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# THE DRIVING FORCES OF HUMAN NATURE AND THEIR ADJUSTMENT

# *The*
# DRIVING FORCES OF HUMAN NATURE
## AND THEIR ADJUSTMENT

*An Introduction*
*to the Psychology and Psychopathology*
*of Emotional Behavior and Volitional Control*

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# PREFACE

THIS BOOK is an attempt at a synthesis of various currents in modern psychological thought. It was philosophy that first attempted to study and interpret the phenomena of mental life. Then came the development of experimental psychology and men tried to obtain further facts by the experimental procedure and a new insight into the nature of mental life. Then came psychiatry with its practical problem of understanding human mental life in order to treat the disorders of the mind. But the three movements have remained to a large extent isolated. Leaders of thought in one center of development have even been suspicious of what was going on in the other.

The three movements can and should be developed so as to supplement each other. Without philosophy to guide and direct empirical research, experimental science runs into the danger of losing itself in a maze of trivialities in which nothing of real importance can be found. And philosophy, although supreme in its own field, needs in many problems an extension of solid facts in order to build on a secure foundation. Psychiatry looks to psychology as medicine to physiology.

And just as pathology has made many contributions to physiology, so the study of the disorders of the mind enables us to understand better what transpires in normal mental life.

The attempt has been made not only to put together these three trends in the development of psychology, but also to illustrate a few methods of treating the disorders of the mind, and so a number of case studies have been given in some detail that *The Driving Forces of Human Nature* might serve as a preparation for one who plans to go on to the study of psychiatry.

Since the major schools of psychopathology were discussed in *The Nature and Treatment of Mental Disorders* and in *Personal Mental Hygiene*, this matter has not been introduced in the present text. Psychopathology is merely illustrated by the actual findings. The general conclusion seems to be warranted that the causes of mental disorders are multiple and various and not to be reduced to a monistic factor as some psychopathologists have maintained.

Psychotherapy often involves the readjustment of the maladjusted patient. But the full and adequate adjustment of the human mind involves a relationship to society and to God, and so we have attempted to outline this adjustment in its ideal perfection.

Certain portions of the present book appeared in my earlier work, *Dynamic Psychology*, but this material has been so extensively revised, so much new material has been added and so much eliminated that the final

form has seemed to represent a new work, warranting a title of its own.

My thanks are due to Dr. John W. Stafford and Miss Lorraine Brilmyer for seeing the book through the press during my absence in Spain.

THOMAS VERNER MOORE

*Madrid, Spain*
*February, 1947*

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# PART I

# HISTORICAL INTRODUCTION TO PSYCHOLOGY

## CHAPTER 1

## THE CONCEPT OF PSYCHOLOGY

THERE is no definition of psychology at the present day that meets with the approval of all students of the science. This lack of unity in the modern concept of psychology is due to several factors.

1. The close relation of psychology to philosophy, from which it has budded off as an independent study.

Metaphysical concepts—one might even say prejudices—are more potent factors in the minds of all men, even scientists, than many would be willing to admit. Different metaphysical attitudes really influence the ideas of the psychologists as to the nature of psychology.

2. Modern psychology is a relatively young science and only in its maturity does a science really crystallize its definition.

3. Psychology is a rapidly growing science splitting up into various subforms begetting a numerous progeny, so that it is hard to decide among its various heirs which is the rightful successor to the name.

This being the case, it is fairer to the student to let him know what psychology has been in the past and from the historical facts deduce the concept of what should be regarded as truly expressing the nature of psychology.

We are confronted with a difficulty at the outset. The name, psychology, is a comparatively recent invention. It is by no means as old as the science itself and was utterly unknown when psychological problems were first discussed in the days of the Greek Sophists. The name, therefore, does not necessarily define the science for us. Were we to take the roots of the word psychology which comes to us from the reformer Melanchthon,[1] psychology would mean the science of the soul: λόγος, a root taken, nowadays, to indicate science, and ψυχή, soul.

This, however, was not the original concept of psychology. If we go back to the first psychological treatise or group of psychological treatises, we find them in the *De Anima* and *Parva Naturalia* of Aristotle. If we look into *De Anima*, we shall see that it is really an attempt to analyze the facts of our mental life. If, however, we wished to give a modern name to the

[1] Philip Melanchthon, a German reformer, 1497–1560, Murray's *New English Dictionary*, VI, 1904, p. 314.

various works grouped together as Aristotle's psychology, this name would be biology rather than psychology, for the discipline that they treat of is said to be the science of life in all its manifestations. Life, according to Aristotle, is that which is capable at least of nutrition, growth, and decay. Besides these fundamental essentials of life, which are found even in plant organisms, there is the fuller life of sensation manifested in animals and of the higher thought processes manifested in man. In the special treatise on *The Soul* Aristotle pays attention mainly to the analysis of sensation and the thought processes of human intellectual life. Bound up with his treatise on the soul were several minor treatises that were termed *Parva Naturalia*. The very titles alone indicate a body of knowledge which extends beyond the metaphysical discussion of the nature of the soul, its freedom, immortality, and other such problems that philosophy now claims as its own.

The titles of the *Parva Naturalia* were as follows: "Concerning Sensation and That Which Is Sensed"; "Concerning Memory and Forgetting"; "Concerning Sleep and Awakening"; "Concerning Dreams"; "Concerning the Interpretation of Dreams"; "Concerning a Long Life and a Short Life"; "Concerning Youth and Old Age"; "Concerning Life and Death"; and "Concerning Respiration."

When we read these titles we see that the first great psychologist made an attempt, very bold for the fourth century B.C., to delve into what we now term physiological psychology and even into problems which the most modern of psychological disciplines, psychoanalysis, has claimed as its own.

During the Middle Ages several treatises were written which adopted as their title *De Anima*, used first by Aristotle. These treatises, however, were written from the metaphysical point of view.

The name psychology, as we have seen, was used by Melanchthon in the sixteenth century. A hundred years later, Christian Wolff (1679–1754) employed the term "rational and empirical psychology." This terminology of Wolff has continued down to the present day with, however, a modification in the meaning of the terms. According to Wolff, there are two methods of studying the soul: the method of reason and the method of experience. Rational psychology investigates the soul by reason; empirical psychology investigates it by experience. From this point of view rational and empirical psychology cover the same field but by a different method. It was soon seen that reason could investigate some problems and empirical research others. It is not possible to study all the problems of psychology by the same method. The distinction, therefore, between rational and empirical psychology became one both of field and of method, rational psychology undertaking to study the metaphysical problems, the nature and origin of the soul, and empirical psychology confining itself to the phenomena of the mind. There was but little progress made in this

empirical investigation until physics and physiology had developed methods of study which could be applied to the sensory life of man. When this development was attained, physiologists began to investigate the relation between the stimulus and the sensation which it produces. This was in the first half of the nineteenth century. The original investigators were physiologists.

Empirical psychology, as a real scientific discipline, had its birth in physiology and not in the philosophy of Christian Wolff. A new science was begotten which was first termed psychophysics and, later, physiological psychology, then experimental psychology, and, occasionally, empirical psychology.

The first work which we may look upon as a treatise *in extenso* of the new science was Gustav Theodor Fechner's *Elements of Psychophysics*, the first volume of which appeared in 1859, the second in 1860. He thus defines psychophysics: "An exact science of the functional relations of dependence between body and mind or, more generally, between the bodily and mental or the physical and psychical world." (P. 8.)

The term "soul" Fechner understood in a very broad sense. In fact, it embraced everything apprehended by inner experience or that could be deduced from inner experience. By the term "body" he understood everything that could be perceived by outer experience, that is, by the senses, or could be inferred from these perceptions.

In 1874 two important works on psychology appeared, one of which was Brentano's *Psychology from the Empirical Standpoint.* He gave a definition of psychology which became very popular and until recent days was the commonly accepted definition of psychology, namely, psychology is the science of psychic phenomena, that is, of conscious processes. He attempted to show that this definition meant neither more nor less than that psychology is the science of the soul. He adopted this definition because it implied no metaphysical theory, whereas the old definition did.

The second great work on empirical psychology which appeared in 1874 was destined to go through six editions and to become the classic work on empirical psychology. This was Wundt's *Outlines of Physiological Psychology.* In his first edition he thus contrasted physiology and psychology: "Physiology supplies us with information concerning those vital phenomena which may be perceived by the outer sense. In psychology, however, man beholds himself from within and tries to explain the interrelation of those phenomena which introspection presents to his view."[2]

A number of psychologists adopted the definition of Brentano, so that psychology was usually defined as the science of conscious processes or the science of the facts of the phenomena of self or the science of consciousness.

[2] Wilhelm M. Wundt, *Grundzüge der physiologischen Psychologie*, 1st ed. Leipzig, 1874, p. 1.

In the meantime, experimentalists were attempting not only to investigate the mental life of man but also to throw some light upon the much discussed problem of animal intelligence. There is, however, this difficulty about the investigation of animal psychology. One can give the animal no verbal instructions, and when one is through with the experiment, one can ask the animal no questions. It is, therefore, necessary to make use of purely objective methods, that is to say, to put the animal in various situations and watch its behavior. One puts a dog in a box, for example, that can be opened by a latch, watches how it gets out and measures the time it takes to liberate itself in successive trials, and thus investigates the time curve in the animal's process of learning.

This objective method of procedure threw a great deal of light on the problem of animal behavior and even gave some insight into the probable nature of animal intelligence as compared with human nature. Those who made use of the method were so thrilled with their success that they wished to apply the same method to the study of the human mind. This they proceeded to do, and this they had every right to do and might hope to obtain and did obtain a number of very interesting results.

Unfortunately, the human mind has a monistic tendency to extreme simplification, which manifests itself under various disguises. If a principle finds valuable application anywhere, some wish to extend it so as to explain everything, and so animal psychologists were not satisfied with applying objective methods to human psychology but commenced to maintain that no other methods whatever were applicable to the mind of man. One must treat a human being as one would an animal. One must ask the subject in the psychological laboratory no questions at all. One must never demand any introspection. One must confine oneself to the objective method. Thus, Watson defines psychology as "a purely objective branch of natural science." Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of the data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness.[3]

After the denial of the value of an appeal to consciousness in the study of psychology, extremists went on to maintain that there is no such thing as consciousness. This extreme attitude seems even to have been adopted by James in his later days. "For twenty years past," he says, "I have mistrusted consciousness as an entity; for seven or eight years past I have suggested its non-existence to my students .... It seems to me that the hour is ripe for it to be openly and universally discarded."[4]

[3] John B. Watson: *Behavior: An Introduction to Comparative Psychology*, New York, 1914, p. 1.

[4] Quoted by Frost, *Psychol. Rev.*, XXI: 204, 1914.

This school which would define psychology as the science of behavior is known as *behaviorism*, and its adherents as *behaviorists*.

It is difficult for one to understand this denial of consciousness without an insight into behaviorism as an outgrowth from animal psychology. With this foundation, however, and keeping in mind the natural tendency of some personalities to all-embracing monistic concepts and sweeping denials and affirmations, and not forgetting either the delight of the radicals to shock the sensibilities of the conservatives and the craving of every man to bring forward something new and startling, we may understand the "psychology" of the behaviorists, though we may have serious misgivings as to the solidity of the logical foundations of behaviorism.

The behaviorist certainly has every right to investigate behavior to the exclusion of consciousness, if he will. When, however, he maintains that psychology is solely the science of external behavior and not an analysis of inner experience, he has no historical foundation for thus limiting the term "psychology." It may be difficult to study our inner mental life, but it is undoubtedly a field of investigation and a field of investigation which has long been termed psychology. This inner mental life is of interest to many investigators, and they have every right historically to term this science of our inner mental life psychology. It is impossible to investigate everything in our mental life by objective methods, for this inner experience is far richer than its manifestations by actions or reactions that can be the objects of an external observer's experience.

Nor has behaviorism been able to attain its goal and predict and control human behavior. A pure behaviorist would have little place in a psychological clinic or the schoolroom or the juvenile court, etc. Whenever one wishes to understand any of the real problems of mental conflict or penetrate into the real causes of the difficulties of life, one has to obtain introspections from the patient in trouble. His reactions alone will not give the insight into his personality that is necessary in order to give him the help he needs. Psychology should enable us to solve the difficulties of the human race as well as to investigate the curve of learning in white rats, dogs, or human organisms.

Somewhat later there was a return to the older concept of psychology as the science of the soul. This tendency was found in Miss Calkins' definition of psychology as the science of the self. To conceive of psychology as the science of individual beings has certain advantages over the conception of psychology as the science of conscious processes. When we study psychology we really seek an insight into the mind and mental life of the individual. We hope for a science which will enable us to interpret not human behavior in general, but the particular behavior of some individual whom we are trying to influence. We may be interested in psychological

theory and in the nature of conscious processes as such, but psychological interest does not terminate with pulling the mind to pieces. No analysis is ever satisfactory as a final result. We wish to try to put things together —to synthesize. We study, therefore, in psychology not isolated states of consciousness alone but the mental mechanisms of behavior which are manifested by individual human beings. Psychology, therefore, in the sense of human psychology, may be defined as *the science of the human personality.* It is not necessary in a definition of this kind to assume any theory of human personality but only that there are personalities, individual human beings, who may be studied from the point of view of their mental life and the mechanisms of their behavior. To say that psychology is the science of the soul assumes at the outset a metaphysical theory. It is better to start on common ground. Psychology is not the science of the brain. It is not physiology, the science of the functions of the organs of the body. It is not biology, the science of life in general, as Aristotle defines it. Psychology is merely the science of human beings developed by analysis of their mental life by experiments, by observations, by everything that will enable us to obtain insight into the minds of men—how they know, how they think, how they reason, how they feel, how they react in the difficulties of life.

## Relation of Psychology to Other Sciences

The question is often raised, Is psychology a natural science? Before answering this question we may ask ourselves, in the first place, Is psychology a science at all? What, we may ask, is a science? A science is a branch of knowledge which seeks an explanation of a correlated group of phenomena or events. Does psychology seek an explanation of a definite field of factual experience? It most certainly does. The facts of experience which are studied in psychology are the facts of our mental life. The task of psychology is not merely to describe these phenomena but to explain them. In this sense, therefore, psychology is a science.

Now we may ask the further question, is psychology a *natural* science? A natural science may be looked upon as one whose explanations are in terms of nature, that is to say, physical motion. The explanations of a natural science must be given according to this concept in terms of matter and energy. We may say rather in terms of energy than of matter, for in most of the explanations of natural science matter does not enter into the question, but only the amount of energy before and after a given event. Natural sciences, so far as their ultimate explanations are concerned, have to do with the manifestations and transformations of energy. Energy is conceived of as the cause of motion, whether of atoms or of masses. Anything that sets in motion a part of matter, whether an atom or a planet, is energy. Can mental phenomena be conceived of in terms of the motion of

atoms or of masses? If we limit ourselves to such explanations as this, we can hardly get beyond physics. We can measure stimuli, we can correlate stimuli with sensations, and when we have done all this we have scarcely trodden upon the field of psychology at all. Psychological explanations are really on a very different basis from physiological. One might learn all about the energy transformations going on in the human body, measure the quantity of food taken and the amount of work done by a human being, and yet one would not understand the true motives of his behavior. If a man appeared to be paralyzed and one understood that the paralysis was not due to any actual injury to the nervous system but to a state of mind, for example, to a desire to get compensation from a railroad company because of the fact that he was in an accident in which he was not really hurt—if one knew all this about a man one would understand his behavior far better than through any insight given by profound chemical studies which might be made of the balance between the energy taken in his food and the energy manifested in his work. Physiological explanations do not help us to understand purely mental facts. It is not likely that they ever will, nor will the principles of physiology enable us, as a general rule, to modify the behavior of criminals or of a psychoneurotic or of an unruly child, etc. This does not mean that physiology may be dispensed with in the study of human behavior. It merely points out that human behavior is not completely explained or understood by an appeal to principles which are strictly those of natural science. Psychology, therefore, is not in the strict sense of the word a natural science. We shall see as we go on that this does not prevent it from being an experimental science or an empirical science. It has many points of contact with the natural sciences. It relies upon physics for information about the stimuli which are capable of producing sensation. Without a knowledge of physics we could not understand how we see, hear, touch, taste, smell, etc. Physics, however, carries us only so far. It leaves us at the threshold of the bodily organism in which we live. When a stimulus impinges upon one of our sense organs many things happen in that sense organ before we become conscious of something in the outside world. Physiology has investigated the sense organs, the nerves, the brain through which we receive information about the outside world. As psychologists therefore, we wish to learn as much as possible about the way in which we know. Physiology is a very important aid to psychology. One who would become a psychologist cannot get along without a good knowledge of the principles of physiology.

To see what psychology has been helps us to understand what psychology is. What modern psychology has been can be seen by looking at the development of American psychology. The following chapter is presented with the idea of showing what psychology is.

## Chapter 2

# THE FOCI OF DEVELOPMENT OF AMERICAN PSYCHOLOGY

### 1. James and the Origins of American Psychology

It has been pointed out that the work of William James was the first focus of development in the history of psychology in the United States.[1] It was he, apparently, who was the first in the United States to become alive to the psychological movement which originated in Ernst Heinrich Weber's attempt to write for physiology its unwritten chapter on sensation. This movement had produced a systematic text in Fechner's *Elemente der Psychophysik* (1859–60), and culminated in the development of Wilhelm Wundt's laboratory and his *Grundzüge der physiologischen Psychologie* (1873–74) before many in the United States knew of its existence. That James should have been the first to awaken the United States to the German movement was probably due to the fact that he had been educated in Europe from childhood, and few psychologists in the United States at this period read German easily enough to become acquainted with the German studies.

Though James awakened the United States to the existence of the German movement in physiological psychology, James himself was not a physiological psychologist.

William James was born in New York on January 11, 1842. He was the eldest son of Henry James, a prominent Protestant theologian who was profoundly influenced by the writings of Swedenborg.

His father was fond of travel and William and his brother Henry received their early education in Europe. "Travel," says Perry, "was a fundamental fact in the history of the James family. It was habitually resorted to as a means of education for the young and as a remedy for the old, whatever their afflictions, whether of body or mind."[2]

The visits of James to the Louvre gave him an interest in painting and the portrait he drew of himself in 1866[3] shows that he attained to no mean excellence as an artist. For a time it seemed that he would be an artist rather than a philosopher or scientist. Perry tells us that James' father

[1] Edwin G. Boring, *A History of Experimental Psychology*. New York, D. Appleton-Century Co., 1929, p. 494.

[2] Ralph Barton Perry, *The Thought and Character of William James*. Boston, Little, Brown & Co., I, 1935, p. 177.

[3] See the frontispiece in Henry James, *Notes of a Son and Brother*. New York, Chas. Scribner's Sons, 1914. See also the reproduction of his portrait of Miss Katherine Temple in 1861, *op. cit.*, opposite p. 96.

thought that art was "frivolous, irresponsible, narrow, vain and parasitic, as compared with either the glory of religion or the seriousness of science."[4]

In 1861 James settled down to study science, but he was never to become a scientist. His physical frailty prevented his following his brothers into



FIG. 1. WILLIAM JAMES, A SELF-PORTRAIT DRAWN IN PENCIL ABOUT 1866

the Civil War, and he entered Harvard Medical School in 1863, receiving his doctorate in medicine in 1869.

The interest of James in psychology can be traced back to about 1867.

[4] Perry, *op. cit.*, I, p. 194.

In a letter from Berlin (*circa* November 1867) he says, "I have blocked out some reading in physiology and psychology which I hope to execute this winter—though reading German is still disgustingly slow. . . . It seems to me that perhaps the time has come for psychology to begin to be a science—some measurements have already been made in the region lying between physical changes in the nerves and the appearance of consciousness—(in the sense of sense perceptions) and more may come of it. I am going to study what is already known, and perhaps may be able to do some work at it. Helmholtz and a man named Wundt at Heidelberg are working at it."[5]

In 1872 he became instructor in physiology at Harvard.[6]

In the "autumn of 1875 James announced a graduate course on 'The relation between Physiology and Psychology' and a similar course for under graduates was announced the next year."[7] And Boring tells us that "at about this time he had space set apart for the experimental work of students, actually several years before Wundt founded the Leipzig institute (1879) which is said to be the first psychological laboratory in the world."[8]

Of what did this laboratory of experimental psychology consist?

Perry quotes a communication of S. Stanley Hall which he says refers to the middle seventies: "In a tiny room under the stairway of the Agassiz Museum he [James] had a metronome, a device for whirling a frog, a horopter chart and one or two bits of apparatus."[9] However, Bowditch's physiological laboratory was used by James from 1872 on; Stanley Hall's work on the muscular perception of space was a Ph.D. dissertation awarded in psychology by the Department of Philosophy in 1878.

In 1880 James became assistant professor of philosophy at Harvard and, in 1885, professor of philosophy. In 1889 his title was changed to Professor of Psychology. But, as Boring remarks, the domination of psychology in his life came to an end the following year, 1890, with the publication of his *Principles of Psychology*. He wrote that his book proved nothing but that there is no such thing as a science of psychology.[10] From that time on his psychological interest waned and he became more and more a philosopher. We may say of him that he was a philosopher with an interest in psychology.

[5] *The Letters of William James*. Edited by his son, Henry James. Boston, The Atlantic Monthly Press, I, 1920, pp. 118–9.

[6] Perry, *op. cit.*, I, p. 325.

[7] Perry, *op. cit* , I, pp. 359–60.

[8] Edwin G. Boring, *op. cit.*, pp. 494–5.

[9] Perry, *op. cit.*, II, p. 14, quoting Hall in *Science*, II: 626, 1895.

[10] Edwin G. Boring, *op. cit.*, p. 497.

In December 1906 and January 1907, he delivered at the Lowell Institute in Boston and at Columbia University in New York a series of lectures later published as *Pragmatism. A New Name for Some Old Ways of Thinking.*[11] This may be looked upon as his major work in philosophy. He died August 26, 1910.[12]

Of all James' works the one of most importance for the development of psychology and for that field of psychology we are about to study was his *Principles of Psychology.*

This work had been built up over a period of years and many of its chapters had been previously published as special studies in various journals. It may still be read with interest and profit. It contains the famous chapter on the emotions which appeared in part in 1884 in *Mind.*

In this chapter he gives expression to a theory of the emotions diametrically opposed to the common concept in popular and scientific thinking. He expresses this concept as follows:

> Our natural way of thinking about these coarser emotions is that the mental perception of some fact excites the mental affection called the emotion, and that this latter state of mind gives rise to the bodily expression. My theory, on the contrary, is that the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur *is* the emotion.[13]

This theory is known as the Lange-James theory, because it was put forward at about the same time by C. Lange, a Danish physiologist. However, at the present time it merits no more than a passing historical note because a careful study of the sequence of events in the various types of emotional experience and emotional resonance shows without any doubt that the emotional experience is aroused prior to the resonance by which it is expressed.[14]

In his discussion of volitional action, James starts with a study of the initiation of a voluntary movement. He maintains that every idea of a movement in adult life is accompanied by a kinesthetic image of the movement to be executed and this kinesthetic image, unless inhibited, gives rise to the movement in a quasi-reflex manner. He argues extensively against the Wundtian concept of a feeling of effort in the sense of an experience of effort originating in the central organ and innervating the motor nerves.

[11] New York, Longmans Green, 1907.

[12] For an account of his publications, see Ralph Barton Perry, *Annotated Bibliography of the Writings of William James.* New York, Longmans, Green & Co., 1920, p. 69.

[13] *Principles of Psychology.* New York, Henry Holt & Co., II, 1890, p. 449.

[14] Cf. Thomas V. Moore, *Dynamic Psychology.* Philadelphia, J. B. Lippincott Co., 1924, pp. 116–133.

James feels, however, that over and above the ideas and their kinetic drive to action there is a *fiat* or effort, so that an idea insufficient of itself to flow over into action by its own ideomotor activity may do so in virtue of volitional effort.

The root of freedom, according to James, lies in the power of attention. One can attend to this or that ideomotor concept. Attention to one ideomotor concept inhibits the kinetic drives of other concepts until the drive of the idea attended to flows over into action.

> The essential achievement of the will, in short, when it is most "voluntary" is to *attend* to a difficult object, and hold it fast before the mind. The so doing *is* the *fiat;* and it is a mere physiological incident that when the object is thus attended to, immediate motor consequences should ensue.[16]

Is the fiat of the will merely an incident in a vast world of changes, each one of which is mechanically determined, or does the volitional act constitute an exception to the mechanical sequence of the cosmos? James thinks that it does, but he tells us that "since the grounds of his opinion are ethical rather than psychological, he prefers to exclude them from the present book."[16]

These grounds, however, he expressed in an address on "The Dilemma of Determinism."[17] It was an early expression of his pragmatism. We cannot settle the dilemma by logical arguments and distinction, says James, but we can show that the freedom of the will fits in better with our sense of the fitness of things and therefore, from what he later termed the pragmatic point of view, we must recognize it as true.

James came to psychology through physiology. It is not surprising, therefore, that his theory of knowledge was anatomical and physiological rather than dominantly psychological.

He carried with him into psychology the assumption of the physiologists that the brain is the organ of thought. "All nervous centers have then in the first instance one essential function, that of intelligent action."[18]

A universal concept, according to him, is essentially the simultaneous action of a number of cerebral convolutions. This simultaneous action is the fringe that surrounds the particular sensory experience, the understood meaning which can, however, never be any kind of an image whether clear and distinct or blurred.[19]

[15] *Principles of Psychology*, II, p. 561.

[16] *Op. cit.*, p. 573.

[17] Published in the *Unitarian Review*, **22**: 193–224, 1884, and republished in *The Will to Believe and Other Essays in Popular Philosophy*. New York, Longmans, Green & Co., 1897, pp. 145–183.

[18] *Principles of Psychology*, I, p. 79.

[19] *Op. cit.*, I, p. 478.

James, therefore, like most who have examined the empirical facts of perception saw the difference between images, bound by their nature to represent something individual, and meanings which are, in general, universal. But, by reason of his physiological prejudices, he could not rise to the concept of the mind of man interpreting reality by nonsensory intellectual powers, which must be activities of his spiritual nature and could never be conceived of as the activity of any single neuron or of a vast group of neurons acting collectively.

The impossibility of really accounting for universals by the chemical or physical changes in *n* neurons may have been a factor in driving him to the conclusion that there is no such thing as a science of psychology. The paternal influence of his father, the minister with lofty spiritual ideals, was felt throughout his life and what he could not justify on the basis of his physiological training he clung to as a practical postulate of the mind.

It is, at all events, somewhat strange that James derives the necessity of conceiving of truth, as a concept that works, from our inability to form visual images of certain elements in the things we know.

In his chapter on the pragmatist's conception of truth, he points out that we can shut our eyes and get a visual image of a clock on the wall that is a fairly good copy. But unless you are a clockmaker you will not be able to get any such idea of its interior mechanisms, and "when you speak of the 'time-keeping function' of the clock, or of its spring's elasticity it is hard to see exactly what your ideas can copy."[20]

By reducing the concept of knowledge to that of a sensory picture and pointing out that if truth is a mere sensory picture of reality we can know very little, James prepared the way for the pragmatist definition of truth: "True ideas are those that we can assimilate, validate, corroborate and verify. False ideas are those that we cannot."[21]

If one leaves out the word "assimilate" one can form a second proposition: All ideas that can be validated, corroborated, and verified are true.

We then see that James' definition is an illegitimate conversion of the second proposition with the added concept which demands that true ideas are those which the mind can assimilate. It is quite clear that some statements might be true which could not be validated and verified and others might be capable of verification, but some particular individual might reject them as not compatible with his personal attitudes; and still these statements would be true in the sense that they give an exact statement of real facts.

James, however, clouds the concept of reality. He says in various places that "an experience, perceptual or conceptual, must conform to

[20] William James, *Pragmatism*. New York, Longmans, Green & Co., 1940, p. 199.
[21] *Op. cit.*, p. 201.

reality in order to be true."[22] And then adds, "By 'reality' humanism means nothing more than the other conceptual or perceptual experiences with which a given present experience may find itself in point of fact mixed up." He softens but does not explain away the implied idealism in a footnote. But then we have such statements as: "At each and every concrete moment, truth for each man is what that man 'troweth' at that moment with the maximum of satisfaction to himself."[23]

More than once in the history of thought, the simple conversion of a universal affirmative proposition has made the false seem attractively true and clouded the minds of men.

The attractiveness of pragmatism comes from maintaining that true ideas can be verified. They work. They satisfy. That is certainly the case with some true ideas. We would like it to be necessarily true of all and so be able to reject unpleasant truths. James seems really to make all truth relative to the mind of the knower and to do away with its objective character. Certainly there was nothing new in advocating verification to test the objective truth of any statement. Nor was there anything new in maintaining that in the long run truth works. Error will out and result in disaster. But to have a philosophy that would attract attention it must be startling. And if the startling is evidently false, one can maintain interest and discussion by clouding the issue. And this seems to be what James did in his discussion of pragmatism.

James made use of pragmatism to arrive at a conclusion relative to the place of religion in the world economy, with the following conclusion:

> In a general way, then, and "on the whole," our abandonment of theological criteria, and our testing of religion by practical common sense and the empirical method, leave it in possession of its towering place in history. Economically, the saintly group of qualities is indispensable for the world's welfare. The great saints are immediate successes; the smaller ones are at least heralds and harbingers, and they may be leavens also of a better mundane order. Let us be saints, then, if we can, whether or not we succeed visibly and temporally.[24]

But when one reads the lecture on "The Value of Saintliness" of which this passage constitutes the conclusion, there is so little adduced from the vast material available to illustrate the practical value of religion and so much criticism of various excesses and religious concepts and practices which James could not understand that the conclusion seems to be an

[22] William James, *The Meaning of Truth. A Sequence to Pragmatism.* New York, Longmans, Green & Co., 1909, p. 100.

[23] *Loc. cit.*, p. 89.

[24] William James, *The Varieties of Religious Experience.* New York, Longmans, Green & Co., 1929, p. 377.

echo of his childhood quite independent of the reading referred to in the chapter.

The *Varieties of Religious Experience* was an unfortunate attempt. James was not equipped by training and sympathetic contacts to understand religious experience. Unfortunately he was interested in extreme forms of religious experience rather than the usual normal devout life of the believer. He dashes about in the lives of the saints like a bull in a china shop making use of his brilliancy in satire to hold up to ridicule what he is incapable of appreciating. The book probably had its influence in the development of the modernistic concept that holy thoughts and aspiration well up from the depths of the unconscious rather than attain to the conscious mind by the action of divine grace.

James' *Principles of Psychology* was an attempt to put together the data of physiology and the new experimental psychology in the light of his own philosophy. He was not satisfied with the result. The reason is not hard to find. His philosophy was inadequate. Unfortunately, instead of correcting his philosophy and working further on the synthesis, he abandoned psychology and went on to develop the inadequate philosophy.

Psychology itself took an opposite course. It abandoned philosophy. Some psychologists devoted themselves to the practical development of psychology, as did G. Stanley Hall at Worcester; and others, guided by a philosophy even more inadequate than that of James, lost themselves in a maze of investigations on the sense organs and their activities, thinking that the solution to the problems of the mind must be found in the study of the sensations, supposed to be the only elements of cognitive mental life. Such were Edward Bradford Titchener and Edwin Garrigues Boring, the present head of the Department of Psychology at Harvard.

Boring, the faithful experimentalist, is at the present day the successor of James at Harvard.

Edwin Garrigues Boring was born in Philadelphia on October 23, 1886. He received his M.E. at Cornell in 1908 and his M.A. and Ph.D. there in 1912 and 1914. He taught at Cornell from 1911 to 1918, in which year he entered the Army as psychological examiner with the rank of Captain. He taught at Clark University from 1919 to 1928, when he was called to Harvard.

What is the character of his psychology? We may say that the influence of Titchener in the training of Boring has sliced down the field of James' *Principles of Psychology* to rather narrow limits.

Boring questions the existence of intelligence and emotions and denies the reality of will.

"The existence," he says, "of intelligence is another moot point, and

perhaps also of emotions. It may be that both concepts, resisting rigorous definition, are now on the way to join the limbo to which will has been consigned, and whither thought, as a concept independent of learning, is bound."[25]

James in his *Principles of Psychology* wrote an interesting chapter[26] on the automoton theory, and he concluded "that to urge the automoton theory upon us, as it is now urged, on purely *a priori* and *quasi-metaphysical* grounds, is an *unwarrantable impertinence in the present state of psychology.*"[27]

Boring, however, conceives of the task of psychology to consist in the description of the functional capacities of man as the properties of a reactive organism and then "to reformulate these functions as properties of a *hypothetical* robot."[28] And then to construct robots that will perform human functions better than man as has been done in the "electronic calculators."

"The robot," says Boring, "is simply an argument against mentalism, and against vague terms which pass current in psychologists' language while remaining incapable of rigorous definition. I believe that robotic thinking helps precision of psychological thought, and will continue to help it until psychophysiology is so far advanced that an image is nothing other than a neural event, and object constancy is obviously just something that happens in the brain. That time is still a long way off, and in the interval I choose to sit cozily with my robot, squeezing his hand and feeling a thrill—a scientist's thrill—when he squeezes mine back again."[29]

If we analyse the evidence for this concept of man as a mechanical automaton, we see that it does not derive from any facts of experimental investigation but rather from a refusal to consider the facts of our intellectual operations and volitional activity. Why are these facts left out of consideration? The explanation is to be sought not in psychology but in philosophy. If the brain is really assumed to be the organ of thought in a materialistic system of philosophy, it seems easier to attempt to explain mental life purely in terms of sensory phenomena and reflex action, denying to the sensory phenomena their obvious psychic qualities. Assume all this, and anything which cannot be defined in terms of sensation and reflex action cannot be "rigorously defined" and therefore is ruled out of discussion.

The difficulties which arise are attributed not to the inherent falsity of the premises but to the present inadequacy of our knowledge.

[25] Edwin G. Boring, "Mind and Mechanism." *Am. J. Psychol.*, **59**: 190, 1946.
[26] Vol. I, pp. 128–144.
[27] *Loc. cit.*, p. 138. Italics in original.
[28] *Am. J. Psychol.*, **59**: p. 191, 1946.
[29] *Am. J. Psychol., loc. cit.*, p. 192.

"There are too many flaws," says Boring, "in our psychophysiology of perception for us to employ it yet awhile as a foundation for the psychophysiology of the 'higher' mental processes."[30]

And so Boring has decided "to sit cozily with his robot" and await developments.

Unlike James, he has been a laboratory psychologist, but a psychologist whose hands have been tied by a materialistic philosophy. He has done many pieces of valuable experimental investigation but philosophy has narrowed the horizon of the psychologist.

His most valuable contribution has been to the history of psychology. To his work, *A History of Experimental Psychology*,[31] we can turn for a vast amount of information on psychologists and the development of psychology. And scarcely less valuable for the field it covers is his *Sensation and Perception in the History of Experimental Psychology*.[32]

His personal contributions to psychology have their value in the sensory field, and were it not that he denies the existence of the intellectual and volitional his work as a whole would deserve recognition as an important contribution.

But the theoretical limitation of psychology to the realm of sensation has resulted in an unfortunate sterility and in the development of a psychology that has little value as an introduction of the college student to the mental problems of life or as an aid to the psychiatrist in understanding the abnormalities of the mind.[33]

In relation to the field of dynamic psychology Boring takes a nihilistic point of view. Emotion and will—what are they? There is no such thing as will according to Boring, and when you have eliminated sensation from emotional life, you have little left.

But nevertheless the problem of the emotions, and how to deal with the situations that give rise to them, still persists; and volitional control still remains an important element in the organization of our lives and our readjustment after the crises of life. No psychology can be adequate that

[30] Edwin G. Boring, *The Physical Dimensions of Consciousness*. New York, The Century Co., 1933, p. 188.

[31] New York, D. Appleton-Century Co., 1929, pp. xvi + 699.

[32] New York, D. Appleton-Century Co., 1942, pp. xv + 644.

[33] Edwin Garrigues Boring, Herbert Sidney Langfeld, Harry Porter Weld, and collaborators, *Psychology, A Factual Text Book*. New York, John Wiley & Sons, 1935, pp. xviii + 555.

Edwin Garrigues Boring, *The Physical Basis of Consciousness*. New York, The Century Co., 1933, pp. xii + 251.

Following down the abstracts of his publications in *Psychological Abstracts* presents to us also the picture of a psychologist of sensation, without interest in the deeper mental problems of life.

fails to deal with emotions and volitional activity and this is what we shall attempt in the present volume.

## 2. Yale and the Origin of Systematic Psychology in America

George Trumbull Ladd was the first in America to attempt a systematic treatise in which were summarized the data of physiology and the new experimental investigations of the mind. He was born at Painesville, Ohio, January 19, 1842, the year of the birth of William James. "He graduated from Western Reserve College in 1864 and from Andover Theological Seminary in 1869."[34] He was active in the ministry until he was appointed professor of philosophy at Bowdoin College in 1879. In 1881 he was called to Yale, where he taught till 1906. He lectured in Japan in 1892 and 1899 and in India in 1899–1900. He wrote many books on psychology, philosophy, and theology. But his *Elements of Physiological Psychology*, which appeared in 1887, was the pioneer textbook in the United States.

Titchener says of Ladd's *Elements*: "I well remember my excitement on finding this book in the library of the Oxford University and the shock of disappointment at reading that mind was a real unit-being."[35]

The beginnings of modern psychology in America were distinctly functional, as will be seen by reading Ladd's *Elements of Physiological Psychology*. In this work Ladd pointed out the fundamental fact that states of consciousness differ from one another and at the same time are related to one another by various similarities.[36] From the character of states of consciousness as compared with what we know of the brain and its activity he drew the conclusion that "The phenomena of human consciousness must be regarded as activities of some other form of Real Being than the moving molecules of the brain."[37]

Mental phenomena, he thought, could be brought under three headings: knowing, feeling, and willing, and these "so called mental 'faculties' are only the modes of behavior in consciousness of this real being."[38] He answered current criticisms, which falsified the faculty concept by referring to them as independent entities with an existence of their own, by denying any such concept and by dwelling on the fact that mental faculties are activities of the one real being that constitutes the personal ego which cannot be identified with physical molecules of the brain's nervous mass.

[34] See the obituary notice by E. B. Titchener, *Am. J. Psychol.*, **32:** 600–601, 1921; also the account in Edwin G. Boring, *A History of Experimental Psychology*. New York, D. Appleton-Century Co., 1929, pp. 551 ff.

[35] *Loc. cit.*, p. 600.

[36] *Elements of Physiological Psychology*, 1887. pp. 600 ff.

[37] Italicized in original, *op. cit.*, p. 606.

[38] *Op. cit.*, p. 606.



FIG. 1-A, GEORGE TRUMBULL LADD, YALE FACULTY PHOTOGRAPH, 1891
Courtesy Yale University Library

Ladd's *Elements of Physiological Psychology* presented a very commendable attempt to develop a well rounded psychology in which theory would not be lost sight of in the mass of empirical facts.

If we turn to psychology at Yale at the present day, we find that it is vastly different from the philosophical empiricism of Ladd. Three well known names are associated with the research of the department: Gesell, Hull, and Miles. Perhaps of these three Hull is most like Ladd, although he is so unlike him that he would be surprised at the suggestion that he bears any resemblance to him whatsoever. But Ladd attempted to interpret the data of physiological psychology in the light of his philosophy and Hull has done the same thing in his own way and with a different philosophy.

The fundamental assumption of Hull's psychology is given in the preface to his *Principles of Behavior*,[39] the assumption, namely, "that all behavior, individual and social, moral and immoral, normal and psychopathic, is generated from the same primary laws; that the differences in the objective behavioral manifestation are due to the differing conditions under which habits are set up and function. Consequently the present work may be regarded as a general introduction to the theory of all the behavioral (social) sciences."

But the assumption is not a generalization from empirical data but a metaphysical speculation as to what human behavior must be in a system of philosophy which disregards the classic distinction between *actus humanus* and *actus hominis*, that is to say, which does not differentiate between truly volitional activity and reflex action.

Hull's *Principles of Behavior* was an outgrowth of an earlier study, *Mathematico-Deductive Theory of Rote Learning*.[40] This was a commendable attempt to translate the ultimate concepts involved in rote memory into symbols of formal logic and to enlist the aid of the department of mathematics in demonstrating theorems from a given set of postulates and check the conclusion by the data obtained by experiment. The authors would have done better to solve some individual problems of memory rather than to establish an all-embracing theory. The difficulty of their task is illustrated by a collapse at an important locus in the well established empirical foundations of the theory of memory. They themselves call attention to this inadequacy: "The most striking single failure of the

[39] New York, D. Appleton-Century Co., 1943, p. v.

Clark Leonard Hull was born at Akron, N. Y., May 24, 1884. He received his A.B. at the University of Michigan in 1913 and his Ph.D. at the University of Wisconsin in 1918. He taught at the University of Wisconsin from 1916 to 1929, since which time he has been professor of psychology at the Institute of Human Relations at Yale.

[40] New Haven, Yale University Press, 1940, pp. xii + 329.

system encountered so far is its disagreement with Jost's law, one of the most firmly established principles in the field of rote learning."[41]

But the attempt is made in the *Principles of Behavior* to extend what was inadequate for rote memory to the explanation of all the activities of man.

The result is a work which regards "the behaving organism as a completely self-maintaining robot."[42] And so we have a psychology that is restricted by the limitation of an assumed metaphysical system and never approaches the vital problems of the social sciences for which it is intended as an introduction.

Walter Richard Miles[43] has been an experimental psychologist of a high order. We might say of him that he is independent of any school. He has been an empirical psychologist who has utilized his ability as an experimentalist to solve problems, some of considerable practical interest. Among his earlier researches was one done in conjunction with Francis Gano Benedict, *Human Vitality and Efficiency under Prolonged Restricted Diet.*[44] His study of *Alcohol and Human Efficiency*[45] was a classic. And later he has published a number of valuable studies on age and human ability. In 1935 he summarized his own work and the literature in his valuable study, *Age and Human Society.*[46]

Gesell,[47] perhaps, derived from Hall at Clark University his interest in child development and carried that interest with him to Yale. Under his direction the Clinic of Child Development, Yale School of Medicine, has become the chief center in the study of normal child behavior from birth through early childhood. Though at times one thinks that these studies are a chaos of empiricism, nevertheless, they have been organized so as to enable one who has familiarized himself with them to study a child under 3 years of age and measure with some degree of success its level of develop-

[41] *Loc. cit.*, p. 307.

[42] *Principles of Behavior*, p. 27.

[43] W. Miles was born at Silver Leaf, N. D., March 29, 1885. He took a B.S. degree at Pacific College, Newberg, Oregon, in 1906; A.B., Earlham College, Richmond, Ind., 1908; and his Ph.D. at Iowa State University in 1913. He held teaching positions in psychology and became professor of experimental psychology at Stanford in 1929 and has been professor of psychology at Yale since 1931.

[44] Washington, Carnegie Institution of Washington, 1919, publication no. 280. Pp. xi + 701.

[45] Washington, Carnegie Institution of Washington, 1924, publication no. 333. Pp. x + 298.

[46] Published in *A Handbook of Social Psychology.* Edited by Carl A. Murchison. Worcester, Mass., Clark University Press, 1935, pp. 596–682.

[47] Arnold Lucius Gesell was born at Alma, Wis., on June 21, 1880. He took his B. Ph. at the University of Wisconsin in 1903, his Ph.D. at Clark University in 1906, and his M.D. at Yale in 1915, since which time he has been professor of child hygiene at the Yale School of Medicine.

ment and so be able to give an opinion as to whether or not it would be a good risk for adoption.[48]

We thus see at Yale at the present time two trends, one toward the practical application of psychology and the other toward the theoretical explanation of human behavior. In itself the presence of these two trends is most valuable and important, for psychology must develop in both these directions. It is to be regretted, however, that Hull's philosophical trend is dominated by such narrow metaphysical principles. Mechanics is not the only science and when we come to the study of man we should take man as we find him and not try to robotize our psychology in order to make it conform to a concept of science which excludes from the field of discussion as unscientific anything which cannot be ultimately reduced to mechanical principles.

### 3. Clark and the Origin of Applied Psychology in America

Granville Stanley Hall was born at Ashville, a little country town in Massachusetts, on February 1, 1844. His ancestors came over from England in the Mayflower in 1620. His father was a farmer. His mother hoped that he would enter the ministry and, as this involved going to college, he made this ambition known to his father, who all along had hoped for his son's help on the farm.

He was graduated from Williams College in 1867 and entered the Union Theological Seminary in New York City the same year.

Though educated for the ministry, Hall did very little ministerial work. He tells us in his autobiography that a foreign-trained scholar, Henry B. Smith, turned his mind from theology to philosophy and advised him to continue his education in Germany.[49] He studied Comte at a little club of positivists and reveled in the theater during his first year at Union Theological Seminary. Henry Ward Beecher introduced him to Henry Sage, who gave him a thousand dollars to pursue his studies in Germany.[50]

He sailed for Europe in July 1868. He says of the medley of courses that he took under such men as Dorner in theology, du Bois-Reymond in physiology, and Westphal in psychiatry that "if ever there were wild electives, they were illustrated in the above selection of courses, which were quite often unrelated throughout my five semesters."[51]

He returned to the United States in 1871 to an unsatisfactory period of

[48] Cf. Arnold Gesell and Catherine S. Amatruda, *Developmental Diagnosis*. New York, Paul B. Hoeber, 1941. Pp. xiii + 447.

[49] *Life and Confessions of a Psychologist*. New York, D. Appleton & Co., 1923, p. 178.

[50] *Loc. cit.*, p. 182.

[51] *Loc. cit.*, p. 190.

tutoring and teaching, but in 1876 he again went to Germany, this time to study under Wundt at Leipzig with whose *Grundzüge* he had recently become familiar. He studied also under von Kries, von Frei, and Ludwig,

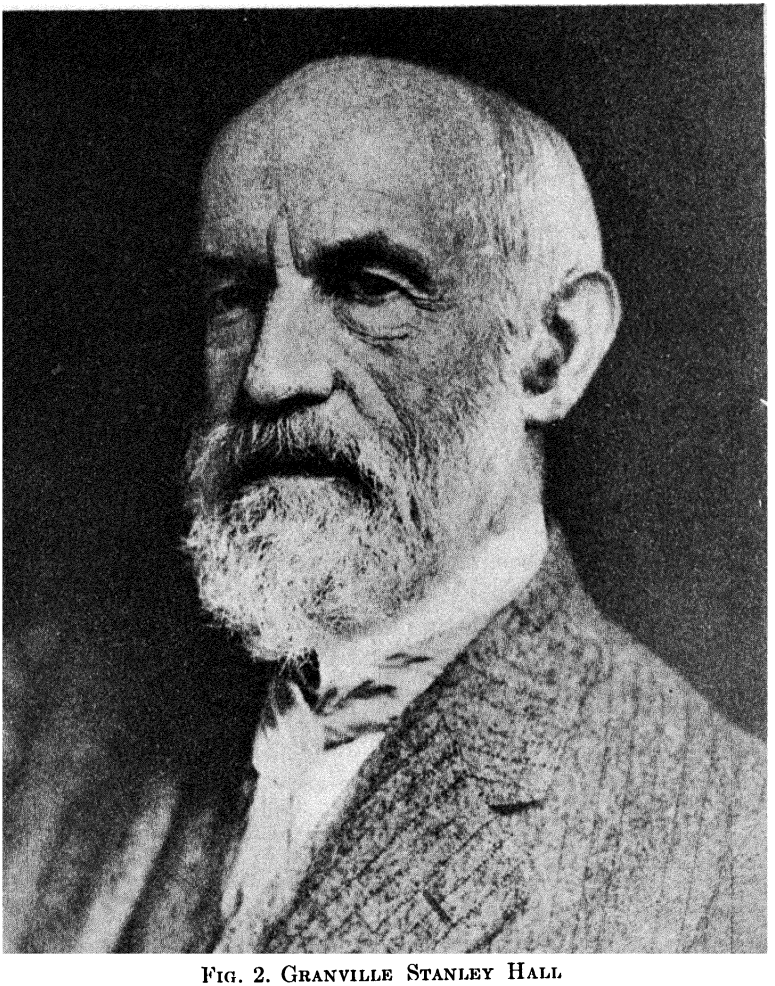


FIG. 2. GRANVILLE STANLEY HALL

the great experimental physiologist. He says: "During the two Leipzig years I found relatively little time for reading, save in connection with my subject, the physiology of the muscles, on which I focused as I had never done on any subject before."[52]

[52] *Loc. cit.*, pp. 207–208.

Returning home he was eventually invited by President Eliot to give a series of lectures on education at Harvard. He commenced also to work at Harvard with Bowditch in physiology and William James in psychology, taking his Ph.D. in 1878. He was thus rather late in starting his psychological career.

In 1881 he was invited to give a course of lectures at Johns Hopkins and this invitation was followed in 1886 by one to organize a psychological laboratory. In 1888 he accepted an invitation to become president of the newly projected Clark University at Worcester, Massachusetts. He resigned the presidency of Clark University in 1919 when 75 years of age and died April 24, 1924.

One may say that Hall's future work was not founded on his previous education. He was a student of William James, but this was a relatively minor incident in the broad and unorganized program of preparation for his future career.[53]

If James was a focus of development in American psychology by what he wrote, Hall was a focus of development by what he did. This does not by any means signify that Hall wrote little, for as a matter of fact he wrote a great deal. However, his writings lacked the solid foundation of established fact but they stimulated activity in others by pointing the way to unexplored fields of investigation.

Sanford, whom he brought from Johns Hopkins to Clark to take care of the experimental laboratory, writing his obituary notice in the *American Journal of Psychology* said "In psychology the specific things with which his name has been associated (his early work in the psychological laboratory, his studies of children and adolescents, the 'recapitulation theory' in education, the progress in muscular control 'from fundamental to accessory,' the emphasis on sex in normal life and education), in all these his

[53] The chief source of our information about Hall is his own autobiography, *The Life and Confessions of a Psychologist.* New York, D. Appleton, 1923. Pp. ix + 623.

We have the following memoirs:

E. C. Sanford, "Granville Stanley Hall, 1846–1924." *Am. J. Psychol.*, **35:** 313–321, 1924.

Publications of the Clark University Library, May 1925, vol. 7, no. 6: *Granville Stanley Hall. Feb. 1, 1844–April 24, 1924.* This contains a biographical sketch by Louis N. Wilson; a reprint of Sanford's Memoir; letters from a number of his students; a list of candidates for advanced degrees who studied under his direction and the titles of their dissertations; and a bibliography of his published writings.

Edward Lee Thorndike, "Biographical Memoir of Granville Stanley Hall 1844–1924." Nat. Acad. of Science. *Biographical Memoirs.* 1925, vol. 12, Fifth Memoir.

Louis N. Wilson, *G. Stanley Hall; a Sketch.* New York, G. E. Stechert, 1914. Pp. 144.

Lorine Pruette, *G. Stanley Hall. A Biography of a Mind.* New York, D. Appleton, 1926. Pp. vii–267.

first reconnoissances have been revised or superseded by the more accurate surveys of later comers, or seem likely to be so superseded."[54]

What were the accomplishments that he achieved? He is credited with the foundation of the first laboratory of experimental psychology in the United States. This he established in 1886 at Johns Hopkins University. But as we have seen, he was preceded by William James, who as early as 1875 had a simple laboratory and was offering instruction in physiological psychology[55] at Harvard. Hall entered this field a little bit later. Professor Gilman invited him in 1882 to build up a psychological laboratory at Johns Hopkins University and he entered upon this project in the autumn of that year.

However, Hall was not to be an experimental psychologist. He published little in the line of experimental research in psychology and after the foundation of the Hopkins Laboratory his studies were always made in association with another worker.[56]

Hall founded the *American Journal of Psychology* in 1889, which he tells us he sold to Professor E. B. Titchener in 1920 and which still continues as one of the important psychological periodicals of the United States. He founded the *Pedagogical Seminary* in 1891,[57] now the *Pedagogical Seminary and Journal of Genetic Psychology*; the *Journal of Religious Psychology* in 1904, which ceased publication in 1915; and the *Journal of Applied Psychology* in 1917, which still continues.[58]

He tells us in his autobiography that the American Psychological Association was organized in his study.[59]

We may look upon Hall as the main focus from which developed our modern investigations of the mind of the child.

In 1880 Hall returned from Germany, having studied under Wundt and worked in the physiological laboratory of Ludwig. It was characteristic of his mental type and prophetic of his future work when he commenced at once in the schools of Boston his study on "The Contents of Children's

[54] E. C. Sanford, *Am. J. Psychol.*, **35**: 320, 1924.

[55] Edwin G. Boring, *A History of Experimental Psychology*. New York, D. Appleton-Century Co., 1929, p. 494.

[56] These studies are: G. Stanley Hall and E. M. Hartwell, "Bilateral Asymmetry of Function." *Mind*, **9**: 93–109, 1884.

G. Stanley Hall and H. H. Donaldson, "Motor Sensations of the Skin." *Mind*, **10**: 556–572, 1885.

G. Stanley Hall and Yuzero Motora, "Dermal Sensitiveness to Gradual Increases of Pressure." *Am. J. Psychol.*, **1**: 72–98, 1887.

[57] This date is incorrectly given on p. 598 of his *Life and Confessions* as 1893.

[58] See G. Stanley Hall, *Life and Confessions of a Psychologist*. New York, D. Appleton & Co., 1923, p. 598.

[59] *Loc. cit.*, p. 7.

Minds on Entering School"[60] rather than some minute investigation in physiological psychology.

To him may be accredited the development of the technique of the *questionnaire.* He speaks of the one hundred points on which the children were questioned to obtain data for his "The Contents of Children's Minds" as his first printed questionnaire[61] and then refers to 194 questionnaires that he had published in conjunction with his collaborators.

What was the most important of Hall's published works? Perhaps the two fat volumes on *Adolescence.*[62] An inquiry answered by 123 members of the American Psychological Association rated his *Studies of Childhood* as of greatest importance and *Adolescence* as only a little less important.[63] But if we should ask what book of Hall's would be of real importance for consultation today, we must answer that scarcely a single work of Hall's is still one of major importance.

If we look upon the fundamental task of psychology as a study of the functions of the mind and our states of consciousness, with a view to understanding their nature and tracing their development, the work of G. Stanley Hall contributed little to this field.

We might say that he left the field of theoretical psychology to become interested in its practical applications and to a large extent he carried with him or was followed by the major group of the American psychologists of the twentieth century. This result is something to be regretted. Practical applications are best developed on a solid basis of facts explained by a sound logic of theoretical interpretation. Our testing movement and the various branches of applied psychology stand in critical need of theoretical guidance.

The tendency for psychologists of the physiological school to confine their attention to sensations and feelings and for the applied psychologists to devote themselves to practical educational problems has had an unfortunate effect in blocking the development of sound psychological theory. It has even threatened the existence of psychology as a science. Thus a few years ago Johns Hopkins University, which has the credit of first having opened formally and intentionally a psychological laboratory, did away with its department of psychology and said that those interested in psychology could take courses in physiology, education, and philosophy.

[60] Published later in *Princeton Rev.*, **2**: 249–272, 1883, and republished in *Ped. Sem.*, **1**: 139–173, 1891, and later in book form by E. L. Kellogg & Co., New York, 1893.

[61] G. Stanley Hall, *Life and Confessions of a Psychologist.* New York, D. Appleton & Co., 1923, p. 381.

[62] New York, D. Appleton & Co., 1904.

[63] Cf. Thorndike's Memoir, Nat. Acad. Sciences, *Biographical Memoirs*, 1925. vol. 12, no. 5, p. 144.

Fortunately this state of affairs did not continue and the Johns Hopkins Department of Psychology was reopened.

The successor of Hall at the present day in Clark University is Vernon Jones.

Vernon Jones was born at Portsmouth, Virginia, on October 13, 1897. He received his A.B. at the University of Virginia in 1920 and his Ph.D. from Columbia in 1926. He spent some time as teacher and principal in the public schools of Virginia, an experience which seems to have guided all his future scientific research. He went to Clark University as associate professor of educational psychology in 1926 and has been professor there since 1938.

Jones is typical of a group of American psychologists whose interest is dominantly practical and who have little use for philosophy and what it can contribute to the guidance of empirical psychology.

However Jones' contributions are distinct advances over those of Hall. His experimental and empirical investigations are better organized and more critical.

One of his major interests has been the moral training of children. His little book, *What Would You Have Done?*[64] is a collection of short stories adapted from the biographies of great men that present conflicts arising from situations that gave rise to various simple moral problems of children. The idea back of the book, as the title indicates, is to get the children in class to discuss the various situations and so develop for themselves, under the guidance of the teacher, sound principles of morality.

His *Character and Citizenship Training in the Public School*[65] is essentially an empirical study aimed at finding out whether or not measurable improvement in character can be brought about by classroom instruction. And he finds that planned instruction can improve moral conduct even though progress is slight and hard to obtain.

Such studies have distinct value when their results are positive, but had, for instance, Jones found that he was unable to demonstrate any improvement in character by the methods of training employed, one should not, therefore, conclude that all attempts at character training are futile. For the possibilities remain (a) that character improvement really did take place but the measures employed to detect it were inadequate; (b) character improvement did not take place but it might have taken place had other means been employed.

The methods of character training employed in the school system of the United States are too naturalistic, and there is too much vagueness about moral standards and objectives for it to be really efficient. Jones made a

[64] Boston, Ginn and Co., 1931. Pp. x + 179.

[65] Chicago, The University of Chicago Press, 1936. Pp. xii + 404.

special investigation of this point.[66] He pointed out that teachers have standards in spelling but not in morals. And in his study he found that American teachers did not always agree among themselves as to the solution for various moral problems, nor did the pupils agree with the teachers. Evidently progress in the problem of character training demands guidance and assistance from religion or at least a sound philosophy of morals.

Jones acknowledges theoretically and practically the importance of religious influence in character education but recognizes the difficulty of attaining it in the school system of the United States.[67] As a matter of fact there can be no satisfactory character training without religion and there can be no fully satisfactory religious training merely by didactic teaching. For religion to be imparted in the school it must be lived within the school itself and not merely imparted by verbal teaching either in or outside the school.

What a difference between Jones and Boring! Each represents a considerable group of American psychologists. Boring and the sensationalists insist on psychology being *scientific*. It must be assimilated to the natural sciences by experimental laboratory technique. The data investigated must be expressed in terms of the attributes of sensation to gain admission to the field of discussion. Problems that cannot be so expressed are not amenable to psychological investigation. The result is a sterile psychology of no value to anybody and looked on with suspicion by the trained physiologist.

Jones and the educationalists feel the crying need of the school for some kind of help from psychology and they set about giving that help by empirical investigations.

Both schools need, more than they recognize, the formal organizing power of a sound philosophy, for empiricism without the guidance of the goals and principles of philosophy ultimately ends in chaos.

### 4. Titchener and Experimental Psychology in America

Whereas chronologically, James, Ladd, and Hall were the original foci from which American psychology developed, there is another man whose actual influence on experimental psychology would be rated as deeper and wider than any of the three patriarchs of psychological thought in America. That man was Edward Bradford Titchener.

Titchener was born on January 11, 1867, at Chichester, England, "an old

[66] "Ideas on Right and Wrong Among Teachers and Children." *Teachers' College Record*, **30**: 529–541, 1929.

[67] "Character Education in Childhood and Youth." *Bol. Inst. Internac. Am. de protec. a la infancia* (Montevideo), **16**: 556–475, 1943.

Roman town with walls still standing, about seventy miles south of London and not far from the coast."[68] When about fourteen he won a scholarship to Malvern College, where he studied for four years. He went to Oxford in 1885 and became a member of Brasenose College. He was a student of classics and philosophy for four years and spent a fifth year in physiology under Burdon Sanderson, receiving his A.B. from Oxford in 1890.

He then went to Leipzig to study under Wundt for two years, receiving his Ph.D. in 1892. Then he returned to England. Frank Angell, whom he met at Leipzig, had gone to Cornell to open a psychological laboratory, but shortly afterwards left Cornell to go to the new Leland Stanford University in California. He recommended Titchener as his successor and Titchener accepted and went to Cornell, where he remained till his death, which occurred unexpectedly on August 3, 1927 at the age of sixty.

When we look at Titchener's educational preparation for his future career, the feeling comes to us that it was somewhat narrow. It was founded on English philosophy, upon which was built a slight superstructure of physiology and a few turrets of Wundtian experimental psychology. Only a native brilliancy of mind could remedy the weakness of the resulting structure.

Titchener's psychology was presaged if not determined by his educational preparation, for it is little more in essence than English sensationalistic philosophy applied to the physiology rather than the philosophy of mind.

I had the pleasure once of spending a day with Titchener at Cornell. He was such a genial host and we discussed our differences in psychology so peacefully and my memory of his kindly friendliness in the presence of diametrical opposition of fundamental principles has been so pleasant that it is with a certain regret that I express my criticism of his philosophy and psychology.

I say philosophy, for in spite of his major interest in establishing psychology as an experimental laboratory science, Titchener's thought remained to the last dominated by the English philosophy he had learned in his youth. It was English philosophy and not the limitation of experimental technique which narrowed his psychological horizon to such an extent that he could see in the mind of man nothing more than sensations, images, and affections.[69]

Titchener has been characterized by Boring as making psychology a pure scientific discipline that deals with the "generalized, normal, adult human

[68] Edwin G. Boring, "Edward Bradford Titchener, 1867-1927." *Am. J. Psychol.*, **38:** 489, 1927. The data of Titchener's life are taken from this excellent article.

[69] Cf. Edward Bradford Titchener, *A Text-Book of Psychology.* New York, Macmillan Co., 1909, p. 48.

mind" rather than the functions of mind, "the psychology of individual differences, mental tests, applied psychology, and lastly behaviorism."[70]

In the late nineties he used a term coined by James, "structural psychology," to designate his own point of view and termed the psychology, developed at Chicago by men like John Dewey and James R. Angell, "functional psychology"

Conceiving of all mental activity as brain activity and seeing no possible way of expressing mental functions in terms of purely neural activity, he gave up the attempt to study the functions of the mind instead of re-examining the postulates of his philosophy.

In his article on the "Postulates of a Structural Psychology"[71] Titchener distinguished very clearly between *structural* and *functional* psychology in the following sentence: "The phrase 'association of ideas,' e.g., may denote either the structural complex, the associated sensation group, or the functional process of recognition and recall, the associating of formation to formation." Structural psychology deals with the phenomena of mind, functional with the way in which mental phenomena are brought into being. Titchener did not deny the value of functional psychology. He merely thought that the present was no time to attempt it, and that psychology for many years would deal with mental structures, that is to say, with the phenomena of mind. According to Titchener, all mental phenomena in the last analysis must be essentially functions of the nervous system; and there seems to be no hope of ever showing just how nerve cells work in the production of mental processes. To talk about mental functions without going back to the ultimate concept of physiological psychology would entail the danger of relapsing into the pre-experimental stage in which psychologists thought they were making a contribution to psychology when they took various nouns such as "memory, recognition, imagination, conception, judgment, attention, apperception, and volition," analysed their meaning, and expressed their personal ideas on these functions of the mind. Furthermore, any such attempt would be likely to revive the concept of faculties which, in the ideas of American psychologists at the close of the nineteenth century, would be a manifest *reductio ad absurdum*.

Titchener never published the final expression of his psychological concepts in a systematic treatise; instead of devoting himself to a work more or less comparable to Wundt's *Grundzüge*, he branched off into a strange interest in numismatics, even studying Arabic to read the inscriptions on Mohammedan coins.

Boring leaves unexplained the fact that his psychological productivity

[70] Cf. Boring, *Am. J. Psychol.*, **38**: 496, 1927.

[71] *Psychol. Rev.* VII: 449–465, 1898.

faded out after 1910. He died in 1927 without having published his promised systematic treatise on psychology.

Was it, perhaps, because as he studied and read more and more, he found the assumptions of English philosophy inadequate for the superstructures of a systematic psychology and he was unable to dig down to the bottom and start anew?

### 5. The University of Chicago and Functional Psychology

Psychology at the University of Chicago was intimately associated in its beginnings with philosophy, although at the same time it was early interested in the anatomy of the nervous system and experimental research. James Rowland Angell[72] was the first director of its laboratory, which was opened in 1894.[73] But the Department of Philosophy was called upon from the beginning to teach courses in psychology.

Angell had studied under Dewey at Michigan and James at Harvard and in this way psychology at the University of Chicago commenced under the guidance and direction of philosophy. And so, within due limits, it should be.

Perhaps the best exposition of Angell's fundamental psychological principles was given in his essay: "The Relations of Structural and Functional Psychology to Philosophy."[74] To Angell the structure of consciousness is "a certain complexity of content revealed in the form of distinguishable conscious qualities." Sensation is thus a structural element in the edifice of the mind. But how different it is from the stable, persistent constituents of anatomy! Sensations last a few seconds and then simply cease to be. They are not abiding permanent qualities. Angell does not enumerate the unhomogeneous data of consciousness that cannot be reduced to simpler elements by psychological analysis. But structure in psychology, he rightly points out, does not mean the same thing as in biology.[75]

Even sensations are produced and therefore something must function

[72] James Rowland Angell was born in Burlington, Vermont, May 8, 1869. He took his A.B. at the University of Michigan in 1890 and an A.M. at Harvard in 1892. He studied also at Berlin, Halle, Vienna, Paris, and Leipzig. After teaching philosophy at the University of Minnesota in 1893, he was called to Chicago in 1894 to open the department of psychology and remained there till 1920, when he became President of the Carnegie Corporation. He was President of Yale from 1921 to 1937.

[73] For data on the origins of psychological teaching and research at the University of Chicago, see Forrest A. Kingsbury, "A History of the Department of Psychology at the University of Chicago." *Psychol. Bull.*, **43**: 259–271, 1946.

[74] The Decennial Publications of the University of Chicago, 1903. First Series, vol. 3, part ii, pp. 55–73.

[75] *Loc. cit.*, p. 57.

in their production. Psychology must study its functions of production and therefore be functional as well as structural.

"When psychology becomes functional," said Angell, "it enters of necessity into connection with philosophy. Logic is merely the applied

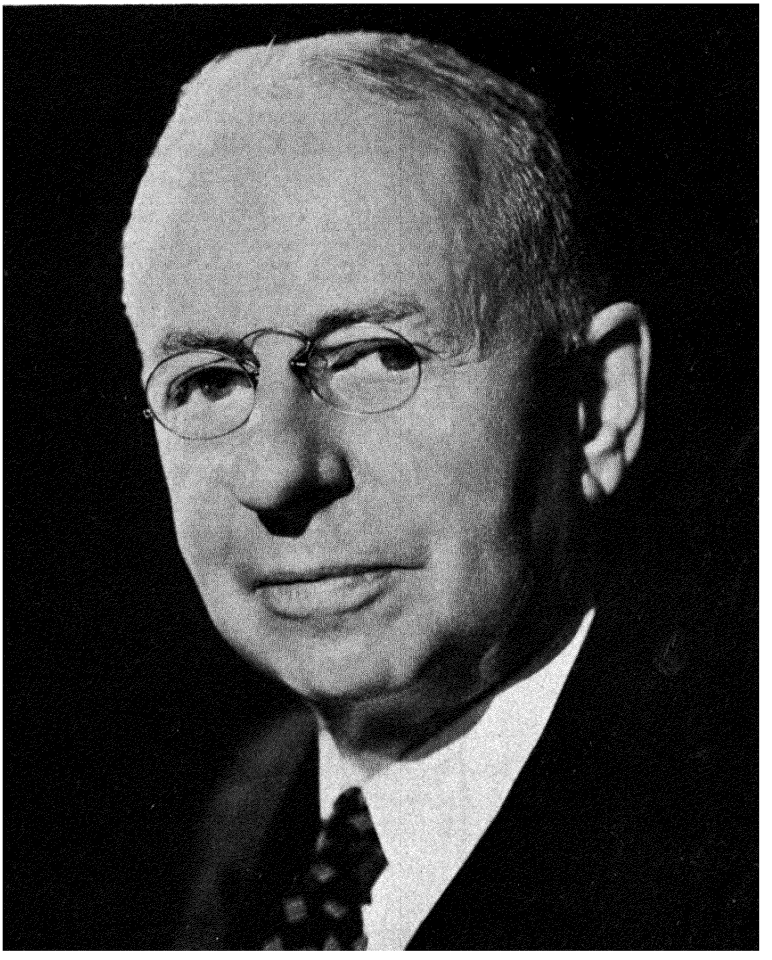


FIG. 3. JAMES ROWLAND ANGELL

psychology of reasoning." And here Angell manifests the pragmatic influence of James. Truth is that which works. What is the psychology of the working?

In answering this question, Angell first touched upon the theory of pleasure and pain that looks upon pleasantness as involving biological

functions that increase the vitality of the organism and pain those that decrease its vitality.[76] If this theory is really true, then an adequate knowledge of psychology would give us an understanding of aesthetics.

He then transfers that concept to logic and ethics: "If one follows with sufficient persistency and thoroughness the question (which comes to light in a functional psychology) of the validity of thought-processes and the mechanism by which they arrive at that which we call truth, one must come upon whatever reply is attainable to the problem of the ultimate nature, warrant, and significance of knowledge."[77]

The great pity is that Angell did not do precisely this. For experimental psychology can make an important contribution to epistemology. We have attempted to make this contribution in our *Cognitive Psychology*.[78]

Psychology has much more to contribute to the theory of knowledge and epistemology than it has to ethics. No study of physiological aesthetics or the psychology of desire could ever by itself establish the groundwork of ethics The nature of true good demands that we know the Eternal Good, the one standard of right and wrong. To know the true nature of the perfect man would indeed help towards the formation of ethical principles. But the ultimate source of morality must be sought in God.

In his presidential address[79] in 1906, Angell extended the concept of functional psychology from that of a type of psychology interested in the nature and classifications of the functions of mind to psychology with all its practical applications. This extension of the term tended to confuse the concept. Furthermore, functional psychology existed as a program that was never fulfilled. There was no real attempt to study the functions of mind in a scientific manner until factor analysis developed out of Spearman's study of the general factor in intelligence. So, properly speaking, there never was a school of empirical functional psychologists in the early history of American psychology.

Functional psychology awaited a new line of development which transformed scientific investigation of the human mind to such an extent that the best psychologists at the close of the nineteenth century would be unable to understand the great body of research being published at the present day and which has been in a process of development since 1904.

Angell's essay, "The Relations of Structural and Functional Psychology to Philosophy," was a study of far greater importance than was generally

[76] *Loc. cit.*, p. 69. Grant Allen, whom Angell cites, attributes this concept to Bain. See Grant Allen, *Physiological Aesthetics*. London, Henry S. King, 1877, p. 20.

[77] *Loc. cit.*, p. 71.

[78] Philadelphia, J. B. Lippincott Co., 1939. Pp. viii + 636.

[79] Published in *Psychol. Rev.*, **14**: 61–91, 1907.

recognized, but it had for some reason little influence on the development of psychology in the United States. Angell himself did not develop his concept of functional psychology[80] and, perhaps because of his pragmatism, pointed the way but did not follow it to the practical application of psychology.

Titchener discouraged any attempt to study the functions of the mind on the ground that we must leave to an indefinite future the essentially impossible task of explaining mental functions in terms of neuro-anatomy and neurophysiology.

And then in some way, even before the days of the first edition of Ladd's *Elements of Physiological Psychology*, there was created a travesty of the concept of mental functions that represented the faculties as little independent entities that in some way existed within the ego and produced their specific products in some mysterious way not open to scientific investigation.

About the year 1900, Thorndike was defending what Spearman later termed the anarchical theory of mental life, that is to say, he held that there was no such thing as mental faculties or general abilities, each taking care of a genus of performances. According to Thorndike, the number of mental abilities was equivalent to that of the individual performances themselves. Thus he wrote in 1903:

> The science of education should at once rid itself of its conception of the mind as a sort of machine, different parts of which sense, perceive, discriminate, imagine, remember, conceive, associate reason about, desire, choose, form habits, attend to. Such a conception was adapted to the uses of writers of books on general method and arguments for formal discipline and barren descriptive psychologies, but such a mind nowhere exists. There is no power of sense discrimination to be delicate or coarse, no capacity for uniformly feeling accurately the physical stimuli of the outside world. There are only the connections between separate sense stimuli and our separate sensations and judgments thereof, some resulting in delicate judgments of difference, some resulting in coarse. There is no memory to hold in a uniformly tight or loose grip the experiences of the past. There are only the particular connections between particular mental events and others, sometimes resulting in great surety of revival, sometimes in little. And so on through the list.[81]

We must leave the vast work of Columbia University with this passing reference to Thorndike and an apology to the more serious systematic labor of Robert Sessions Woodworth. A little sound philosophy would

[80] His *Psychology. An Introductory Study of the Structure and Function of Human Consciousness*. New York, Henry Holt, 1904. Pp. vii + 402. This is an elementary general treatise written from the point of view of functional psychology, and is not a scientific contribution to its development.

[81] Edward L. Thorndike, *Educational Psychology*. New York, Lemcke and Buechner, 1903, pp. 29–30.

have eliminated many of the fallacies in the publications of Teachers' College and there might have been produced a psychology more true to the nature of man and more helpful to the philosophy of education.

In 1904, Charles Spearman, of the University of London, published two epoch-making articles in the *American Journal of Psychology:* "The Proof and Measurement of Association Between Two Things"[82] and "General Intelligence, Objectively Determined and Measured."[83]

In the first he explained the use of the coefficient of correlation, already much used in this country by Thorndike; and the correction of the raw coefficients for errors of observation and for irrelevant factors by the technique now known as partial correlation.

In the second study he obtained a correlation that approximated unity between what was common in various measures of intelligence and what was common in sensory discrimination and argued that the common factor was general intelligence.

In a series of subsequent studies by various techniques, he always found in cognitive measures an ever present general factor. He conceived of this general factor as underlying all cognitive measures and put forward in place of a faculty theory his concept of two factors which regarded all cognitive performances as carried out by two factors, one general—Spearman's *g* factor—and one specific arising from the special performance measured.

We are mentioning this merely by way of introduction to the later work of the Chicago school, having criticized the concept elsewhere.[84]

We might say that the net result of the work of the Chicago school is a rejection of the anarchical concept of Thorndike as well as the two factor theory of Spearman and the establishment of the faculty concept.

The man at the University of Chicago who is responsible for this development is Louis Leon Thurstone.[85]

In his first teaching position at the Carnegie Institute of Technology, Thurstone published an interesting work, *The Nature of Intelligence.*[86] He parted company in this work with the prevailing behaviorism of the day. The first chapter called attention to the stimulus-response fallacy in

[82] *Am. J. Psychol.*, pp. 72–104, 1904.

[83] *Ibid.*, pp. 201–293.

[84] Cf. *Cognitive Psychology.* Philadelphia, J. B. Lippincott Co., 1939, pp. 592 ff.

[85] Louis Leon Thurstone was born in Chicago, May 29, 1887. He took his M.E. at Cornell in 1912; his Ph.D. at Chicago in 1917. He was professor of psychology at Carnegie Institute of Technology from 1915 to 1923 and has been at the University of Chicago since 1924.

[86] London and New York, Kegan Paul and Trench Trubner & Co., 1924. Pp. xvi + 167.

psychology.[87] "I suggest," he writes, "that we dethrone the stimulus. He is only nominally the ruler of psychology. The real ruler of the domain which psychology studies is the individual and his motives, desires, wants,



FIG. 4. L. L. THURSTONE

ambitions, cravings, aspirations."[88] In this work Thurstone recognizes the existence of consciousness in opposition to the behaviorists, but does not rise to an insight into its true nature.

[87] Published previously in the *Psychol. Rev.*, September 1923, vol. XXX

[88] *The Nature of Intelligence*, p. 18.

"We postulate," he writes, "a functional identity of the three phases of the psychological act, in that consciousness is assumed to be made of the stuff that behavior is made of."[89]

Thurstone's contributions to factorial analysis started in 1931 with a study entitled "Multiple Factor Analysis."[90] He has been continually working on the improvement of his technique, the best summary being in his work *The Vectors of Mind*,[91] though he has since vastly improved the technique there given for the "rotation of the axes."

The beginnings of factorial analysis may be said to have originated in Spearman's demonstration that certain tetrad differences were equal to zero within the limits of probable error whenever one cause or group of causes was responsible for all the intercorrelations in a table. Spearman at first pointed out a number of tables of correlation in which this condition held. He maintained that this fundamental cause was what he termed general intelligence.

It was not long, however, before Spearman commenced to find "broad" factors which interfered with the formation of zero tetrads, and the problem of factorial analysis was seen to be more complicated than it had seemed at first sight.

It was here that Thurstone stepped into the field with his "vectors of mind" which, however, turn out to be faculties of the mind or mechanisms involved in the operation of a faculty. Thurstone himself recognized this when he wrote, "Factor analysis is reminiscent of faculty psychology. It is true that the object of factor analysis is to discover the mental faculties."[92]

In a number of tables of intercorrelations Thurstone demonstrated that the intercorrelation of the variables could be accounted for by fewer factors (or faculties) than the number of variables

Had Thorndike's postulate of no faculties but as many abilities as performances been true, every table of intercorrelations would require as many factors as variables. But some require only one factor, as when Spearman's tetrad function holds. Others require two or more factors, but definitely fewer than the number of variables.

Thus functional psychology has become a field of research subject to mathematical investigation and were Titchener alive today he could no longer say of "functional psychology" that the scientific study of the functions of the mind must be laid aside as impossible.

Though mathematics enables us to demonstrate the existence of mental

[89] *Loc. cit.*, p. 157.

[90] *Psychol. Rev.*, **38**: 406–427, 1931.

[91] Chicago, University of Chicago Press, 1935. Pp. xv + 266.

[92] *The Vectors of Mind.* Chicago, University of Chicago Press, 1935, p. 53.

faculties and to give a descriptive definition of them, philosophy is necessary for a satisfactory study of their essential nature.

Besides his study of the vectors of the mind, Thurstone has made a number of investigations[93] of general value to psychologists in the present-day problems with which they are confronted. In general his work has been a contribution to technique, but the results he has obtained suggest theoretical implications that transcend any philosophy to which he has as yet given expression.

### 6. Psychology at the Catholic University of America

#### A. History of the Department

The Department of Psychology at the Catholic University of America, with its laboratory, dates back to 1891 when Edward Aloysius Pace returned from his studies in Europe to teach psychology at the then recently opened Catholic University of America. It was, therefore, among the earliest laboratories of experimental psychology in the United States.

Dr. Pace was born at Starke, Florida, July 3, 1861.[94] He attended the common school in that city, going later to Duval High School in Jacksonville and in 1876 to St. Charles College, Catonsville, Md., to commence his studies for the priesthood. He was later sent to the American College in Rome and was ordained priest May 30, 1885.

He returned to this country and was appointed Rector of the Cathedral of St. Augustine, Florida, which post he still held[95] when Archbishop John J. Keane, the first Rector of the Catholic University of America, asked that he be sent to Europe to prepare himself to teach philosophy at the Catholic University of America. I was told that Satolli, who was to become later the first Apostolic Delegate to the United States and then Cardinal, had heard Pace in the scholastic disputations at Rome and that he told Archbishop Keane that no keener mind could be found for training than that of Dr. Pace. Archbishop Keane was an ideal university rector.

[93] One might mention here "The Unit of Measurement in Educational Scales," *J. Educ. Psychol.*, 1927, 505–527; "The Measurement of Opinion," *J. Abnorm. Social & Psychol.*, **22**: 415–430, 1928; "The Absolute Zero in Intelligence Measurement," *Psychol. Rev.*, **35**: 175–197, 1928.

[94] See the biographical account by James H. Ryan in *Aspects of the New Scholastic Philosophy*. Edited by Charles A. Hart. New York, Benziger Bros., 1932, pp. 1–9. Most of the data in this account of the life and work of Pace is taken from an unpublished and unfinished manuscript by the late Dr. J. Edward Rauth. Rauth obtained his data by personal conversations with Pace.

[95] "Tribute to the Memory of Monsignor Pace." (Unsigned) *Cath. Ed. Rev.*, **39**: 563, 1941.

He did all he could to obtain an outstanding man for the head of a department and when none such was available he tried to make a careful selection and send a young man to be trained where he would have the best possible opportunities.

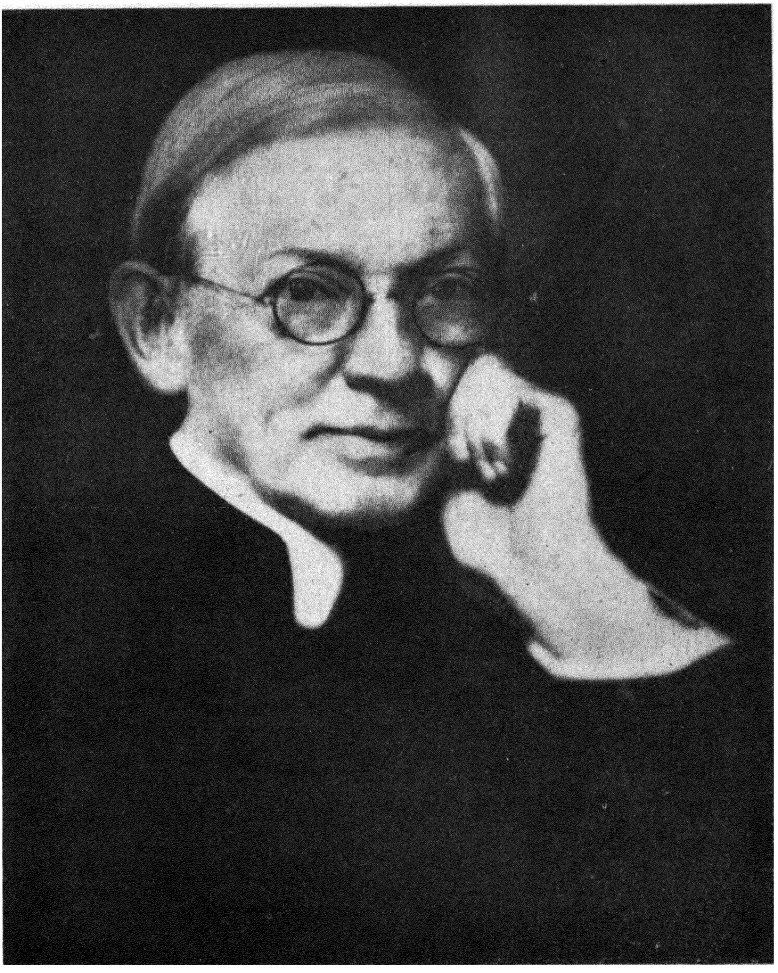


FIG. 5. MONSIGNOR EDWARD A. PACE

It is interesting to note that Dr. Pace was sent to Europe to prepare himself to teach philosophy, not psychology.

On May 24, 1888, at a meeting of the Board of Trustees, "it was decided to empower the treasurer to meet the expenses of Edward A. Pace, a priest

of the Diocese of St. Augustine, who was then studying in Europe in preparation for the chair of philosophy."[96]

It is important to remark, too, *that in preparing to teach philosophy he studied science.* He seems to have gone first to Paris to study principally physiology, judging by anecdotes he used to tell of those days. His first decision to study psychology under Wundt came about by pure accident. He told me that while looking through the volumes in a secondhand bookstore in Paris he ran across Wilhelm Wundt's *Grundzüge der physiologischen Psychologie.* He bought the book and said to himself, "I will go to Leipzig and study Physiological Psychology." In Paris he had already been studying chemistry and physiology at the Sorbonne. It would then seem that Pace at first did not know about Wundt. But in preparing himself for his future work he studied science for the light it might throw on the problems of philosophy. This same concept of the importance of a knowledge of the sciences of the day for a serious study of philosophy was apparent in his direction of my studies when I came to him in 1897. So, in the following September (1889), he matriculated at the University of Leipzig, studying psychology under Wundt and physiology under Carl Ludwig. He obtained his doctorate in July 1891, presenting a dissertation on *Das Relativitätsprincip in Herbert Spencer's psychologischer Entwicklungslehre.*[97]

Pace returned to this country bringing with him a number of pieces of apparatus for the new psychological laboratory in Washington. He commenced his work at the University in the autumn of 1891, giving shortly after his return a public lecture, the subject being: "Reaction Time and Demonstration Using the Hipp Chronoscope."

Among the early pieces of apparatus which Pace brought back with him from Europe was a set of Koenig paired tuning forks and resonators. The laboratory was well equipped for experiments on sound and reaction time.

Pace was a charter member of the American Psychological Association. At the first annual meeting of the Association, held in Philadelphia December 27, 1892, he presented a paper on "Tactile Estimates of Thickness."[98] At the second annual meeting, held in New York December 27-28, 1893, he presented a paper on "Pain Contrasts."[99] The same year we find a short article in the *American Journal of Psychology* entitled, "A Note on

[96] John Tracy Ellis, "The Formative Years of the Catholic University of America." Washington American Catholic Historical Association, 1946, pp. 292-3.

[97] Besides being printed as a dissertation, this appeared in *Philosophische Studien,* 7: 487-557, 1892.

[98] *Proc. Am. Psychol. A.*, First Annual Meeting, University of Pennsylvania, Philadelphia, Pa., 1892, p. 5.

[99] *Proc. Am. Psychol. A.*, Second Annual Meeting, Columbia College, New York, 1893, p. 25.

Improvements at Leipzig."[100] Articles by him on psychology appeared in the *Catholic University Bulletin* and the *American Catholic Quarterly Review*.[101]

In 1893 he published his study testing the theory that the so-called fluctuations of attention to visual stimuli of threshold intensity are due to fluctuations of tension in the muscles of accommodation. He found, after paralyzing the muscles of accommodation with atropine, that the rings of the Masson disk continued to fluctuate, and so he was led to attribute the phenomenon to central rather than peripheral factors.[102]

And a little later he published a study on "Visceral Disease and Pain" in the *Psychological Review*.[103] In 1902 he published an article "Fluctuatons of Attention and After Images," in the *Philosophische Studien*.[104] But by this time Pace had allowed his time and energy to be taken up to a very large extent by extralaboratory activities. These were matters of great importance. He was the guiding spirit in the production of the *Catholic Encyclopedia*. With Bishop Shahan he had organized the Institute of Pedagogy in New York; he lectured all over the country on the philosophy of education; and at the Catholic University in Washington he was soon teaching philosophy rather than psychology and he was Vice-Rector of the University.

It is a matter of great regret that with his clearness of thought and lucidity of style Pace never made a synthesis of the experimental data of psychology. He died on April 26, 1938.

My own first interest in psychology was awakened in the summer of 1896, when on the porch of the Paulist Fathers' summer house at Lake George, New York, I listened to the young Dr. Pace talk about the new psychology that was being developed in Germany and of the laboratory he had established at the Catholic University of America in Washington. In some way the idea of designing experiments to study mental life was

[100] *Am. J. Psychol.*, vol. VI, **2**: 310, 1894.

[101] "The Growth and Spirit of Modern Psychology." Am. Cath. Quart. Rev., XIX, **75**: 522-544, 1894.

"The Relations of Experimental Psychology." Am. Cath. Quart. Rev., XX, **77**: 131-162, 1895.

"The Concept of Immortality in the Philosophy of St. Thomas," C. U. Bull., VI, **1**: 3-17, 1900.

"Locke's Influence On Modern Thought." C. U. Bulletin, XI, **1**: 3-18, 1905.

"Introspection and Experiment." C. U. Bulletin, XIII, **1**: 61-70, 1907.

"The University of Louvain (1834-1909)," C. U. Bull., XV, **6**: 551-555, 1909.

[102] Edward Pace, "Zur Frage der Schwankungen der Aufmerksamkeit nach Versuchen mit der Masson'schen Scheibe." *Philosophische Studien*, **8**: 388-402, 1893.

[103] *Psychol. Rev.*, IV, **4**: 405-409, 1897.

[104] *Philosophische Studien.*, **20**: 232-245, 1902.

very attractive, little as I knew then of experimental science or of philosophical principles.

Later in the same year I went as a student to the Catholic University, and early in 1897 I visited Pace and asked him to accept me as a student of psychology. After a short discussion in which he inquired into my knowledge of science and mathematics he told me to go away and come back after I had studied physics, chemistry, biology, and mathematics for some years. I did so, and, returning several years later I was given a "dissertation" to work out on the temporal relation between reaction time and the speed of the movement by which the reaction was made[105]; in June 1903 I received my Ph.D. In the autumn of the same year I commenced to lecture on psychology at the Catholic University of America's Institute of Pedagogy in New York. I improved the opportunity of being in New York by attending a course by Thorndike on educational psychology at Columbia University. Papers were assigned to the students to be written and read in class. The paper assigned to me, unlike those to other members, was on a subject that seemed a bit foreign to the general matter of the course—"The Evolution of Intelligence." When I read it, young Thorndike came out and sat just in front of the reader's desk, took out a notebook and a pencil, looked at me, as if to say, "Be careful young man of your statements," and then said, "Go ahead." I noticed that as I read Thorndike took no notes. My paper was an attempt to digest the available empirical data on animal intelligence, including, of course, Thorndike's two classics, *Animal Intelligence* and *The Mental Life of Monkeys*. The idea was put forward that human learning, where insight was possible, would give a curve with a sudden drop at the point of insight, unlike the trial and error curves of Thorndike's animals. In the discussion that followed, we agreed that there was a sad lack of experimental work on the intellectual processes of human mental life, and I at once commenced to think of how that lack might be remedied.

In some way Thorndike and myself have been on very friendly terms ever since the reading of what to me was a memorable paper. I arranged later in the spring of 1904 to go to Germany and study under Wundt. In saying good-bye to Thorndike he told me that I should look up in Leipzig a young Englishman by the name of Spearman with whom he had been corresponding. Of course I did so and I was a subject for Spearman in his experimental *Arbeit on Lageempfindungen*.

I carried with me to Leipzig the problem of how to open the field of the thought processes to experimentation. And, after being duly warned by

[105] "A Study in Reaction Time and Movement." C. U. Dissertation, April 1904, pp. 86. Published also in the Monograph Supplements to the *Psychol. Rev.*, 6, 1 (whole no. 24): 2 + 86, 1904.

Wundt not to extend theory beyond the solid basis of experimental fact, I commenced in his laboratory in the autumn of 1904 my experimental study, *The Process of Abstraction.*[106] The technique of the study allowed me to distinguish various stages in the process of perception and to arrive at an important generalization: Perception proceeds from that which is most general, that is to say, from a knowledge without reproducible imagery, to an adequate analysis of the object perceived and a final full sensory representation of the individual object. One does not first get shreds of imagery that are finally filled in and put together. Perception first develops a knowing rather than a sensing, even though it does so by means of sensation. Human knowledge, therefore, consists essentially in an intellectual abstraction obtained by means of a sensory presentation. This sensory presentation is a means *by which* one attains to an intellectual knowing without itself being specifically attended to in the process of perception. Perception is not merely the acquisition of a group of sensory qualities or of a configuration (or Gestalt) but an interpretation of an object. By this is meant a knowing of what an object is. Truth is the adequation of the *intellect* with the thing perceived, *not of the sense organ* with the object sensed. It is therefore a matter of indifference whether or not the sensory picture may be said to be a mirror copy of the real qualities of the object.

In a series of studies, culminating in our work *Cognitive Psychology,* our laboratory has attempted to throw light on the *intellectual* life of man, the very existence of which is commonly denied in modern experimental psychology.

The first of these studies was *The Process of Abstraction,* just mentioned.

A second contribution to the psychology of human intellectual life was a study of the temporal relations of meaning and imagery.[107]

In the process of perceiving printed words and pictures, what comes first, a knowledge of the meaning of the word or an image of some object represented by the word; a knowledge of the meaning of the picture or a word designating the picture? In both cases meaning takes temporal precedence. The meaning that appears in these experiments is often one of a truly universal character that comes into consciousness as a universal of which the subject is reflexly aware.

Thus Külpe, in describing his experience of the meaning of the word

[106] University of California Publications in Psychology, 1, 2: 73–197, 1910. Owing to illness diagnosed as tuberculosis, I spent the winter of 1905–06 at a sanatorium in the Schwarzwald and the study on abstraction was completed at the University of California but did not appear until 1910.

[107] *Image and Meaning in Memory and Perception. Psychol. Monographs,* **27** (whole no. 119): 67–296, 1919.

"candle," said: "There came to me at once the word 'light.' This was not a determination of the meaning, but only another word for it. The meaning was entirely general, as if I should say a candle, that is, any candle, every possible candle."[108]

Now it is easily seen that the data of these experiments are incompatible with an atomistic sensationalism, such as that of the English philosophers and the Cornell school of experimental psychology. The configurationalism of Wertheimer, Koffka, and Köhler, which denies a suprasensuous intellectual process in perception, cannot account for the empirical data in these experiments. It is rather strange that the Dominican Noël Mailloux can see in our work "an exaggerated intellectualism."[109] This concept seems to have arisen in his mind because Cajetan describes a *simplex cogitativa operatio* and Mailloux thinks that what Cajetan describes was all that took place in our experiments. But our experiments were designed not to present an illustration of Cajetan's *simplex cogitativa operatio* but to find out what takes place in the human mind in the process of perceiving words and pictures. Our work does not involve a denial of the Thomistic *vis cogitativa* nor is it an investigation of how the intellect perceives individual objects. But if anyone makes experiments of this nature and studies various pathological conditions, he will find that perception may involve or be associated with complex intellectual processes, even reasoning itself, as when a patient after an operation for congenital cataract, seeing something on the wall, argued successfully but illogically: pictures hang on walls, these things are hanging on walls, therefore, these things are pictures. Such an acquisition of knowledge, as pointed out in our *Cognitive Psychology*, "is not perception at all, but the acquisition of information by a process of deduction."[110] To one who is seeking an illustration of Cajetan's *simplex cogitativa operatio* it will be of little value, but to one who is attempting to find out whether or not there is in the human mind an intellectual power, transcending sense knowledge, it will be of great importance and will not involve what Mailloux terms an exaggerated intellectualism.

It is of importance in the study of the human mind to turn to the mind itself rather than to the commentaries on Aristotle and St. Thomas. The commentaries have their value, but if there is to be progress in psychology we must not only interpret the past but make investigations in the present and bring ancient truths into contact with the developments of the present. This task was the life work of St. Albert the Great, to whom St. Thomas

[108] T. V. Moore, "Image and Meaning in Memory and Perception." *Psychol. Monographs* **27**: 140, 1919.

[109] Noël Mailloux, "The Problem of Perception." *The Thomist*, **4**: 273, 1942.

[110] *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., 1939, p. 318.

owed so much. The study of empirical data is of even more importance in our day than in the time of St. Albert, because of the vast amount of material waiting to be synthesized. The data available at the present transcend in importance anything that St. Albert could even have dreamed about. Let us look up from the texts and the commentaries at least long enough to have a glance at what is available in the present.

St. Thomas was rightly interested in the analysis of the functions of mental life and it is quite possible to design experiments that will give empirical evidence of the existence of any specific function he mentions.[111] But in experiments on various functions of the mind, one will not ordinarily find only a single one of the Thomistic functions involved.[112] To call attention to the various processes involved in concrete situations is not to deny the importance of any mental function defined by St. Thomas.

While at Munich I commenced the above-mentioned study of "The Temporal Relation of Meaning and Imagery."[113] The result of this study showed that an unanalyzed consciousness of the meaning arises prior to any conscious image in the perception of printed words, and prior to the word in the perception of pictures. If A exists prior to B, then A cannot be identified with B, nor be caused by B. Meaning, therefore, can neither

[111] This was done in our laboratory for the Thomistic concept of sensory memory and imagination by Sister Mary Constance Barrett, R.S.M. "An Experimental Study of the Thomistic Concept of the Faculty of Imagination." *Studies in Psychol. & Psychiat.*, **5**: no. 3, 1941.

[112] It might be well to touch here on another criticism of our work: the use of a terminology which is not the same as that of the modern school of neoscholasticism. There is room for publications using a terminology that can be understood by the physicians and psychologists of the present day. Some neoscholastic writers make their works unintelligible to modern readers by the use of a highly specialized terminology. Sometimes the criticism of our terminology is based on lack of knowledge of movements in modern psychiatry, as when Brennan objected to our use of the term *psychobiological*. Modern psychiatrists are familiar with this term as referring to the movement initiated by Adolf Meyer. One might prefer a word with different roots, but the use of another word would make it impossible to know to what school or movement a reference was being made. One might not like, for instance, to use the word "enlightenment" to refer to the well known philosophical movement of the eighteenth century, but the use of a self-fashioned designation might cloud the passage or demand complicating explanations.

Most of Brennan's criticisms of *Cognitive Psychology* were objections to terms whose significance was quite clear in the context and whose true meaning would be grasped by the psychiatrists of our day much more easily than the Latin terminology of certain neoscholastics. (See the review of *Cognitive Psychology* by Robert Edward Brennan, O.P., *The Thomist*, **2**: 156–163, 1940.)

[113] A preliminary report of this work appeared in the *Psychol. Rev.*, **22**: 177–225, 1915. The full account was published as "Image and Meaning in Memory and Perception," *Psychol. Monographs*, **27** (no. 2): 69–206, 1919.

be nor be caused by the image in the perception of words nor by the word in the perception of pictures. This makes untenable the theory of Titchener that meaning is always context and when an image is the context or the fringe in any perception that meaning is the image.

In the winter of 1909–1910 I paid a visit to Witmer's psychological clinic at the University of Pennsylvania and conceived the idea of establishing a similar clinic at the Catholic University of America. I saw that this was practically impossible without my obtaining a doctorate in medicine. After securing the necessary permission, I commenced my medical studies at Georgetown Medical School in Washington, continued them in Munich in 1913 and was a semester short of my M.D. when World War I broke out in 1915. Returning to this country, I obtained my M.D. at Johns Hopkins in 1915 and opened my clinic at Providence Hospital in Washington, January 16, 1916. This was transferred to the grounds of the Catholic University in 1937 and the Department of Psychology became the Department of Psychology and Psychiatry when it was enlarged by a Rockefeller grant in 1939.

In teaching psychology to undergraduate students it seemed to me of primary importance to give them a psychological understanding of themselves rather than an accurate knowledge of the sense organs and the philosophy of perception; and so my first textbook became *Dynamic Psychology*,[114] in which little was said of the intellectual and the main stress was laid on emotional life, the driving forces of human nature and their adjustment and volitional control. It was commenced when I was in the Medical Corps in France in 1918–1919. The war neuroses offered a valuable opportunity for studying emotional conditions and enabled me to delineate a group of emotional disorders, the *parataxes* which lie between the normal emotional reactions or *psychotaxes* and the major psychoses.

The concept of what is the essence of a mental disorder commenced to loom large as an important problem of research. Are psychotic conditions an anarchy of symptoms or are there emotional factors, or faculties of affective experience, whose disturbance gives rise to the psychotic condition? The answer was obtained by intercorrelating some forty symptoms in over 300 mental patients and undertaking a factorial analysis of the table of intercorrelations. This factorial analysis demonstrated the existence of a group of empirical syndromes and these syndromes were in general easily identified with certain Kraepelinian diagnostic entities.

The conclusion is evident: The Kraepelinian diagnostic entities, that is to say, the psychotic conditions enumerated as schizophrenic and manic-

[114] Philadelphia, J. B. Lippincott Co., 1924. Pp. ix + 444. 2nd ed., 1926. A companion volume dealing with the other side of psychology was published as *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., 1939. Pp. viii + 636.

depressive mental disorders, are in their essential nature disorders of our human faculties of affective experience.[115]

A further study[116] confirmed this by the finding that the symptoms of a patient's mental disorder are correlated with his prepsychotic personality. Defects of temperament and character, therefore, predispose to psychotic conditions.

The attempt was made to embody these and other findings and give an account of psychotherapeutic procedures and guidance in the personal management of one's own life in two works, *The Nature and Treatment of Mental Disorders*[117] and *Personal Mental Hygiene*.[118]

The experimental work of the Department of Psychology at the Catholic University of America in Washington has had a distinctly functional trend. Much of it has been published in the *Studies in Psychology and Psychiatry from the Catholic University of America* which was opened with a monograph on the "Psychology of Reasoning" by Miriam Frances Dunn. A number of studies followed which analyzed cognitive mental life by a special technique of factorial analysis developed in the department. The studies of the factors of cognitive life were also extended to character and temperament in school children[119] and in mental patients.[120] Genetic psychology has not been neglected and our studies in this field have dealt with intelligence,[121] reasoning,[122], memory,[123] and moral and religious development.[124] There have been a number of empirical studies of the basic problems of psychiatry.[125]

[115] These results were published in "The Essential Psychoses and Their Fundamental Syndromes." *Studies in Psychol. & Psychiat.*, Vol. 3, no. 3, 1933.

[116] "The Prepsychotic Personality and the Concept of Mental Disorders." *Character & Personality*, **9**: 169–187, 1941.

[117] New York, Grune & Stratton, 1943. Pp. viii + 312.

[118] New York, Grune & Stratton, 1944. Pp. vii + 331.

[119] See the painstaking work of Sister M. Rosa McDonough, "The Empirical Study of Character." *Studies in Psychol. & Psychiat.*, Vol. 2, nos. 3 and 4, 1929.

[120] Cf. supra, notes 115–116, also En Hsi Hsü, "The Construction of a Test for Measuring Character Traits." *Studies in Psychol. & Psychiat.*, Vol. 6, no. 1.

[121] Sister Maurice McManama, "A Genetic Study of the Cognitive General Factor in Human Intelligence." *Studies in Psychol. & Psychiat.*, Vol. 4, no. 2.

[122] Cf. Thomas Verner Moore, "The Reasoning Ability of Children in the First Years of School Life." *Studies in Psychol. & Psychiat.*, Vol. 2, no. 2.

[123] Sister Regis Holland, "The Development of Logical and Rote Memory." *Studies in Psychol. & Psychiat.*, Vol. 4, no. 8.

[124] Sister Mary, I.H.M., and Margaret Mary Hughes, "The Moral and Religious Development of the Preschool Child." *Studies in Psychol. & Psychiat.*, Vol. 4, no. 1.

[125] John William Rauth, "Diastatic Activity of the Blood Serum in Mental Disorders." *Studies in Psychol. & Psychiat.*, Vol. 1, no. 2.

But one might say: In this account of the foci of development of American psychology, two of the most important trends of American psychology have so far been left unmentioned: behaviorism, except for the brief mention in Chapter I, and the testing of mental abilities and educational achievements.

One might be pardoned for not treating behaviorism in a brief historical introduction to American experimental psychology if one considers that it was really one of those evanescent foci of activity, like a new star that flares up in the heavens and then rapidly fades away. Such was the course of behaviorism.

Harrell and Harrison thus speak of what has happened to the movement:

> Behaviorism must be viewed now as essentially an historical development of the recent past. Watson has withdrawn from psychology, Lashley has become quiescent on controversial matters, and both Peterson and Weiss are dead. Tolman has been drawn under the mantle of *Gestalt* and purposive psychologies and the resulting eclecticism is behaviorism in name only. Hunter and Kuo have forsaken the Watsonian orthodoxy but their deviations have attracted few followers, while the younger converts to behaviorism have become strangely silent. Of recent years the volume of literature on behaviorism has dwindled into a barely perceptible stream, and psychologists have grown weary of the very words.[126]

Behaviorism after all was not an essentially new current of thought but merely materialism masquerading under a new name. And as such it has a long history in the past and is not likely to die out completely in the immediate future.

The history of the testing movement in the United States deserves more attention than we can give it here. It is a movement of great importance and its end is not yet in sight. It awaits however, a more complete analysis of the faculties of the human mind in order that it may rise to the

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Thomas Verner Moore, "The Essential Psychoses and Their Fundamental Syndromes." *Studies in Psychol. & Psychiat.*, Vol. 3, no. 3.

M. Gertrude Reiman, "The Prognostic Value of Mental Symptoms in the Psychoses." *Studies in Psychol. & Psychiat.*, Vol. 3, no. 6.

Thomas Verner Moore, "Consciousness and the Nervous System." *Studies in Psychol. & Psychiat.*, Vol. 4, no. 3.

C. J. Connolly, "Physique in Relation to Psychosis." *Studies in Psychol. & Psychiat.*, Vol. 4, no. 5.

L. J. Krause, "The Correlation of Adjustment and Achievement in Delinquent Boys." *Studies in Psychol. & Psychiat.*, Vol. 5, no. 2.

William J. Devlin, S. J., "The Effect of Certain Pharmacological Preparations on the Emotions of Normal and Psychotic Individuals." *Studies in Psychol. & Psychiat.*, Vol. 5, no. 6.

[126] Willard Harrell and Ross Harrison, "The Rise and Fall of Behaviorism." *J. General Psychol.*, XVIII: 401–402, 1938.

fullness of its maturity and make the contribution to human progress which in due season it is going to present.[127]

## B. CONTRIBUTIONS TO FUNCTIONAL PSYCHOLOGY

In the course of its development, the Department of Psychology at the Catholic University has made a number of contributions to functional psychology. These investigations have been so varied and numerous that they serve as a demonstration of how unnecessary was the pessimism of Titchener, who felt that a scientific investigation of the functions of the mind was impossible and, therefore, psychologists had better renounce any attempt to investigate the impossible and devote their energies to the study of the states of consciousness themselves or, as he termed them, the structures of the mind.

Let us consider briefly these contributions, commencing with the technique which in the history of psychology is the oldest of them all.

### *a*) FUNCTIONAL PSYCHOLOGY AND THE DATA OF ANIMAL INTELLIGENCE

The Greek philosopher Alcmaeon (*circa* 530 B.C.) was perhaps the first physiological psychologist and in him we have a primitive attempt at functional psychology. His argument was based on the principle that if two functions are found in one species of animal and one of these exists in another species without the second function, then these two functions must be conceived of as different from each other.

And in this way he arrived at an essential difference between sense perception and intellectual interpretation.

"Man differs," he said, "from other animals in that he alone can understand. Other things perceive with the senses, but do not understand, so that to think and to sense are different, whereas, Empedocles said they were the same."[128]

Aristotle follows this same technique in his work, *De Anima:* "Of the powers of soul above mentioned, namely, those of nutrition, appetency,

[127] On the history of mental testing see:

Joseph Peterson, *Early Conceptions and Tests of Intelligence.* Yonkers-on-Hudson, N. Y.; World Book Company, 1925. Pp. xiv + 320.

Rudolf Pintner, *Intelligence Testing.* New York, Henry Holt & Co., 1931. Pp. xii + 555 (1st ed., 1923).

Bunnie Othanel Smith, *Logical Aspects of Educational Measurement.* New York, Columbia University Press, 1938. Pp. x + 182.

Kimball Young, "The History of Mental Testing." *Ped. Sem.*, **31**: 1–48, 1923.

[128] Theophrastus, *De sensu*, 25 (506) Hermann Diels, Die Fragmente der Vorsokratiker. 5th ed. 1934. i, 211.

sensation, locomotion, and understanding, some living things, as we remarked, possess all, others some, others again only one."[129]

During the period in which Nazi philosophy flourished in Germany, it was maintained that the differences between the higher and lower races of man is similar to that between the higher and lower animals. The German race was supposed to be at the summit of human development and lower human races scarcely differed from animals.

Pius XI requested the Catholic University of American to put together the available scientific data on the differences between races. It was thought desirable to have a chapter on animal intelligence, so that one might see from the empirical evidence whether or not it was possible to consider the highest animals as approaching the level of the lowest existing human races, and so our department was asked to abstract and summarize the experimental and empirical evidence on this problem.

A digest of the available literature made it abundantly clear that monkeys and the higher anthropoids could attain the level of the high grade human idiot in performances which involve nothing more than the synthetic sense. But when a problem involves of necessity the formulation of a general principle in the logical order or of abstract concepts, their level of performance sinks to zero. For no animal below man is capable of intellectual operations involving the handling of even simple general principles. Intellectual functions, therefore, must be differentiated from those of the special senses and the synthetic sense.[130]

### b) ANALYSIS OF FUNCTIONS BY THE DATA OF PATHOLOGY AND THE MANIFESTATION OF INDEPENDENT VARIABILITY

This biological analysis of mental life has a logical resemblance to the analysis of functions by the data of pathology.

The underlying principle in this latter type of analysis was stated as follows:

"If one type of performance can be destroyed while another remains, these two activities must be conceived of as being carried on by different groups of causes."[131]

Starting out with this principle it has been shown that memory and perception are more or less independent variables and one function can be

[129] *De anima*, ii, Ch. 3, 414a, 29–35. Translated by Robert Drew Hicks. Cambridge University Press, 1907, p. 59.

[130] T. V. Moore, "Human and Animal Intelligence." In *Scientific Aspects of the Race Problem*, with a preface by Bishop Joseph W. Corrigan. New York, Longmans, Green & Co., 1941, pp. 93–158.

[131] T. V. Moore, *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., 1939, p. 426.

more or less completely destroyed while the other remains practically intact.[132]

Furthermore a study of the pathological defects of memory enables us to distinguish two mnemonic functions:

1. The storing of impressions, the thesauric function.
2. The recall of an impression already restored, the anamnestic function.

Either of these functions may be destroyed while the other remains practically intact. Thus a young man[133] who had been subjected to severe mental strain after he suffered poisoning from illuminating gas could no longer recall the names of familiar objects and did not recognize his relatives but was perfectly able to learn to talk again and did so, but with the German accent of his attendant. Here we have the loss of the *anamnestic* function but the *thesauric* function remains intact.

After a stroke of apoplexy a man with cerebral syphilis preserved intact the memory of the events of his life prior to the attack but was unable to store any new impressions. He could not learn to find his own place at table or his bed in the ward and he would greet patients, with whom he was long in contact after his stroke, just as if they were new arrivals. Here the *thesauric function* is destroyed but the *anamnestic* remains.[134]

One attempt at factorial analysis, deriving from independent variability, is deserving of mention here.

St. Thomas Aquinas had a concept of sensory memory which has not been given specific attention by modern experimental psychology.

According to St. Thomas, sensory memory involves not only the reappearance of a sensory item in consciousness but also the recognition of it as an item of past experience.

Imagination, according to St. Thomas, is the conservation of past sensory experience but without any accompanying label of its having been in consciousness in the past. To label it as past belongs to sensory memory.

Sister Mary Constance Barrett undertook, under the direction of Dr. J. Edward Rauth, to determine whether or not past sensory experience could reappear in consciousness without being labeled as past experience. In other words, Is the Thomistic distinction between the faculties of imagination and sensory experience a real element in our mental life?

Subjects were presented with words or pictures and asked to write all the words or pictures that they could remember as having been presented, and also any others that came to their mind, for a period of ten minutes. They

[132] Cf. *hereon* T. V. Moore, "The Correlation of Memory and Perception in the Presence of Diffuse Cortical Degeneration." Mon. Supp., *Psychol. Rev.*, **27**: 299–345, 1919; also *Cognitive Psychology*, pp. 412 ff.

[133] *Cognitive Psychology*, 413 ff.

[134] *Op. cit.*, p. 416.

were then asked to check on their list all the words or pictures that were presented in the original material. In this way one had a score for

1. Words or pictures recalled and recognized (Thomistic memory).
2. Words or pictures recalled but not recognized (Thomistic imagination).
3. Words or pictures completely forgotten.

From the intercorrelations it was found that Thomistic imagination for words correlated with that for pictures to the extent of 0.459 and had negative but low correlations with Thomistic memory. It was therefore concluded that the two functions were capable of independent variation and were therefore distinct.

### c) THE ANALYSIS OF FUNCTIONS BY EQUATIONAL CONSTANTS

A very valuable technique for the investigation of the functions of the mind is the study of the parameters in equations which can be devised or selected for expressing accomplishment in the performance of mental functions. This technique was made use of in 1932 in the memorial volume of essays written by the students of Monsignor Pace and presented to him on the occasion of his seventieth birthday.

The equation selected was

$$\text{Log } y = a - bc^x$$

This equation was made use of to analyze the functions in the process of memorizing. The constant $a$ designates the number of items to be memorized or associated. The variable $y$ gives the number actually remembered after the $x$th repetition. The main interest centers in the interpretation of the two parameters $b$ and $c$. Let

$$x = 0$$

Then

$$\text{Log } y_0 = a - b$$

The greater $b$, the greater the amount of work the subject will have to do by dint of repetition. The smaller $b$, the more the task will approach the subject's span, so that one repetition will suffice for the learning of the whole task.[135] Evidently then, $b$ can be understood as the toughness of the terrain or the resistance in the nervous system which must be overcome in order that faultless repetition may be secured.

[135] It was shown by Sister Regis Holland that $b$ gets rapidly smaller from about the eighth to the twelfth year: "The Development of Logical and Rote Memory." *Studies in Psychol. & Psychiat.*, **4**: no. 8, 1940.

Let us look now at $c$. Giving $b$ a fixed value, let us assume first that $c = 0.10$, then that $c = 0.90$. If $c = 0.10$, then on the second repetition

$$\text{Log } y_2 = a - bc^2$$

and only 1/100 of $b$ remains to be subtracted from $a$; and when $x = 3$, only a thousandth of $b$ is to be subtracted from $a$. It is seen that with low $c$ values learning takes place very rapidly. But with $c$ values that approach unity, learning progresses very slowly. If $c = 1$, no learning takes place at all.

Therefore, $c$ might be compared to the sharpness of a knife cutting an inscription in wood.

Memory, therefore, has a toughness factor and a sharpness factor, as is readily seen from the equation.[136]

### *d*) FACTORIAL DIFFERENTIATION BY MAXIMAL DIFFERENCES

Consider figure 6. It represents the relationship between scores in memory and scores in intellience in a group of 262 individuals. The individuals in the upper right-hand quadrant are good both in memory and intelligence. Those in the lower left-hand quadrant are poor in intelligence and poor in memory. Those in the upper left-hand quadrant are poor in intelligence but good in memory. Those in the lower right-hand quadrant are poor in memory but good in intelligence.

If we lay it down as a general principle that performances capable of independent variation involve at least two independent mental functions, we can see at once that intelligence and memory performances involve at least two different mental functions, for the figure shows that they are capable of wide independent variation.

Let us now take the same group of individuals and divide their composite intelligence score into two parts and then plot the sum of a "discrimination" and "completion" test against an "analogy" and "definition" test and we get figure 7, which shows that here there is little independent variation and so the condition for the involvement of two or more mental functions is not present.

Memory, therefore, from these results seems to be one mental function, and the type of intelligence involved in formulating definitions, seeing analogies, etc., is another mental function.

[136] Cf. Thomas Verner Moore, "The Analysis of Association by its Equational Constants." In *Aspects of the New Scholastic Philosophy*. Edited by Charles A. Hart. New York, Benziger Bros., 1932. Pp. 181–225.

It is possible to bring out this difference in a striking manner by a technique developed by R. A. Fisher.[137]

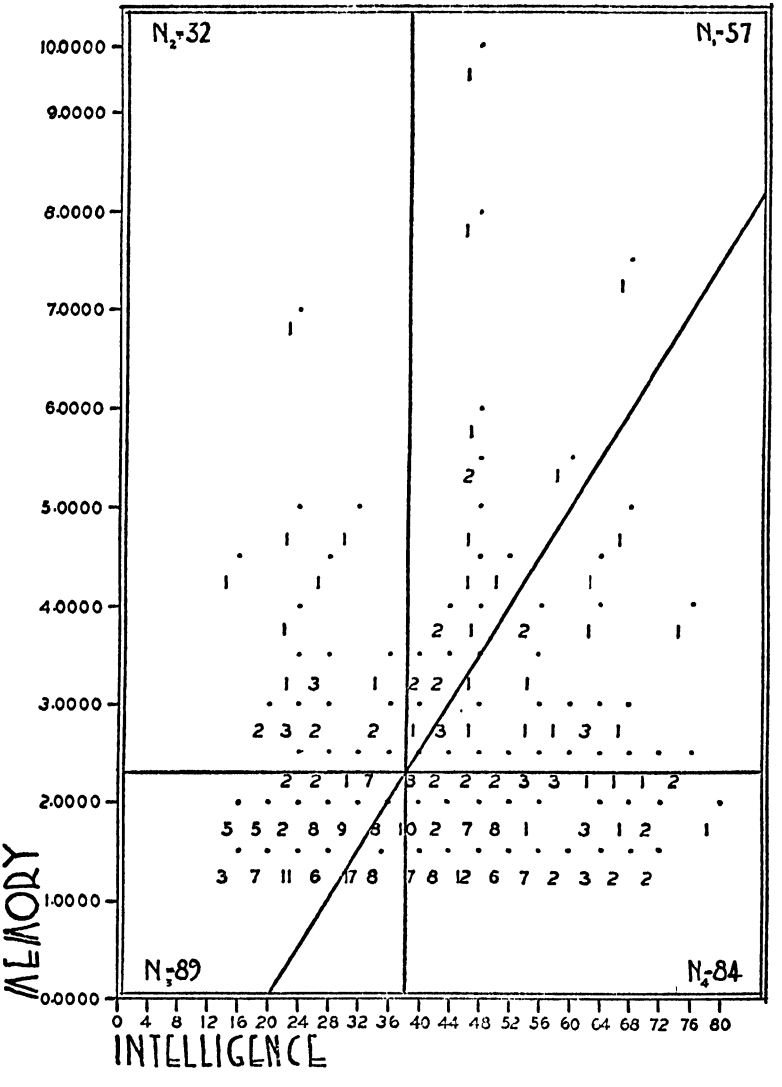



FIG. 6. SCATTER DIAGRAM OF INTELLIGENCE AND MEMORY SCORES

Fisher raised the problem, "When two or more populations have been measured in several characteristics, how may the measures be weighted

[137] "The Use of Multiple Measurements in Taxonomic Problems." *Am. Eugen.*, 7: 179–188, 1936.

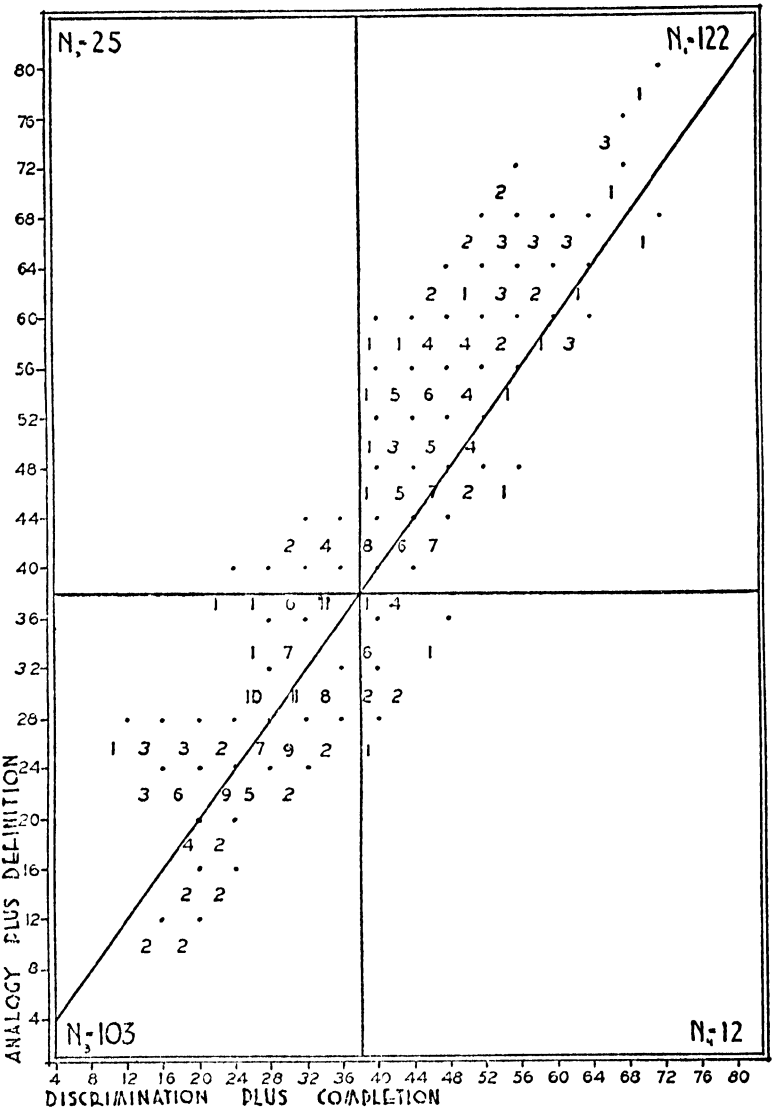



FIG. 7. SCATTER DIAGRAM OF INTELLIGENCE SCORES

so as to obtain a maximum difference between the ratio of the difference between the means divided by the standard deviation?"[138]

[138] Sister Mary Alfred Noble, "Factorial Differentiation by Maximal Differences." *Studies in Psychol. & Psychiat.*, Vol. 4, **6**: 6, 1940. It is from Sister Alfred's study that the data and curves here presented have been obtained.

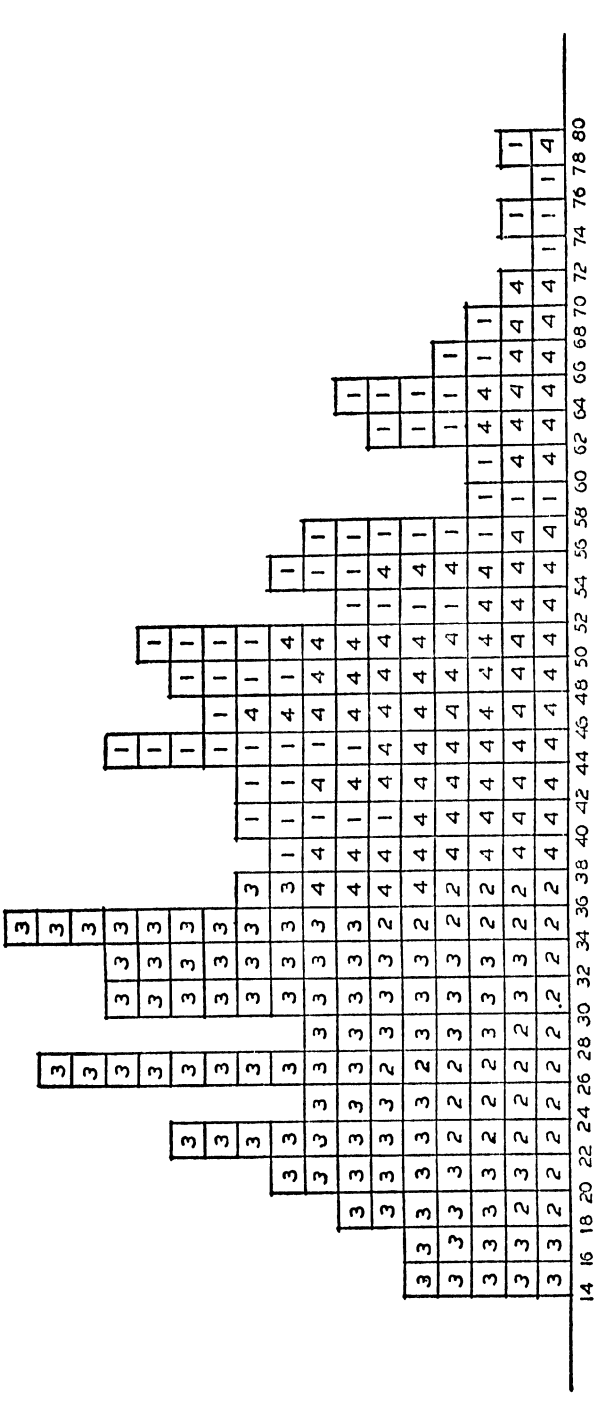



FIG. 8. DISTRIBUTION OF UNWEIGHTED COMPOSITE SCORES

Each square represents one composite score. The small numerals indicate the quadrants in which the scores occur.

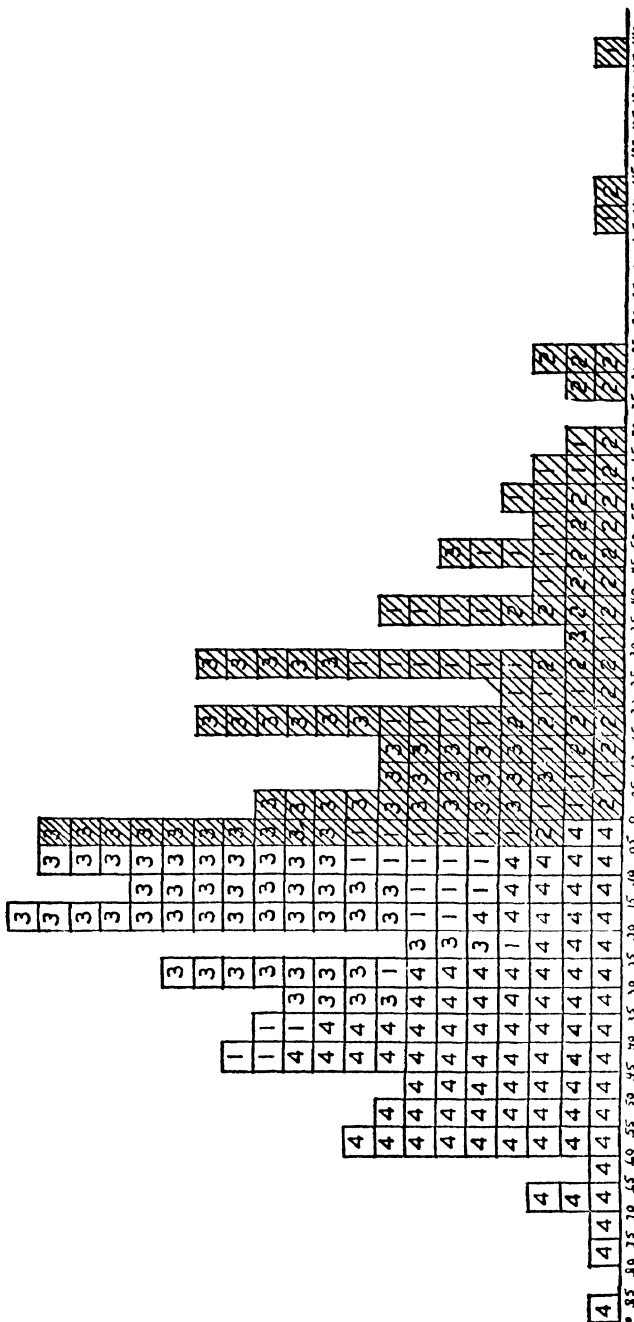


FIG. 9. DISTRIBUTION OF WEIGHTED COMPOSITE SCORES

Each square represents one composite score. The small numerals indicate the quadrants in which the scores occur. The shaded area includes the scores where memory outweighs intelligence; the unshaded area, the scores where intelligence outweighs memory.

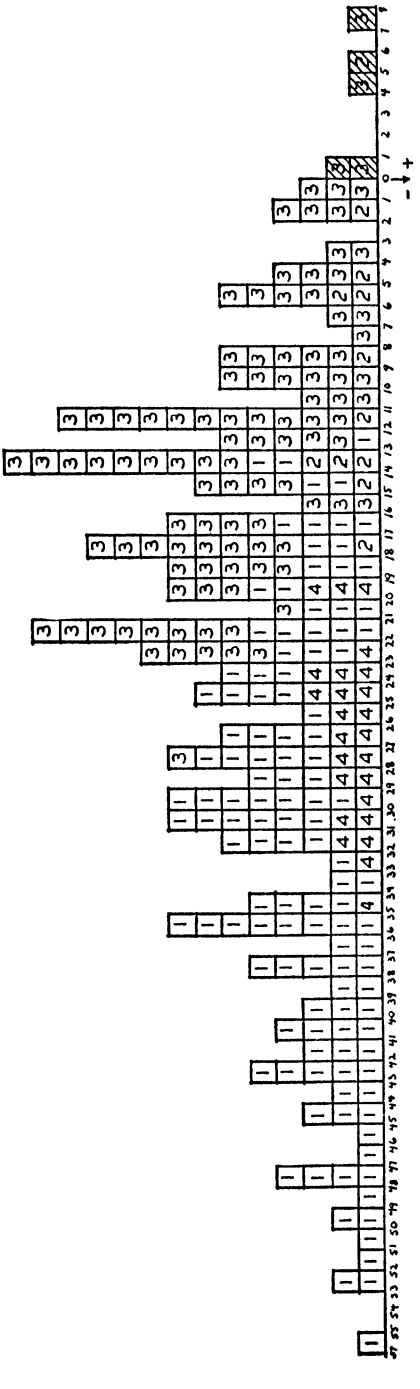


FIG. 10. DISTRIBUTION OF WEIGHTED COMPOSITE COGNITIVE SCORES

Each square represents one composite score. The small numerals indicate the quadrants in which the scores occur. The shaded area includes the scores where discrimination and completion outweigh definition and analogy; the unshaded area, the scores where definition and analogy outweigh discrimination and completion.

Let two composite scores by written:

$$X = \lambda_1 x_1 + \lambda_2 x_2 + \lambda_3 x_3 + \lambda_4 x_4$$
$$Y = \lambda_1 y_1 + \lambda_2 y_2 + \lambda_3 y_3 + \lambda_4 y_4$$
$$X - Y = \lambda_1(x_1 - y_1) + \lambda_2(x_2 - y_2) + \lambda_3(x_3 - y_3) + \lambda_4(x_4 - y_4).$$

or

$$\beta = \lambda_1 d_1 + \lambda_2 d_2 + \lambda_3 d_3 + \lambda_4 d_4 .$$

It is possible to determine $\lambda$, so that $\beta$ should be a maximum.

This was done by regarding those in the second quadrant as comparable to a species of individuals with good memory but poor intelligence, the $\bar{X}$ species.

Those in the fourth quadrant should be regarded as a species of individuals with good intelligence and poor memory, the $\bar{Y}$ species.

The $\lambda_1$ weights thus obtained were multiplied into each of the four scores (two memory scores and two intelligence scores) for the whole population of 262 individuals.

We thus plotted the accompanying two curves of distribution.

Figure 8 is the distribution of the unweighted scores.

Figure 9 is the distribution of the weighted scores. In this curve each block (which represents one individual) has been shaded when the ratio of the cognitive score to the memory score is greater than unity. It is evident that we have two groups of individuals differentiated by superiority or inferiority in two functions—memory and intelligence.

When, however, one takes a composite score of four cognitive tests, treating two of the four as if of one function and two as if of another, one gets no such differentiation as is shown in figure 10.

Fisher's technique has, as is here seen, its value for psychological theory, but it has also a great practical value in weighting a battery of tests to pick out, let us say, students who would do well in law as compared with those who might do well in medicine.

### *e*) FUNCTIONAL DIFFERENCE DEMONSTRATED BY POSITION IN A TEMPORAL SEQUENCE OF MENTAL PHENOMENA

It has been maintained by the English logician, F. H. Bradley, that a meaning "can not as such exist. It can never be an event, with a place in the series of time or space."[139] And many are the shades of the theory that denies the difference between meaning and some kind of mental imagery. If it could be found that a "meaning," that is to say, a universal concept has its definite place in the temporal sequence of perception and that its position in that sequence is different from that of the mental image, a great deal of light would be thrown on the theory of perception and a

[139] *The Principles of Logic.* London, Oxford University Press, 1922, vol. 1, p. 7.

difference would be demonstrated between the function of intellectual interpretation and that of forming images.

A study commenced in Munich with Oswald Külpe and completed at the Catholic University of America made precisely that determination.

The consciousness of meaning, in the sense of an abstract knowing of what a word refers to, has a definite place in the sequence of mental events involved in the meaning of words and that place is prior to the mental image which may arise as a kind of illustration of the meaning.

When one studies the perception of pictures it is found that the interpretation of the picture or its meaning has a definite sequence in the series of events and it arises before the word by which the picture is named.[140]

Meaning, therefore, must not be confounded with the mental image and intellectual knowing is not imaginal representation.

### *f*) FACTORIAL ANALYSIS FROM THE CURVE OF DEVELOPMENT

Though we have not stressed genetics in factorial differentiation, much could be done along this line and some of our data are suggestive.

Consider for instance the accompanying curve of development of cognitive function in verbal material taken from the careful study of Sister Maurice McManama (figure 11).[141] Development is still progressing at 19 and attains its peak in the late twenties. But in the curves obtained by Sister Regis Holland[142] for the development of the *c* parameter[143] in the curve of learning it would seem that before the age of 12 the rate of memory development commences to slow up and flatten out. However, the points on the memory curve are too few to give anything more than a suggestion and point out a valuable field for further investigation.

### *g*) FACTORIAL ANALYSIS BY MEANS OF TETRAD DIFFERENCES

This technique has been made use of in a number of studies. Its first use in our laboratory was helpful in an analysis of character.[144] Its second use gave an empirical dismemberment of psychotic symptoms into the fundamental syndromes of the essential psychoses.[145] Anarchy no more rules in psychiatry than it does in psychology. Mental disorders are

[140] T. V. Moore. "The Temporal Relations of Meaning and Imagery." *Psychol. Rev.*, **22**: 177–225, 1915.

See also the rejoinder to Edward C. Tolman in *Psychol. Rev.*, **24**: 318–322, 1917, and "Image and Meaning in Memory and Perception," *Psychol. Monographs*, **27**: 69–296, 1919.

[141] "A Genetic Study of the Cognitive General Factor in Human Intelligence." *Studies in Psychol. & Psychiat.*, **4** (no. 2): 24, 1936.

[142] "The Development of Logical and Rote Memory." *Loc. cit.*, **4**: no. 8, 1940.

[143] Cf. above, p. 34.

[144] Sister M. Rosa McDonough, "The Empirical Study of Character." *Studies in Psychol. & Psychiat.*, **2**: nos. 3 and 4, 1929.

[145] T. V. Moore, "The Essential Psychoses." *Loc. cit.*, **3**: no. 3, 1933.

disturbances of real functions in the affective life of man and the symptoms are but manifestations of the functions disturbed.

An improved technique was made use of by Moynihan[146] in a study of the synthetic sense. Moynihan pointed out the relation between the synthetic sense and intelligence in the following words:

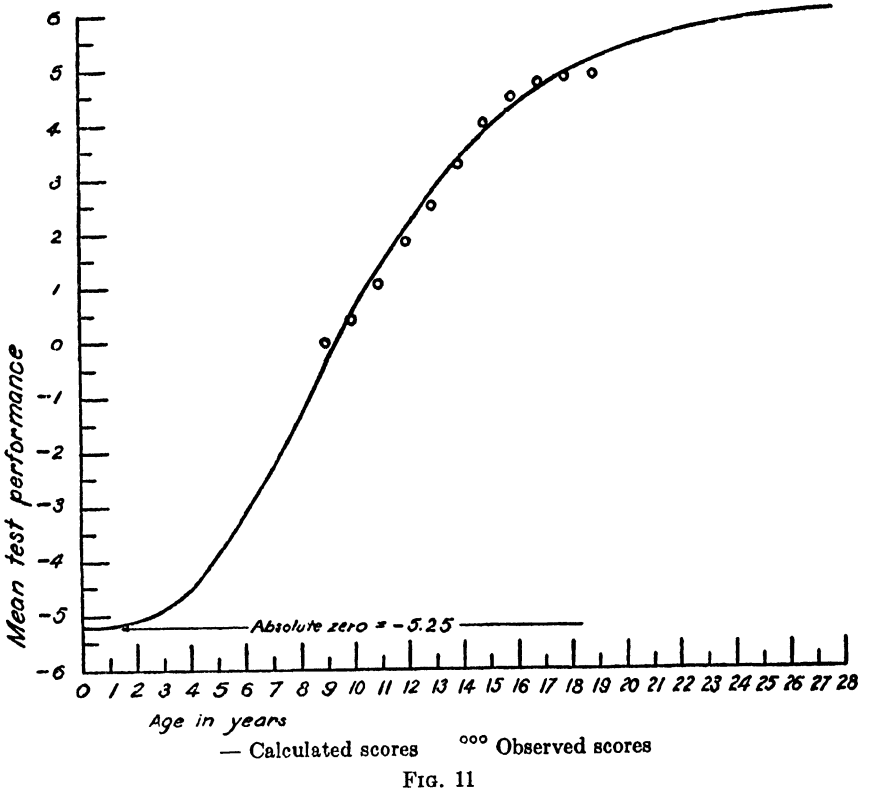



FIG. 11

To see the important elements in a sensory complex, they must first be isolated from their background; and to see that they express that which is fundamental and essential, the products of analysis must be apprehended as a synthetic unit. The first involves the analytic and the second the synthetic activity of that function called the Synthetic Sense.[147]

The activity of the synthetic sense therefore is basic for the operations of intelligence. The synthetic sense is profoundly affected by extensive cortical injuries,[148] but the spiritual faculty of intelligence in itself is not

[146] James F. Moynihan, S.J., "The Concept of the Synthetic Sense and a Technique of its Measurement." *Loc. cit.*, **5**: no. 5, 1942.

[147] *Op. cit.* page 30.

[148] Cf. T. V. Moore, *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., 1939. 245 ff.

injured even by severe pathological changes. As Aristotle remarks in his *De Anima*: "If an old man could be given a good eye, he would see just as well as in youth." Deterioration affects the organ, but not the faculty.

Is there any reason for us continue to show the pessimism of Titchener and to say that a functional psychology is still impossible? Not unless we assume Titchener's philosophy and maintain that the explanation of mental functions must be sought in the physiology of the nervous system. It is because Boring still clings to this philosophy that he has decided "to sit cozily with his robot" and await developments.

From the various studies we have just touched upon it is evident that we can demonstrate the existence of mental faculties and distinguish empirically between one faculty and another. Functional psychology exists as a matter of fact and is rapidly developing.

Long ago Aristotle defined faculty as "the source of movement or change which one thing works in another, or the capability of being acted on in a specific manner by some external agency."[149]

If man's only activity were the production of movement and if his only capability were physical changes in his organism, one might explain his activities and passivities by the physiology of the nervous system. But the conscious, the intellectual, the universal and the abstract cannot be conceived of in terms of movement and physical change. What physical change can be singled out so that one can say these movements are essentially the principle of contradiction which expresses the truth that a thing cannot be and not be at the same time and in the same respect?

An image of a landscape can be projected on the retina and thence to the cerebral cortex, but it is vain to think about a visual projection of the principle of contradiction by any system of lenses whatsoever. When we rise to intellectual truths we must leave the physical world. That therefore which is active in the mental life of man is not physical but spiritual in its nature. The sense organs and the synthetic sense are necessary for one's contacts with the physical world. But neither the sense organs nor the cortex is that which acts in the understanding of intellectual truths.

Intellectual functions are faculties of a nonphysical, spiritual being. Sensory functions involving physical mechanisms are functions of the psychic being and the mechanisms the senses involve. The capability of a special mental function must be a specific characteristic of this nonmechanical spiritual being.

[149] See Aristotle, *Metaphysics*, V, xii, 1, 1019$^{a}$.

# PART II

# CONSCIOUSNESS AND THE UNCONSCIOUS

## CHAPTER 3

## CONSCIOUSNESS

PSYCHOLOGY, as we have defined it, is the science of the human personality. What characterizes the human personality most specifically is its mode of conscious behavior. It is perhaps on this account that some psychologists have chosen as their definition: Psychology is the science of conscious processes.

Though the mind cannot satisfy itself with the study of these isolated processes, nevertheless it is necessary for us to analyze consciousness before we can attempt to obtain that synthetic knowledge which gives us an insight into the workings of any individual mind. It is necessary, furthermore, to have names to designate the phenomena we observe. It is necessary to apply those names in a scientific manner, always univocally designating the same fact of observation. Hence it is necessary, even in dynamic psychology, to know something about the elements of our mental life.

We shall prelude this analysis of our mental life by asking ourselves first, What, after all, is consciousness itself? This is particularly useful inasmuch as some psychologists have denied the existence of consciousness. If, therefore, the fundamental fact of our mental life is apparently in doubt, it is necessary for us to point out clearly just what we mean by this fundamental fact.

James has likened consciousness to a flowing stream. The analogy is, after all, an apt one. It suggests the continuity of our waking experience. This waking experience is roughly what we understand by consciousness. Man is said to be conscious or unconscious. What goes on in his mind when he is said to be conscious constitutes his consciousness. In other words, consciousness is a generic term that we use to designate the various forms of experience that we are aware of in our mental life. When, therefore, we say that the human mind is conscious or possesses consciousness, we do not mean to maintain that there is any generic mental experience over and above the specific forms of which we are aware. To do so would be to lose sight of the meaning of generic terms. Trees exist but there is no tree that is not a special kind of tree, that is neither oak nor maple nor elm nor hickory nor walnut, but only a tree. So, also, consciousness exists, but there is no consciousness apart from the specific forms in which

it manifests itself. Thus we are conscious when we think, we see, we hear, we are angry, we are annoyed, we are joyful, we are sad, etc. By consciousness, therefore, we merely mean to designate the manifold experiences of our waking life, and no one can deny that we do have experiences of some sort in our waking life.

James' figure, which compares consciousness to a flowing stream, truly points out the continuity of our mental life. For certainly in our normal waking life the modes of experience vary, but there are no lapses such as occasionally take place when an epileptic has a *petit mal* attack, becomes dazed for a moment, and knows nothing of what may transpire during his lapse of consciousness. The normal human being, in his waking life, knows no such lapses. He may be distracted, his thought may not follow any one direction for a very long time, but consciousness in some form is always present. And though sensations come suddenly and disappear when they do come, they do not awaken us from a state of unconsciousness but suddenly break our flow of thought, as when the river in its downward course meets a rocky crag and breaks in bubbling streamers on either side. So our waking life is one continuous flow of experiences whose character is much more varied than the water in any stream.

Is consciousness ever interrupted? (In sleep it seems that consciousness ceases, but no one can ever remember the exact moment of becoming unconscious even in sleep.) Consciousness seems to fade into another type of experience of which we have fragments in our memory when we awaken and recall to mind the fragments of our dreams. It is not clear that dream-life itself is not a continuous, unbroken stream of conscious experience at a lower level. It is not even *absolutely* certain that consciousness ceases under ether or as the result of shock or accident. Nevertheless, seeing that in these states the individual gives no evidence of conscious life and has no memory of anything having transpired during the state, he would be rash indeed who would maintain as a certainty that consciousness continues in such states as these.

What, we may ask, is the ultimate nature of consciousness? To answer this question one must enter the field of metaphysics. Properly speaking, it is no task of psychology, and one may go on and study a great deal about the facts of consciousness without ever knowing anything at all about their ultimate nature. Thus, though chemistry and physics go back in their origins to disputations about the nature of matter, progress in these sciences came only after men gave up seeking an answer to the ultimate question. And so it can be with psychology. Psychology need not answer the question of the nature of consciousness before it investigates the operations of the mind. Nevertheless, it may be pardonable to raise the question and suggest a philosophic answer.

Consciousness, though continuous as a stream of awareness or waking experience, is always in any single one of its actual manifestations a transitory phenomenon. When we look at these phenomena individually, consciousness does not resemble a stream but rather the fireflies that flash in the night. An experience comes and an experience goes. What are these phenomena which arise more or less suddenly and abruptly and then disappear as quickly or fade gradually into oblivion?

All things in nature may be classified as substances or as accidents. Substances such as coal, iron, earth, air, water, trees, and animals have independent existence. Accidents never exist apart from substances. They may be looked upon as characteristics of a substance. Shape, for instance, cannot exist independently and apart from some object whose form it outlines. Color cannot exist without something colored. Motion or action of any kind cannot exist without something that moves or acts. And so consciousness appears to us not as a substance but as an accident, an action of some kind. It is, therefore, the activity of something. We know it only in ourselves and we are living organisms. We assume that it exists in organisms that are similar to our own. We find that in some manner it is connected with organisms possessing nervous systems. For organisms without a nervous system, such as plants, do not in general manifest those actions which resemble our behavior in our conscious waking life.

Consciousness, therefore, is in some manner the activity of a living organism of a definite type, not of any organism. It is not likely that it would be a mere chemical reaction, for as we understand chemical reactions we do not see any identity between the shifting of atomic groupings and those experiences which we recognize as conscious. At least, in the ultimate analysis, there is no possibility of identifying consciousness with ordinary movement governed by the relations of mass and velocity. And yet we see from the study of physics and of anatomy and of physiology that all our sensations in becoming conscious involve mechanical motion and chemical change. Consciousness, more than anything else, seems to demand in every organism something more than chemical activity.

The German biologist, Driesch, feels that the phenomena of growth and regeneration cannot be explained without the assumption of a vital principle or entelechy in the organism. If this is so, the explanation of a conscious organism by mere physics and chemistry is much more difficult and would therefore demand the assumption of an entelechy as the basis of its conscious life. Metaphysically, one should at least consider the possibility that consciousness is not a chemical reaction, nor is it a secretion of any gland; it is not a substance; it is not physical motion to which all forms of energy are ultimately reduced. It is an activity of the

vital principle of an organism. This activity is intimately associated, but not to be identified, with chemical processes that take place in the sense organs, the nerves, and the central nervous system. When, therefore, we study consciousness, we must not forget that, in some of its manifestations at least, it has an organic counterpart, nor is it lawful to confound the organic counterpart with consciousness itself.

## Chapter 4

# THE UNCONSCIOUS

### 1. The Philosophy and Psychology of the Unconscious

Let us approach the problem of the unconscious by a study of the ordinary current of mental life.

At any given moment many conscious events are taking place in our mental life. One terms the totality of these events at any moment the field of consciousness. And by analogy with all that the eye can see as it gazes at a fixed point one terms the event to which one pays direct attention the *focus point* of consciousness and all that surrounds it the *field of consciousness.* One is said to be focally aware of what lies in the focus point of consciousness and all that lies around the focus point is said to be *subconscious.* One might conceive of the unconscious as the limiting value of the subconscious as it fades into nothingness. This would reduce the activity of the unconscious in the mental life of man to something of infinitesimal importance, but there are many lines of evidence which indicate that the unconscious, whatever it may be, lies well above the threshold of the infinitesimal.

Let us now leave the present moment and ask ourselves what becomes of conscious events as one present moment after another sinks into the past. Whatever the conscious event may be in the actual present it is not simply annihilated when it disappears into the past. In some manner it survives, for it is capable with more or less modification of awakening as if from sleep and entering again into the field of the conscious present.

What becomes of it in the meantime? If this question can be answered we shall have some important information about the unconscious.

The ordinary answer of brain physiology is that every conscious event leaves a trace of itself in the nervous system and that these traces are capable of reactivation and so of becoming conscious.

Let us here raise the question of whether or not these traces can be said to be in any sense psychic in their nature and then discuss whether or not the statement, "All conscious events are psychic," can be simply converted so that we can also say, "All psychic events are conscious." For if we must say that (a) all conscious events are psychic, and (b) only *some* psychic events are conscious, then we have reached an important level in the progress of the discussion and can understand many things by viewing them from the vantage point to which we have ascended. The psychic then would be a genus with two subspecies of events: the conscious and the unconscious.

Let us, therefore, take up the consideration of the traces left in the mind by the activity of conscious events.

Can all these traces be nothing more than something akin to the deposition of a precipitate arising from chemical activity in various regions of the nervous system or some other purely physical or chemical change of a material character?

Let us look at this matter for a moment from the point of view of certain theories of the relation between body and mind.

Many who think about the problems of the relations between body and mind at the present day adopt the theory that is known as psychophysical parallelism. This theory assumes that what is psychical can never produce or be produced by that which is physical and, vice versa, what is physical can never be produced by that which is psychical. It conceives of psychic events as running a course in which psychical produces psychical but never physical; parallel to this series of events and complementing it in a marvellous manner by a kind of pre-established harmony there is a series of events in which physical produces physical but never psychical.

What is the memory trace from the point of view of psychophysical parallelism? The ordinary physiological concept of the memory trace is not applicable, for in terms of this theory a mental event can never leave a physical trace in the nervous system and a physical trace can never give rise to mental events, such as the reproduced psychic representation of what occurred in the past. One would have to postulate two series of traces, one physical and the other psychical. The brain physiologist could readily conceive of the brain as harboring the physical traces. But if he is also a psychophysical parallelist, his physical traces do not help him to account for psychic memory experiences, for the physical, according to this theory, can never produce anything psychical. There must be a psychic trace and it must be harbored somehow and somewhere. And so we might be led to the concept of two substantial entities. For action must be the activity of something and we are, therefore, forced to the strange concept of a substantial body in which there resides a substantial soul, both soul and body acting and developing by powers inherent in each, but neither acting upon the other.

This after all was the concept of Descartes. But with him mind acted upon body and body acted upon mind in an utterly inexplicable manner.

In any theory of extreme dualism the concept of the memory trace presents a major difficulty. Can the trace be termed psychic, but unconscious as long as it lies dormant? If so, it should be harbored by the psyche. Or is the trace physical and unconscious only in the sense that it is not conscious or psychic in its nature, but, in that ever strange, inex-

plicable manner demanded by extreme dualism, though physical in its own nature it gives rise to something that is psychic and conscious.

But dualism need not involve the gruff opposition between body and mind conceived of by Descartes. Many considerations point to the concept of living substance that is quite different from forms of matter that do not grow and assimilate nourishment and develop in virtue of an inherent principle within the organic whole. This inherent principle may be physically inseparable from the material that it organizes, or if separable, as in the case of the human soul, be incomplete when separate and demanding for the fullness of its activity the material substrate that it is capable of organizing.

What is the memory trace in such a psychophysical organism? It is a vital, living thing, not something akin to a chemical deposit. For were it a mere deposit it might be a secretion separated off from the organism but not a part of the organism itself and capable of entering into its internal activities, as memory traces do.

Is it physical or psychical? The answer to this question is that it is not purely physical, but that many memory traces are psychophysical and some purely psychical or spiritual in nature.

Let us explain this matter. There is a vast body of experience that comes to us through the senses. Visual sensations by the refractive media of the eye form a picture on the retina and this picture is projected point for point on the cuneate gyrus of the cerebral cortex. This area is connected with the motor area so that when this particular image arises certain movements occur. This whole series of oculomotor phenomena demands an organism in which it may transpire, even though experiments indicate that when various regions of the brain are destroyed the organism does not lose habits acquired by means of visual experience.[1] Such traces are psychophysical in nature.

But there are cognitive experiences which are incapable of being localized and for which we can see no connection with the brain other than indirectly through sensory data derived originally from the neurological activity of the mechanisms of sensation. But the sensory data merely presented matter for intellectual operations, such as abstraction, comparison, interpretation and generalization, from which were derived universal concepts, such as our knowledge of the essential nature of prudence, temperance, justice, and fortitude, and general principles, such as, We must do good and avoid evil.

What now, may we ask, becomes of all these concepts and principles

[1] Cf. T. V. Moore, *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., pp. 82 and 522.

when they are no longer in the field of consciousness? They cannot be chemical deposits in the nervous system. They are not physical but spiritual in nature. We may use the broad term "psychic" to designate them. When they are no longer present in consciousness they are unconscious. We may say that they exist as traces, but the term trace must be broadened to embrace psychic traces.

If now some mental traces are psychic but unconscious, there can be no contradiction, if the terms are defined as we have defined them, when we speak of unconscious, psychic conditions.

## 2. The Basis of Judgment and the Psychology of the Unconscious

### *a*) sensory experience

Is it absolutely necessary that the mind should be clearly conscious of the basis of judgment? There are various lines of evidence that show that neither in simple sensory perception nor in reasoning is the mind always fully aware of all that enters into the sensory complex on which a sensory judgment is based nor of the principle which determines a conclusion.

Let us examine the evidence.

Let us take, for example, the simple experiment of comparing two weights by lifting and judging one as heavier or lighter than the other. One method of making this discrimination is to have a subject make a large number of judgments of paired weights which differ by a value that approaches the subject's threshold of discrimination. It was customary to regard the interval at which the subject made 75 to 80 percent of correct judgments as the patient's threshold.

If one had to be clearly conscious of the sensory clues that lead to the judgment, heavier or lighter, it would seem that there should be a definite interval below which practically all judgments would be, "I don't know," and if forced to guess one way or the other, 50 percent of the guesses would be right and 50 percent wrong. Above this limit practically all guesses ought to be right.

But one does not find this state of affairs. One of the earliest studies in American experimental psychology was a painstaking investigation of this problem by Peirce and Jastrow.[2] It demonstrated that there is no such thing as a fixed threshold of discrimination, but as two weights differ from each other by greater and greater differences the percentage of correct judgments increases according to the law of chance. Furthermore, a subject might estimate that his judgment was entirely lacking in certainty and nevertheless be correct three tmes out of five. Let us conceive of a

[2] C. S. Peirce and J. Jastrow, "On Small Differences of Sensation." *Mem. Nat. Acad. Sci.*, 3: 75–83, 1884.

marksman shooting at a target and let us count the percentage of shots within various circles around the bull's eye, the radii of which are the various differences between the two weights. Let us then ask what is the probability of making an error and calling the weights equal when as a matter of fact they are unequal by an amount equal to the given difference between them? Stating the problem in this way it is possible to calculate the probability, that is to say, the percentage of errors that would occur by chance in any given number of judgments. Peirce and Jastrow did this and they found a rather close agreement between the number of errors actually made and those calculated by theory from the probability curve.[3]

Anyone who has followed Hagen's demonstration of the law of error as given in Mansfield Merriman's textbook, *The Method of Least Squares*,[4] will see what is here suggested. The sensory impressions "heavier" or "lighter," "equal" or "unequal," "change" or "no change" are not so simple as they seem. They arise from a total impression which is a resultant of a vast number of infinitesimal causes, and the balance will fall now to one side, now to another with a frequency that depends on the law of chance.

If this is the case, the individual action of any one of these quasi-infinitesimal causes must be well below the threshold of consciousness. Many sensory judgments must be a weighing of probabilities and the elements giving rise to the resultant total impression lie individually in a realm that we may term the unconscious. Seeing, however, that the total impression is conscious and the elements produce it, each element such as the stimulation of a single nerve fiber must in some way have a psychic effect in the production of the total conscious impression. There are indeed such things as chemical changes taking place in the activity of a neuron but these chemical changes do not constitute the entire picture; there is also a psychic conscious resultant, a sensory experience which along with similar quasi-infinitesimal sensory experiences have as their resultant the total sensory impression which seems to us to be "heavier" or "lighter," "equal" or "unequal," "brighter" or "dimmer," and so on.

Peirce and Jastrow observe, "The general fact has highly important practical bearings, since it gives new reason for believing that we gather what is passing in one another's minds in large measure from sensations so faint that we are not fairly aware of having, and can give no account of how we reach our conclusions about such matters."[5]

[3] For a confirmation of Peirce and Jastrow, see F. M. Urban, *The Application of Statistical Methods to the Problems of Psychophysics*. Philadelphia, Psychological Clinic Press, 1908.

[4] Mansfield Merriman, *Method of Least Squares*. New York, John Wiley & Sons, 1911, 66 ff.

[5] *Loc. cit.*, p. 83.

These remarks do not find a full logical foundation in the experiments reported, but there are many lines of evidence that indicate that we are not specifically aware of all the elements that incline us to believe one thing rather than another. In some problems the evidence stands out so clearly that the law of probabilities no longer functions. But in many of the practical judgments of life we are forced to follow inclinations and trends without being able to analyze a problem to elements each of which rises to focal consciousness.

Let us take another example from the field of sensory perception.

Miller made the following interesting experiment. He pretended to a group of subjects that he was making an experiment in clairvoyance and and asked them to stare at a transparent mirror while the experimenter looked at one of five cards named by the picture on them as "plus," "wave," "star," "circle," "square." They were asked to try to see one of these pictures on the mirror and if they could not see one to guess and tell what they had guessed.

As a matter of fact, a projection apparatus cast an image of one of the pictures on the mirror but so faintly that it could not be seen.

A second group of subjects were used who from the outset knew that pictures were being projected on the screen. These were termed "sophisticated subjects" and the former "naïve subjects."

When the intensity of light by which the pictures were projected was 0.0150 foot-candles, all subjects averaged about 25 correct guesses out of 125, that is to say, the probable number.

But beyond this point the sophisticated subjects scored an increasing percentage of correct guesses, even while the intensity of the illumination was too faint for them actually to see the figure. The naïve subjects commenced to increase their percentage of correct guesses only after the illumination passed an intensity of 0.0175 foot-candles. Thus knowing what to look for increases the power of vision, so that even such a simple thing as the threshold of visual sensation depends on internal factors and is not solely a function of the peripheral organ.

But the main thing that we are now interested in is that sensory stimuli which lie below the threshold of conscious awareness can be evaluated and contribute to correctness in judging.[6] In decisions based on sensory perception there is often an element of the unconscious which serves as a basis for the judgment.[7]

[6] For the details of this experiment see James Grier Miller, "Discrimination Without Awareness." *Am. J. Psychol.*, **52**: 562–578, 1939.

[7] There is a large literature on this problem. See the excellent summary by James Grier Miller, "Unconsciousness." New York, John Wiley & Sons, 1942, pp. 135–158.

### *b*) INTELLECTUAL EXPERIENCE

Let us now pass to the field of the intellectual. The power to define the meaning of a word is an intellectual act transcending the limits of sensory functions. But just as we have seen that a sensory awareness such as "heavier" seems to be due to a vast number of quasi-infinitesimal contributions to a total sensory impression, so our knowledge of the meaning of a word, though apparently simple, is capable of being resolved into a number of categories of information and these, too, may be subdivided further and so on through several stages of analysis.

Thus when asked, What is a knife? one might answer: A knife is an instrument to cut with. One could ask, What is an instrument? Webster defines instrument as that by means of which any work is performed or result is effected. It is clear that one might then define each of the words in this definition and so on indefinitely. The knowledge that one has of all that is implied in these various definitions, the latent concepts, all contribute to the meaning of the word knife. A notable deficit of the fundamental concepts (not merely of the words by which they are designated) would cloud the meaning of "knife," whether presented as a word or an actual object.

It is quite evident that if all the contributory concepts had to come into consciousness in order to understand the meaning of a word, reading would be impossible. The contributory concepts must lie dormant, that is, remain unconscious or subconscious but still produce their effect when we understand the meaning of a word.

Let us pass to the process of reasoning. We are able to solve problems because the mind harbors a store of principles to which the problem may be assimilated. It is interesting to note that when solving the problem we often do not bring to clear expression the principle that determines the solution. And many fairly well educated persons are unable to formulate the principle even on reflection, even as little children or the feeble-minded, when asked what a chair is, say a chair is a chair. But their inability to give any definition does not mean that they do not know what a chair is, and the inability of normal adults to formulate the principle which determines this conclusion does not mean that the principle is not present, nor that it is not active in leading the mind to the conclusion. It is unconscious and its activity belongs to the field of the unconscious.

Let us take an example.

*Commonwealth vs. Hackett.* Supreme Judicial Court of Massachusetts, 1861, indictment for murder:

The defendant wilfully and unjustifiably inflicted a wound which ultimately caused the death of a man whom he attacked.

The defendant maintained that his victim's death was due to unskilful treatment by the surgeon who attended him and that it was not enough for the state to prove that the man would not have died had he not been wounded; and that if the surgeon treated him unskilfully, the surgeon was responsible for the death of the man and not the defendant.[8]

When asked whether or not the defendant, who wilfully and unjustifiably inflicted the wound, was guilty of murder, some would say "yes." If now we asked one of these why he thinks he was guilty of murder, he is likely to answer because he wounded him so that he died. But this is a statement of a fact, not a reason or a principle. It is what we term the minor premise. Is there no major premise or general principle determining the conclusion? The answer is yes, but the principle which determines the answer often remains so deep in the subconscious or unconscious that the mind is unable to give it even an approximate expression. And yet it is evident that it must be there, for no one could argue about moral responsibility for murder without having some concept of the nature of responsibility and what is meant by murder. And so when a person says, after studying this case, that the defendant was guilty of murder, he does so in the light of his knowledge of "responsibility" and "murder." That knowledge might be crystallized by making the statement, "Anyone who wilfully and unjustifiably, with a lethal instrument, wounds another so that he is in danger of death is guilty of murder if the victim dies, even though it is conceivable that a more skilful treatment of the victim might have saved his life."

The knowledge implied by this statement may all be in the mind of the one who says the defendant is guilty of murder without getting close enough to focal awareness to be expressed in words. It remains not only unexpressed in words but also not even clearly thought. In this way the process of reasoning evidently involves, at times, processes which we may term subconscious or even unconscious.

### 3. Dynamic Concepts in the Unconscious

Let me present the following case to illustrate how an idea that the patient rejects may be suppressed into the subconscious and nevertheless may produce a strong drive to execute an action which the patient abhors.

The patient was about 38 years of age when I was asked to see him in the jail in which he was confined for the murder of his two children.

His education had been meager, for he left school in the fifth grade when he was only 11 or 12 years of age. His life had been quite free from serious illness. He married when about 26 and eventually had two

[8] Abstracted from Miriam Frances Dunn, "The Psychology of Reasoning." *Studies in Psychol. & Psychiat.*, vol. 1, 1: 60–61, 1926.

children. His married life had been quite happy until shortly after the birth of the first child. At this time he became suspicious of his wife's relations with other men. When she said that she was visiting various relatives, it seemed to him that she was going around with men of ill repute. He suspected this but could not prove it and attributed his failure to get proof to her friends spying on his movements so as to warn her in time and prevent him from following her up. He maintained, however, that on one occasion he hid himself and heard her talking in a vulgar way with men.

It was quite possible that his suspicions even at this time were delusional in character, though his lawyer assured me that he had ample grounds on which to object to his wife's conduct. The patient commenced to seek a way out of his unhappiness by spasmodic excessive drinking. He recounted to me how he heard from others stories of his wife's infidelity. He became very irritable with her and their life commenced to be most unhappy. Finally he took his two children and secretly stole away.

Legal procedures resulted and he was given custody of the little boy and his wife custody of the little girl until a final adjudication. While the final decision was pending he commenced to visualize his little girl growing up and becoming an immoral woman under the influence of his wife. And yet the love of his wife had not been entirely destroyed. He told me how he would at times think that it would be better for his children to be dead than that his wife should have them and corrupt them. And he thought of killing them lest this should occur. And then he would often say, "I am so glad to have not killed them, for my wife might change and I could be reconciled to her and we would once more be happy together.

"But in the meantime people were telling me of seeing her this place and that with men of ill repute. I commenced to distrust my lawyer; I thought he was planning with her to have me go back and live with her. And again and again the idea would come to me of killing the children lest she should get them and they would grow up and become immoral. I said the children would be better off in heaven."

The idea of killing the children had been recurring over a period of some three to four months and seemed to be getting stronger and stronger. Towards the last he said, "It haunted me. I would kneel down and pray and ask God to help me overcome those thoughts. . . . I kept trying to fight it off. I would hate to think about it and put it out of my head, but in the middle of the night I would awake and think I had to do it. They will be better off with God in heaven. If my little girl lives on with my wife, my child will become an immoral woman. I thought of killing myself but I said if I do, I will go to hell, but what I want is that they may go to heaven. I did not want to do it. I just could not help it. It was the devil, the evil spirit in me that made me do it. Finally one

day the idea came to me: Buy that gun. But I did not want to buy that gun. I walked all around town trying to keep away from it. I would walk away from the streetcar and then towards it. Finally I got on the streetcar and rode two or three blocks on the way to the store to buy that gun. And then I got off. But I kept hearing the words "buy that gun, buy that gun." A spirit in me was saying the words. Finally I obeyed. I got on the car again, went to the store and bought the gun. And all of a sudden my mind seemed quiet. I was satisfied. I got on the car and went home, and hid the gun lest my mother should find it. Something told me, but not a real voice like "buy that gun," that my mother would not find it. I kept busy and thought no more about the whole matter."

The patient worked at night and on returning to his house the next morning went to bed, but did not sleep well. "I kept thinking of my little girl and pitying her, because of the way her mother behaved. I tried to sleep and could not. All kinds of thoughts were running through my mind and I kept coming back to the idea: the best thing to do is to kill them and put them in God's hands. Then I would say: I won't. I will wait and see what my wife is going to do. And then I thought how Mrs. X had told me she was still running around with men."

He woke and took his little boy to the barber's to have his hair cut. This was evidently an act of his better self that did not want to kill the child, for why have his hair cut if in an hour or so he was to be murdered? He then went out looking for the little girl in various places, driven by the subconscious idea of finding her in order to kill her, but consciously because he loved her and wanted to see her. He did not find her and went home. He saw a little girl at the corner and thought it was his own. He jumped up and ran to her, but found out it was someone else's little girl. He came home and then started out to find her. "Then the thought came into my head about the pistol and I went back to get it and put it in my pocket. I had a headache by that time and went to a drugstore to get a bromo-seltzer and cool my head. Then my mind commenced to get all mixed up and I went looking for my little girl."

He found out where she was and rang the bell and the child came running to the door to kiss him.

Then followed a scene of pleading that she be allowed to go with him to her grandmother's to eat cake and candy. The lady who had charge of her said she had been forbidden to let her go away, but finally when he promised to take her around to his house for just a little while and bring her back, and the little girl pleaded, "I want to go with my daddy," the fatal permission was granted. The patient remarked at this point of the interview, "I really intended, when I promised, to keep the promise and bring her back."

And so his better self did, but an ogre in the unconscious, a subconscious idea with a dynamic drive, had already prepared everything for the murder.

The child put on her coat and hat and came running to her daddy. He noticed holes in her shoes and sent her back for her rubbers, for it was wet and slushy outside. Here was another act of the conscious self which shows that the conscious self had no idea of killing the child. For what difference would it have made if the child did get her feet a bit wet, if in less than an hour she was to be murdered? As they went along the child kept prattling: "I want to go and live with you and Granny. I don't want to live with my mother." In a few minutes they were home. "My mind was in an uproar then. Sadness and everything was in my head. The little boy had some walnuts and we went out on the back porch to crack them. We came back into the kitchen and I just remember my mother being there. It seemed as though she were a spirit, just a shadow. There she was, but she did not look like my mother. She divided up some cakes and grapes for the children. They ate them and I said: 'Come to the front part of the house.' The idea had just come into my mind to shoot them. I don't know whether they followed me, or I them. I said no! I will not do it! But we had passed through the hall and the damned impulse came over me again and I pulled my pistol and shot my two children. I grabbed the little girl first and put her head up against my vest. And then quick as a wink I grabbed the boy and held his head against my vest. I don't remember how many shots I fired. After it was over I don't remember anything but my mother screaming and people running and my yelling for the police. The next I remember I was going down the steps with a policeman."

"Do you think you were responsible?" I queried. "I could not have been. My heart was full of love for those little ones, a love I cannot describe. It was the love I had for my babies and that devil or whatever it was in me that made me buy that pistol. I had neglected Mass and Communion for two years. If I had gone to God and a priest in confession, He would have helped me. Now I can see it all."

The little girl was 6 years and 10 months and the little boy 4 years and 4 months old when they were murdered by their father.

The patient was judged insane and sent to a mental hospital where he finally committed suicide.

Let us look at this sad history for a moment. The behavior was not that of a sane man but that of an insane person suffering from what has been termed in the literature *paranoia acuta.*[9] This is an acute delusional condition arising on a basis of severe emotional stress, accompanied by

[9] For a citation of the more important literature on this point, see T. V. Moore, *Cognitive Psychology.* Philadelphia, J. B. Lippincott Co., 1939, pp. 25–26.

hallucinations and a persistent drive to do an unreasonable act, often of a criminal character. Having committed the act there is no drive to any kind of a repetition, as in the obsessions, but the emotional excitement fades and the condition clears. At times there may be amnesia for the criminal act.

We are now interested in the unconscious elements in the picture. We see two conflicting emotional systems which have often been termed two personalities. There is no necessary inconvenience in using the term "personality" if we bear in mind that we are not using it in the metaphysical sense but with an empirical meaning that has become common in psychological literature.

Let us look at these two personalities. One loves the children, wants to take care of them, protect them and delight them with childhood's joys. And so our patient sees that his little boy gets a haircut, makes the little girl put on her rubbers lest she should catch cold, brings her to her grandmother to get cake and candy and nuts and grapes. We see a father really loving his children.

The other personality is under the influence of delusional concepts. The infidelities of the wife have been perhaps exaggerated and delusional ideas of reference see some things in a false light, even though other things might be true. There is an ambivalent attitude of love and hate towards the wife, with hate dominating. And though our interview did not uncover it, it is within the realm of possibility that in the deeper strata of the unconscious there was a drive to kill the children in order to punish the wife. This drive masks itself and by a process of rationalization the patient convinces himself that he wants to kill his children to preserve them from moral corruption and make them happy with God forever in heaven. A normal mind would easily have seen through this false rationalization and would have asked: Why should I put myself in the place of God and with my blindness to future possibilities cut short the lives of two little children?

The concept of killing the children to punish the wife was suggested only by the patient volunteering the denial, "I did not kill them because I was jealous of my wife."

It seems quite clear that the patient during the whole episode was dominated by the concept to kill the children to preserve them from moral corruption even though in a deeper stratum of the unconscious there was the idea of revenge. But even this concept of preservation was not clearly in consciousness during a great part of the tragedy. Occasionally the conscious and the unconscious would meet, producing a violent emotional reaction and a volitional rejection expressed by such words as "No! No! I won't." But it is perfectly clear from all we have said that the patient was not fully conscious of the complete motivation of his actions and in some way his conduct was profoundly influenced by the unconscious

He said towards the end of the interview: "Had I gone to God and a priest in confession this would not have happened." This is precisely what a sane Catholic would have done and, thus receiving divine help and seeing into himself, would have been freed from the unreasonable drive. A non-Catholic might have talked things over with a wise and trustworthy friend and have obtained a natural insight that would have enabled him to meet the situation and act with prudence and self-control.

When the unconscious drive is brought into the strong light at the focus point of consciousness, its color fades and its mysterious attractiveness rapidly vanishes. To deal with the unconscious we must not deny it nor ignore it but examine it, and then we shall be able to act with ordinary care and prudence.

Any confessor will be able to look back upon various episodes in the lives of his penitents which terminated in a sinful act of one kind or another. And as one studies the episodes one sees how everything was set by dynamic concepts in the unconscious as if logically planned from beginning to end. Such is the course of temptation and it leads to sin unless one makes use of the grace of God to see things in their true light and to strengthen volitional effort in the struggle to be true to ideals.

### 4. Dream Life and the Unconscious

The study of dreams has revealed that they are often, if not always, the continuation of the thought of the day by a kind of allegorical symbolic thinking. Thus many dreams have a meaning which can be discovered by an analysis of the dream. The meaning is often obtained only after a very difficult analysis. It is obviously something of which the wide-awake person is utterly ignorant. But the person himself not only produced the imagery of the dream but also read into it the meaning that transformed it into an allegory.

The symbolic expression of thought by imagery is something that takes place with peculiar spontaneity in our sleeping life. One can best get a first-hand view of this by studying the imaginal expressions of thought that occur when one dozes off to sleep in the daytime. In such happenings the dream imagery is formed only a few minutes after the train of thought and it is easier to find the connection between the imagery and the thought than when one attempts the next morning to analyze a dream of the night that has just elapsed.

The following example may illustrate what I mean.

I was reading this morning the epistle of St. Clement to the Corinthians. I looked up the word παράπτωμα, finding the sense "a fall beside," metaphorically a transgression. A little later I dozed off and saw a chute such as one sees in a depot where trunks are allowed to slide along a curved inclined plane to the floor below. Numbers of red mattresses, rolled up and tied with a cord, were tumbling down the inclined

plane and as they reached the floor below *fell off* at the *sides*. At first I could see nothing with which the peculiar scene could be connected; presently I thought of *παράπτωμα* and the *fall beside*.

It is clear that as I awakened I was not conscious of any meaning in the picture that had been before my mind in sleep. But it is equally clear that the picture had a very definite meaning. There was a time then when the meaning of the picture was unconscious. Furthermore, the activity by which the thought was expressed in imagery was not conscious. There was no intention nor effort consciously made to express a thought in imagery. This activity was therefore unconscious. Though unconscious, it was evidently psychic. For the expression of thought by appropriate imagery is evidently a mental function, not a mere chemical change occurring somewhere in cerebral tissue. It is a psychic function of the soul.

The dreams of the night illustrate this unconscious activity, although it is more difficult to get at their meaning.

Consider for example the following dream.[10]

I was dreaming that a man was relating to a boy of about 13 how it was demonstrated for the first time that lifeboats could save lives. A lifeboat was launched from a vessel in which were five mariners and passengers, making a total of forty-two. He asked the boy whether or not he thought the boat was crowded, and I was surprised at the stupidity of the boy, who did not answer promptly that it was. At this time another lifeboat appeared in the dream and the man went on to tell the boy that a mariner attempted to tie the bow of the second boat to the stern of the first and then—at this point I thought the mariner was going to be told that this must not be done, when to my surprise the man went on to relate that in attempting to do so the mariner fell overboard and was drowned. I was rather surprised at this conclusion of the story, for I thought that the mariner should have been able to swim, and I thought that the conclusion was going to be that he would be told not to tie the two boats together. I also wondered why the word mariner was used instead of sailor. I wondered also, if it was rough enough to drown the mariner who fell overboard, how it was possible for the boats with so many people in them to weather the storm.

The fundamental meaning of the dream to the dreamer was that he did not believe that two corporations should be merged into one. But this meaning was unknown to him on awakening, that is to say, it was unconscious. Note, however, that not only was the fundamental meaning of the dream unknown to the dreamer on awakening but the dream itself developed in a way that he was not conscious of determining. He tells us how he "thought the mariner was going to be told not to tie the bow of the second boat to the stern of the first . . ." when to his surprise "the man went on to relate that in attempting to do so, the mariner fell overboard and was drowned."

[10] It was discussed in my work, *Personal Mental Hygiene*. New York, Grune & Stratton, 1944, p. 124.

But who but the dreamer was really relating the story? If an author were writing a story he would not be surprised at the content of any sentence that he wrote unless he could contrive to fall asleep and write what he dreamed. Evidently the plot in the above dream is an unconscious fabrication of the psyche. There is, therefore, a psychic activity of man which goes on without the conscious guidance and direction of the ego.

### 5. Unconscious Dynamic Symbolism in Waking Life

It has long been known that acute emotional conditions may have a sudden onset without any apparent cause in the present events of the patient's life. Some of these may well be due to obscure unknown events in the physiology of man which produce an abiding irritation of the reflex emotional centers in the hypothalamus. But others may be connected with the patient's train of thought. There is much to indicate that more than one track in the mind serves the functions of psychic experience, and some of these seem to lie below the level of focal awareness. In fact, it would seem that some of the ideas that suddenly burst into consciousness are sidetracked from the unconscious to the level of awareness.

I would like to present a case in which the bursting of the subconscious into the conscious was at least associated with the onset of an anxiety state, and the patient's insight into the relationship was followed by a complete disappearance of the anxiety.

Shortly after the end of the scholastic year, a mother wrote about her 16 year old daughter who toward the end of the year had developed a feeling of insecurity.

Towards the end of the year she had manifested a sudden inability to go to school alone and her sister had to take her to school or she would not go. She would no longer go to parties unless her mother would take her. Quite often, instead of coming home from school by herself, she would phone saying she was sick in a drugstore and someone would have to come and take her home. When some member of the family would go to get her there seemed to be nothing wrong and she could not explain why she had to stop at the drugstore.

Although the difficulty about going to school alone had only started some six weeks before her first visit to the Child Center, there had been various other fears during the previous year. In one class she developed a fear of being unable to recite, though she never failed to do so when called upon. She had also developed a fear of being left alone when she was in bed with a cold. But a few weeks before the end of school she had suddenly become unable to go on the streets without intense anxiety and refused to go to school unless accompanied by another.

The attempt was made to probe into the parent-child and child-school

relationships, but nothing of moment was discovered. The child had been in a plaster cast for three years on account of curvature of the spine and it was thought that perhaps there might be an *abaissement du niveau mental* due to general physical disability. Arrangements were made for her to go to a camp for the summer and she returned apparently in excellent physical condition, but when her return to school was discussed her eyes filled with tears and she said she would not be able to go on the streets alone.

The attempt was then made to analyze the mental background of her fear of being alone.

This analysis revealed that for some time she had spent a good deal of her spare time in daydreaming about her boy friends. She had developed a chronic fear that no boy would ever ask her to marry him and that she would be left an old maid all her life. This may have been rendered a real possibility in her mind by the fact that she had to wear a plaster cast.

During one interview in which she was asked to give all her associations with "being alone in the street" she recalled an incident which she said was the origin of her present disability to be on the streets alone.

Towards the end of the school year she was coming home one afternoon from a party. No one was on the street except a man about a block in front of her. He seemed to be so far in front of her and was getting further and further away from her There came over her an intense fear: He will go away and leave me all alone. She thought she had to catch up with him and began to run and yell to him, "Do you know where I can get a drink of water?" As soon as she caught up with him her fear vanished. She said she was sick and wanted something to drink. He told her where there was a drugstore near by and walked on. She went to the drugstore but got nothing to drink. She merely phoned and asked her mother to come and get her. From that time on she was afraid to go on the street. But she had never thought of the incident before as having any connection with her phobia.

To anyone who has analyzed dreams the incident seems very much like the symbolic expression of thought in a dream. The fundamental anxiety of the patient's life is the fear that, owing to her spinal condition perhaps, she will never find a boy friend and will remain an old maid all her life.

With this fear in her mind she finds herself alone on the street and sees a man ahead of her getting further and further away from her. This symbolizes her constant ever recurring anxiety, "I will never get close to any man."

The attempt was made to work out this interpretation with the patient from her associations. She was led to see that there must have been a

cause of her unreasonable fear when she saw the man in front of her getting away from her and that if she did not consciously associate the incident with her major anxiety in life it might have been, unconsciously to her, a genuine expression of that anxiety.

Her insight into the connection was not deep, but for some reason she realized that there was no reason why she should be afraid to go on the street by herself and from that interview on her difficulty ceased. She came once a month for some time afterwards and reported that there was no longer any difficulty in going to school and laughed at her former anxiety.

### 6. The Unconscious Personality

In every human being there are to be found a vast number of desires and emotional trends. Nor do all these desires and emotional trends converge to the attainment of one ideal. The human mind is a battlefield of conflicting forces in which, however, it often, I think we may say usually, happens that the good dominate and the evil are subjected to repression. In order that this domination may remain permanently successful and the better self attain to expression, there is required not only a certain stability and strength of volition but also the integrity of the nervous system.

Our study of the physiological factors in emotional manifestations point in this direction. Should pathological changes in the nervous system give rise to a sudden appearance of violent emotional reactions, either by the direct production of affective experience or by the paralysis of restraints, then it might well be that a previously well organized mental life might undergo revolutionary changes.

This would be possible only if the emotional trends, contrary to the ideal established by voluntary activity, were not annihilated but merely held in check so as not to interfere with the established organization of mental life. What happens to them while they are held in check? One may not experience them or feel any trace of their existence for notable stretches of time. Certainly every well organized personality is not always conscious of the contrary forces in the moral conflict. What becomes of these contrary forces when they are not experienced? They must exist at least as traces or potentialities that can become actualities should restraints be removed. Let us not attempt to settle the question as to their mode of perendurance but content ourselves with the knowledge that in general they are not annihilated but in some manner continue to exist. We may in fact designate the sum total of the contrary trends of the well organized personality as a subconscious personality. The term personality is here used in an empirical sense, not in the metaphysical sense of a subsisting intellectual substantial being.

Let us illustrate by an actual case what is meant here. We shall take one reported some years ago from our own psychiatric center.[11]

When about 28 years of age, the patient suffered an attack of encephalitis lethargica. His illness started with abdominal pain, giving place eventually to severe headache. He then commenced to see double, became very drowsy, and commenced to sleep. During his sleep he would shriek and cry out as if in great distress. After twenty days of almost continuous sleep the drowsiness began to disappear and a short time afterwards he was discharged from the hospital. In about ten weeks after his discharge he gained sixty-five pounds in spite of a loss of appetite.

It was then noticed that there had been a profound change of character. Though there had been no serious loss of intelligence, he had undergone a profound change in his emotional life and in the organization of his behavior.

Before his illness he could be relied upon to keep his word and do anything he promised to do, but after his illness he would promise but not fulfil, making promises apparently without any intention of keeping them. Before his illness he could be relied upon to tell the truth, and was never known to make false statements about anyone. After his illness he told his parents stories about people which were not true, so that they could no longer rely on his word at all. There was, however, no change in honesty in regard to money matters. Before his illness, if he broke anything in his work as a plumber, he would tell his employer, but now he destroys valuable material and tries to conceal what he has done. Before his illness he was always respectful and proper in his relations with women, but afterwards he wanted to make love to every girl he saw. Once in a theater, after his illness, he fell asleep and let his head rest on the shoulder of a young lady sitting next to him. Because he was ejected from the theater for this action, he wanted to sue the management, asserting that they had no right to complain of his conduct.

One can summarize his behavior by enumerating a number of traits that appeared and some that disappeared after his illness.

| *Traits appearing after encephalitis lethargica* | *Traits disappearing after encephalitis lethargica* |
|---|---|
| Talkativeness | Conventionality |
| Frankness with opinions | Skill with tools |
| Persistency in trying to get what he wants | Ability to get along with older people |
| Cheerfulness | Tactfulness |
| Conceitedness | Integrity |
| | Trustfulness |

[11] See Donald McNeil, "A peculiar Transformation of Personality due to *Encephalitis Lethargica.*" *Am. J. Psychol.*, **34**: 13-31, 1923. This case is considered again in Chapter 31 on the *Pathology of Voluntary Action.*

| *Traits appearing after encephalitis lethargica—Cont.* | *Traits disappearing after encephalitis lethargica—Cont.* |
|---|---|
| Tendency to talk of self | Carefulness for reputation of others |
| Sociability | Mindfulness of rights of others |
| Tendency to thrust himself on others | Systematic method of work |
| Tendency to unburden | Punctuality |
| Tendency to talk of his intimate affairs | Tendency to despondency |
| Forwardness | Self-consciousness |
| Forwardness towards opposite sex | Sensitiveness |
| Interest in opposite sex | Considerativeness |
| Flirtatiousness | Tendency to keep friends |
| | Carefulness of personal appearance |
| | Bashfulness |
| | Contentedness with existing sexual adjustments |

When we consider that encephalitis lethargica attacks the gray matter of the cortex and the various subcortical ganglia, it seems possible to explain this appearance and disappearance of so many symptoms by one general factor: the paralysis of inhibitions. Speech and action were no longer organized by volitional activity, for the mechanism of control had been seriously impaired. And as a result, forces and trends contrary to the ideals established by the ego commenced to make their appearance without check or hindrance. The metaphysical personality was, of course, the same, but the empirical manifestations of the ego underwent a profound change. We may term the repressed forces and trends an unconscious personality of which the ego had not been conscious for years. With the paralysis of inhibitions the sleeping beast came out of its state of hibernation and commenced to dominate conduct.

We should all realize that within each one of us is a hibernating beast an unconscious personality, which can still become active unless we maintain our system of control. This system of control can in rare instances be destroyed by disease, but it can also break down through our own infidelity to ideals. It is a breakdown such as this that, barring major accidents such as that suffered by our patient, we can prevent by conceiving of life as a period in which to bring to completion a work of value and by living in the enthusiasm of its accomplishment.[12]

[12] For a further study of the phenomena of multiple personality and a study of the relationship between breaks in the memory chain and the splitting of the "personality" and the distinction between the resulting *empirical personalities* and the metaphysical personality, see T. V. Moore, *Cognitive Psychology*, pp. 24–44.

## Chapter 5

# DREAMS AND THE UNCONSCIOUS

Before approaching the study of the various methods of analyzing the unconscious it will be useful to understand something about the theory of dreams, for one of the most important methods of analyzing the unconscious is the method of dream interpretation. Sigmund Freud has the credit for giving the psychological world its first true insight into the nature of dreams. We shall therefore commence our study of dreams with an outline and criticism of the Freudian view.

According to Freud, "*Some reference to the experiences of the day which has most recently passed is to be found in every dream.*"[1]

He gives various examples in which he has been able to trace the dream to some incident which transpired in the day that had just elapsed. In my own experience with dream analysis this principle seems in general justified.[2] Sometimes, however, the incident which gives rise to the dream is not the day just past but dates two or three days previous to the night of the dream.[2a] It is true also, as Freud suggests, that something which is apparently trivial is the starting point in which the dream takes its rise. Thus, a middle-aged lady reported to me the following dream as one that had absolutely no meaning. She dreamt that she had been an ostrich feather and had been changed into a feather duster. Analysis revealed that she was really very much worried about the approach of old age. The dream, therefore, has the following interpretation. In her youthful days she was the ostrich feather; now no one pays any attention to her, everyone passes her by and she is neglected. The source of the dream was related, by association, to her noticing on the previous day a feather which had fallen from a feather duster on the floor, and for some reason or another the thought came to her mind that everybody was walking over this neglected piece of feather duster. In her waking hours she did not see the analogy between the much-trampled feather and herself, but in the nighttime her anxiety expressed itself in a dream by a symbolism which had its origin in a trivial incident of the previous day's experience. As we shall see, in the theory of dreams outlined below, dream life probably takes its start in the thought of the day that has just elapsed. It is not, therefore, surprising that the dream is associated with the incidents of the day before.

[1] *The Interpretation of Dreams.* English transl., New York, Macmillan, 1913, p. 139.

[2] That this is often the case is borne out by the spontaneous statement of the patient whose problem and treatment are discussed in Chapter XVI.

[2a] The basis of this statement is a personal dreambook which I kept some years ago.

*Not only is the dream, according to Freud, related to the day that has just elapsed, but it also goes back to the experiences of early childhood.* Thus he says, "The dream often appears ambiguous, not only may several wish fulfillments, as the examples show, be united in it, but one meaning or one wish fulfillment may also conceal another, until at the bottom one comes upon the fulfillment of a wish from the earliest period of childhood; and here too it may be questioned whether 'often' in this sentence may not more correctly be replaced by 'regularly.' "[3]

He gives the following example: "A physician in the thirties tells me that a yellow lion, about which he can give the most detailed information, has often appeared in his dream-life from the earliest period of his childhood to the present day. This lion, known to him from his dreams, was one day discovered *in natura* as a long forgotten object made of porcelain and on that occasion the young man learned from his mother that this object had been his favorite toy in childhood, a fact which he himself could no longer remember."[4]

In my own experience the word "often" in Freud's statement should not be replaced by "regularly" but by "seldom."

According to Freud also, *all dreams have in them something of a sexual element.* Here again it would seem that the tendency to generalize is exaggerated, for it can scarcely be proved that all dreams have in them a sexual element, but only that many dreams that seem free from it are nevertheless found on analysis to reveal some kind of hidden sexuality.

The third and fourth chapters of Freud's *Interpretation of Dreams* constitute an attempt on his part to demonstrate that *all dreams whatsoever are wish fulfillments*, and that there is no such thing as a fear or an anxiety expressing itself in our dream life. He points out that the dreams of children are frequently plain, ungarnished wish fulfillments. This I think anyone will be able to confirm who pays attention from time to time to the dreams that children recount. Thus, for example, I remember a child at a little inn where I stopped overnight on a tramp through the Sierra Nevadas: The child was told that a lion inhabited a big black crevice in the rocks above and that if he would wait up at night he could see him come out in the moonlight and hear him roar. Naturally, the child wished to stay up and hear the lion, but was put to bed. The next morning he came down in great glee rubbing his hands and telling how he dreamt of the big lion coming out of the rock and prancing about and roaring to his heart's content. The child, therefore, was not to be outdone. He was forbidden to stay up and see the lion so he got out of the difficulty by seeing him in a dream.

[3] *Op. cit.*, p. 184.
[4] *Op. cit.*, p. 159.

Naturally, Freud does not maintain that all dreams are plain, ungarnished wish fulfillments, for this would be disproved by nightmares and various frightful experiences in dreams. The dreams of adults, he says, are seldom like the dreams of children, because of the distortion that the wish must suffer in order to attain its expression. We must, therefore, distinguish between the manifest and the latent content of dreams. The manifest content is usually a meaningless phantasmagoria in which personalities are disguised. In the disguised personality there is, however, usually something of the nature of the devil's cloven hoof that betrays his character, such as the color of the hair, the presence of a beard, a peculiarity in the clothing, etc. One cannot, according to Freud, argue from the fact that persons in a dream are men or women, that, therefore, they must refer to men or women in reality; for a man may appear as a woman in a dream and vice versa. Furthermore, dream personalities are sometimes the telescoping into one of several individuals in real life. From the fact that one dreams of some frightful and terrifying incident you cannot argue that the dream does not represent a wish fulfillment. Thus, for instance, a young lady dreamt of her father's death. She had a real affection for her father. How is it possible for a dream of this kind to represent a wish fulfillment? As a matter of fact, however, her father was an invalid, *absorbed a great deal of her time in caring for him*, and prevented her from mingling in social activities for which she had a craving. His death alone could free her, but consciously to think of this would be against the natural principles of a dutiful daughter. Therefore, she repressed into the background of consciousness any wish to obtain her freedom by her father's death that might make itself manifest. The unconscious, however, is no respecter of persons or of principles. It wants what it desires without regard to consequences or the ideals imposed by education or the sanctions of morality. The dream of the girl, therefore, represents an unconscious wish, a desire for freedom. In this way it may be proved that many dreams are wish fulfillments in spite of their manifest content, but can we, from any amount of analysis, demonstrate that *all* dreams are wish fulfillments? I might mention cases where patients have dreamt of deaths of individuals in which no reason could be found by analysis why these patients would desire the death of the person of whom they dreamt. The Freudians will answer to any such cases as these that the dream is not adequately analyzed; in fact, Freud disposed of a number of dreams that are apparently exceptions to his theory in the following way: "If I group the ever frequently occurring dreams of this sort, which seem flatly to contradict my theory, in that they contain the denial of a wish or some occurrence decidedly unwished for, under the head of counter wish dreams, I observe that they may all be referred to two principles, of which one has

not yet been mentioned, although it plays a large part in the dreams of human beings. One of the motives inspiring these dreams is the wish that I should appear in the wrong. These dreams regularly occur in the course of my treatment if the patient shows a resistance to me, and I can count with a large degree of certainty upon causing such a dream after I once explain to the patient my theory that the dream is a wish fulfillment."[5]

It may be that Freud is right in referring the dreams that seem to be exemplifications of the inadequacy of his theory to a desire on the part of the patient to prove that his theory is wrong. As a matter of fact, patients do attempt to demonstrate the falsity of the theory when once it has been proposed to them or at least they will give a dream which is apparently not a wish fulfillment and say, "There, this shows that the theory is not correct." Thus a patient once related to me as disproving the wish fulfillment theory of dreams that she had dreamt that her mother had gone to live with her sister-in-law. "There," she said, "is a perfectly commonplace event that has no relation whatsoever to any wish fulfillment." One of the patient's difficulties, however, was precisely with her mother, inasmuch as her mother had the unfortunate habit of drinking too much, and during these times had caused the patient serious trouble and anxiety. Knowing this, I immediately asked the patient if she did not have a grudge against her sister-in-law. She answered with some vehemence, "I hate her." The meaning therefore is apparent. She wishes to burden her sister-in-law with the troubles that she has with her mother.

It would be very difficult by Freudian methods, however, to prove or disprove the Freudian theory. Whether or not all dreams are wish fulfillments must be determined by the theory of dreams itself. According to Freud, *the reason why dreams are symbolic and not plain downright wish fulfillments is that there exists in our mental life a censor.* Education and environment place upon us many restrictions and, therefore, we cannot do all the things that we would like to do; we become ashamed of those things that society frowns upon. We look on them as unworthy of ourselves and therefore repress them, banishing them utterly from our mental life. The censor does not allow these things to appear in consciousness in a plain, ungarnished form. Freud says, "The censor behaves analogously to the Russian newspaper censor on the frontier, who allows to fall into the hands of his protected readers only those foreign journals that have passed under the black pencil."[6]

No explanation has ever been given of the psychological nature of this censor. He is awake both day and night, eternally active with his black pencil.

[5] *Op. cit.*, pp. 133–134.
[6] *Op. cit.*, p. 419.

As pointed out in the previous chapter on the unconscious, the little dreams that one may have when dozing in the daytime are much more easily traced to their roots than the dreams of the night.

I once kept a record of such dreams which I termed "hypnotic analogies," because some are very simple as compared with the dreams of the night.[1] When waking after experiencing one of these hypnotic analogies, I was always able with a little effort to demonstrate that the hypnotic analogies were merely the continuation of thoughts that were in the mind just before dozing off to sleep. The expression of these thoughts was not logical as in waking life, but symbolic, accompanied at times by queer and amusing imagery.

From a study of the hypnotic analogies it is evident that the thought of the day is continued immediately into the thought of the hypnotic analogy. The hypnotic analogy is not the commencement of a new train of thought but a continuation of the old. The type of thought is essentially different. The thought of the day is logical, the thought of the hypnotic analogy is poetic and symbolic, but the symbolism is usually too crude to form a part of what waking life would approve of as poetry. In other words, in our waking life we have one type of thought dominant, in our dream life another. Various authors have called attention to the existence of two types of thought in man. Jung refers to it in his *Wandlungen und Symbole der Libido.* Many authors have recognized this type of thought in the mental life of praecox patients, and here it has been termed "autistic" thinking. What, we may ask, is the reason for the sudden change from logical to symbolic thought in passing from our waking to our sleeping mental life? In our waking life our thought is largely associated with or affected by the activity of perception. In sleeping these sensations are replaced by images. When one is about to fall asleep he is frequently aware of various visual images of the most bizarre character flitting before his mind; at times one may perceive also auditory or other images. Myer has given to these images the name of "hypnagogic hallucinations." They are perhaps to be conceived of as due to the rhythmic activity of the sensory cerebral centers. Though ordinarily this activity does not become conscious when actual sensations are present, we do become aware of it in the quiet that comes with the advent of sleep. Perception in waking life, as may be proved by many examples, involves a union of incoming sensations with past images and categories of experience. In our sleeping life the sensations are largely lacking. Instead we have a train of thought and the hypnagogic hallucinations. These hypnagogic hallucinations are seized upon by the train of thought, modified by it and woven into the fabric of

[1] Psychological Studies from the Catholic University of America. *Psychol. Monographs* **27** (no. 4): 387–400, 1919.

our dreams. No censor is necessary. Dreams are symbolic because they are woven not from sensations but from hypnagogic hallucinations. The trend of thought is not necessarily a drive to wish fulfillment. Anxieties sometimes find their expression in dreams. More frequently, as dream analysis will show, the trend of thought in dreams tends to flow in the channels of repressed desires, and so these desires mainly find their expression in dream life. Seeing that repressed desires constitute a large element in our subconscious or unconscious life, the analysis of dreams becomes a very important method in the study of the unconscious.

## Chapter 6

# METHODS OF INVESTIGATING THE UNCONSCIOUS

When one has had a little experience with mental disorders he will soon become convinced that some abnormal forms of behavior do not have their origin and explanation in the conscious levels of the mind. At all events the development of our knowledge of the unconscious has come to us from those who have devoted themselves to psychiatry, the science of mental disorders.

Those who had to deal with abnormalities of conduct naturally sought further insight into those forms of behavior that seemed inexplicable at the conscious level. Therefore, they developed methods of investigating and analyzing the unconscious depths of the mind.

In the present chapter we shall outline briefly the methods of investigating the unconscious. In mental disorders this frequently means the discovery of some emotionally toned incident in the past, a "complex," which is in some manner related to present behavior.

1. *Dream analysis.* The technique of interpreting dreams is very simple. One asks the patient to write out the dream, preferably immediately upon awakening. If a few hours elapse between the time of dreaming and writing out the dream, important elements are likely to be forgotten. With the written copy of the dream before him, the analyzer commences by writing down a phrase. The analyzer then repeats the same to the patient and asks him to tell everything that comes to his mind, jotting these things down as the patient speaks. To be a good dream analyzer one should be a stenographer. The patient is urged to keep nothing back that comes to his mind, to exercise no critique over the order or appearance of his thoughts, but to let his memories and associations flow forth spontaneously. This is done with one phrase after another. In my own experience the first stages of this procedure seem hopeless and it is only when the analyzer comes to the final associations that suddenly the meaning of the dream dawns upon him. Few dreams can be analyzed without revealing a great deal of the hidden life of the patient. Before attempting to analyze the dreams of others it is necessary, or at least very useful, to analyze a number of your own.

2. *Free association.* The method of free association resembles the technique of analyzing a dream. Without any dream the patient is urged simply to proceed to give all memories and associations whatsoever that come to his mind. These are written down and it is supposed that eventu-

ally these memories and associations will lead to the revelation of hidden complexes in the patient's life that may be affecting his conduct. Freud ordinarily practiced the method by closing the blinds, having the patient recline on a couch while he sat behind the head of the patient taking down in a note book all the associations and memories that were given. Some psychoanalysts admit that these details are superfluous. The patient may as well sit down in the daylight.

3. *Jung's method of controlled association.* Jung conceived the idea of measuring the association time of a patient's reaction to a series of words. He prepared a list of 100 words. The patient is given one of these words and asked to say the first thing that comes to his mind. The physician measures with a stop watch the time that elapses between his pronouncing the word and the patient's response by another word. The whole list is gone through, the word of response and the reaction time being recorded. When this is over the list is repeated and the patient is asked to give the same association as he gave previously. This in general he will be able to do. Note is now taken of the associations that were exceptionally long, i.e., anything over three seconds, of the forgotten associations, of the associations that seem peculiar and unnatural, of associations which seem to arouse some kind of emotional response in the patient; all such associations are recorded as complex indicators. They call up the complex and are therefore delayed, or another word which does not refer to the complex is chosen by the patient instead, and so reaction time is retarded. The physician then takes a complex indicator and asks the patient to recall whatever comes to his mind, that is, give a series of associations having their starting point in the complex indicator. This series of associations frequently leads to the complex.

4. *Galvanopsychic reaction.* In this method a series of words is used just as in the last. The indication of the complex is found by means of the galvanopsychic reaction. This is obtained as follows: A beam of light is thrown upon the mirror of a delicate galvanometer and reflected on a transparent scale. When the galvanometer swings, the movement of this beam of light can be observed on the scale. Electrodes from the galvanometer are connected with some part of the patient's body. The galvanometer swings at once, but settles down after a bit to an angle of rest. When a word is spoken it will give a swing, the extent of which may be observed by means of the scale. Some words cause swings that are three or four times more extensive than the others. These are looked upon as complex indicators. I have never used the method, but saw it in operation in the hands of Doctor von Stauffenberg in Munich. A child of 13 was being observed who came to the hospital with an hysterical paralysis.

All words referring to home gave relatively wide swings and it was, therefore, concluded that the child's home relations were unpleasant, which afterward proved to be the case.

5. *Method of partial hypnosis.* The German psychiatrist, Frank, has advocated[1] the investigation of the unconscious in a kind of semihypnotic condition in which conscious attention is not wholly excluded. He produces a mild degree of hypnosis and then asks the patient to recount any images or scenes that he experiences. He finds that some patients under these circumstances experience more or less exciting instances of the past and after having lived these instances over again they are free from their anxiety. The following case will explain the method. He gives an account "of a thirty-eight year old man, a motorman on the city streetcar line. The patient complained of strong pressure in the head, flushing, and especially of vertigo. The symptoms were of four years' duration. He slept well, dreamed a great deal but without anxiety. During the day also he did not suffer from anxiety. Physical examination was negative except for exaggerated knee jerks. A thorough examination of the ear by a specialist revealed no cause for vertigo. The patient was very testy, easily breaking out into anger, forgetting himself in conversation. He complained of headaches which radiated from the occipital to the frontal region. The chief symptom was vertigo, which utterly depressed him. This vertigo always set in when the patient left his streetcar. As long as his attention was occupied with his work as a motorman he felt absolutely nothing. But on leaving his car the vertigo would last for hours, in fact until he would go to bed. Momentarily he would at times experience a hot flushing in the head which obscured a drumming sensation. The condition developed most insidiously, so at first he attributed the cause to his diet, until finally he noticed that neither this nor alcoholic drinks (patient has always been a total abstainer) nor smoking had the slightest influence. On the streets, men and houses would become blurred to him, on the car the phenomena appeared as soon as he no longer had to fix his attention on his work. He attempted, therefore, as much as he could, in spite of the prohibition, to talk with passengers in order to divert his attention. He was therefore glad if anyone came near him so that he could enter into a conversation. Analysis in the semihypnotic condition brought out a whole series of frights and states of anxiety which he had formerly experienced, especially when on duty on his car. With the abreaction, the vertigo decreased and after experiencing over again an especially terrifying scene, the patient was free from all pathological phenomena, so that he felt as if born anew."

[1] "Die Determination physischer und psychischer Symptome im Unterbewusstsein," *J. f. Psychol. u. Neurol.*, XIX, Supp. 1, 249–342, 1912.

Frank attributes the reason for the improvement to what he terms the abreaction. He thinks that past emotional experiences for one reason or another were repressed as to their manifestations, producing a state of tension, and when these emotions are lived through again in a semihypnotic condition and allowed to discharge their emotional resonance, this condition of tension is relieved. Whether or not his theory is correct, the method is capable of doing the same thing as the Freudian method of free association and may sometimes be used with success when Freud's method calls forth no associations. Some have attempted to investigate the complex by questioning in a condition of deep hypnosis. Such a method, however, is of limited application and does not seem to lead to a satisfactory analysis.

*Automatic Writing.* Dr. Anita Mühl developed[2] the technique of automatic writing for the investigation of the unconscious. A pencil is placed in the patient's hand and the arm hung from some fixture above, so that writing movements on the sheet of paper underneath are unobstructed. The patient's attention is then distracted by giving him a book to read. Some patients commence to execute automatic phenomena very readily: Draw pictures, relate fanciful stories, which may be written every alternate line in mirror script, etc. She maintains that the method "may be used as a successful adjunct to psychoanalysis. . . . Once succeding in getting the patient to 'automat,' the unconscious gives up its material much more readily and for some reason a patient seems to accept her unconscious problems with much less disbelief when she sees them on paper written by herself, rather than if she merely utters them verbally. The patient may write just simple words, or only nonsense syllables but even so each of these by means of free association will generally go back to conflict material."

Simple as the method is, it must not be regarded as a parlor experiment. Dangerous symptoms developed in one of her patients and the writing had to be discontinued. Automatic writing is for serious use by the competent only.

[2] *J. Abnorm. Psychol. & Sociol.*, July–September, 1922; April–June, 1923.

## Chapter 7

# THE SUBJECT MATTER OF PSYCHOLOGY

Until the 20th century one could assume that consciousness was the proper subject matter of psychology. But in the first quarter of the twentieth century there arose a movement in Russia which was transplanted to this country and on American soil lead to the view that man's external acts or behavior and not consciousness is the proper subject matter of psychology and a little later to the denial of the very existence of anything that could be termed consciousness.

The Russian movement was made known to the world by the attention given to Pavlov's experiments on the secretion of saliva in dogs. His work grew out of the observation that saliva is secreted by the dog not only when food is placed in the dog's mouth but also when it is merely shown him.[1] Pavlov distinguished, therefore, between two types of reflex action: (1) the organic or unconditioned reflexes, those, namely, that take place promptly and immediately and constantly whenever the appropriate end organ is stimulated; and (2) the psychic or conditioned reflexes which take place only if a number of conditions are fulfilled.

Bechterew extended Pavlov's work on salivary secretion to the voluntary muscles and found that conditioned reflexes may be obtained not only in salivary glands but also in the voluntary musculature.

Kostyleff hailed this as demonstrating that "acts generally considered as spontaneous and free can be associated with external stimuli and produced in the same manner as reflexes."[2] He even went so far as to maintain that the reflexes studied by Pavlov and Bechterew are the essential elements of our images and ideas.

In general, however, the early Russian school spoke as if conscious processes existed along with various physical reactions of the organism, and, admitting the real existence of consciousness, they conceived of it as merely one type of brain process. Thus Bechterew writes:

> On our part we do not think of denying "psychic" reality, but we are justified in maintaining that it is not something isolated from brain processes. . . . Still, not every brain process is at the same time a psychical process, and, therefore, the concept of brain process is wider than that of psychical process.[3]

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[1] Pavlov, I. P., "Psychische Erregung der Speicheldrüsen." *Ergebn. d. Physiol.*, 3(Abstr. 1): 177–193, 1904.

[2] *Le mecanisme cérébral de la pensée.* Paris, 1914, p. 15.

[3] Vladimir Michailovitch Bechterew, *General Principles of Human Reflexology*, Translated by Emma and William Murphy. New York, International Publishers, 1932, p. 44.

This was written before the results of extirpation of massive regions of the human brain were generally known and without any consideration of many facts that indicate that some mental processes are in some way independent of the nervous system.[4]

Ludwig Klages has well expressed the difficulty of identifying conscious experience with a chemical, or physical, process of some kind in the nervous system.

> The occurrence of sensory experience is bound up with certain things that transpire in the body: namely, in the peripheral organs of sense, the sensory nerves and the sensory centers; and the natural scientist is inclined to identify the sensory experience with occurrences in the body. This concept is false for two reasons.
>
> *a*) If the sensory experience, for example of the color red, were identical with molecular movements in the visual apparatus, then we should experience the red within our head and not as outside ourselves.
>
> *b*) Then also should person A be able to experience the "red" experience of the person B, provided only it were possible to transilluminate that which transpires in the visual apparatus. But even if we could see all the molecular movements in the sensorium of a person who at the time was experiencing red, nevertheless we would see only molecular movements and not the least trace of the red experienced. One can see colors, but not see the seeing. One can hear tones, but not hear the hearing and so on.[5]

But in America, the land of unlimited possibilities, even before the transplantation of the Russian reflexology to the United States and its baptism by Watson as behaviorism, distrust of and denial of the existence of consciousness had already found its way into the mind of no less a person than William James. Frost quotes him as remarking, "For twenty years past I have mistrusted consciousness as an entity; for seven or eight years past I have suggested its non-existence to my students. . . . It seems to me that the hour is ripe for it to be openly and universally discarded."[6]

Reflexology, while admitting the existence of consciousness, maintained that "the study of subjective or conscious processes . . . can nowise be regarded as a branch of natural science, for in any science the method of investigation is primary, and the method of natural science has hitherto been strictly objective and will remain so."[7]

The study of consciousness is rejected because no one can say just what consciousness is in its intimate essential nature. And yet natural science

[4] The problem has been discussed in some detail in T. V. Moore's *Cognitive Psychology* (Philadelphia, J. B. Lippincott Co., 1939) Part I, which appeared originally as "Consciousness and the Nervous System." *Studies in Psychol. & Psychiat.*, **4**: no. 3, 1938.

[5] Ludwig Klages, *Vom Wesen des Bewusstseins.* 3rd ed., Leipzig, Barth, 1933, p. 10.

[6] Quoted by Frost in *Psychol. Rev.*, **21**: 204, 1914.

[7] Bechterew, *op. cit.*, p. 20.

has studied gravity and electricity for generations and no one yet knows just what they are.

But it is not at all essential or advisable for psychology to parade as a natural science, if we understand by a natural science one that seeks all its explanations in terms of natural energy where energy is equal to one half the mechanical mass times the square of the velocity.

There are phenomena which are not governed by the transformations of natural energy and some of these phenomena belong to the field of psychological investigation, as, for instance, the events that transpire in the human mind when it studies a problem, formulates and appropriates a principle, and draws a conclusion. Many, too, of the phenomena of our affective life cannot be reduced to transformations of natural energy. And the attempt to write books whose subject matter is derived wholly from the data of reflexology and use them as aids in the problems of mental adjustment ends in a failure to produce anything of human value in managing the actual problems of life.[8] There is evidently a need for something else besides reflexology when we wish to deal with human problems and mental patients.

This book is written to serve as a psychological basis for understanding the problems of the mind. It discusses conscious experience rather than organic reflexes.

In view of the criticisms of Russian authors and American behaviorists it might be well to start by a descriptive statement which will indicate clearly what we mean by the state of consciousness and the items of conscious experience.

If we consider various states and conditions in which a human being finds himself, we can distinguish one in which a man may become (a) aware of objects and events in the world around him, (b) evaluate these objects and events for all practical purposes, and (c) make adequate use of past experience in adjustment to the needs of the present moment.[9]

We can also distinguish a state of mind such as coma in which it is utterly impossible for the individual to be aware of anything that transpires in the world around him. Something akin to coma is found in a state of deep sleep. It differs from coma not only in its being a normal natural phase of human life, but also in the fact that one can be awakened from deep sleep by strong sensory stimulation, but in coma there is not the least response to any stimuli, however intense.

By observing the results of a person's response to stimulation, his reactions and adjustments or the lack of any reaction whatsoever, it is

[8] Cf. Chapter 1, p. 1.

[9] For a fuller discussion, see T. V. Moore, *Cognitive Psychology*, 3 ff.

possible for observers to determine whether or not he is wide awake, asleep, or in a state of coma.

The individual himself who has been awake and asleep, who has experienced the effects of a general anesthetic, or perhaps has been in and come out of a state of coma, has personal experience of the difference between states in which he is wide awake and others in which he is more or less incapable of response to stimulation.

Furthermore, when wide awake he can distinguish two types of response, as, for instance, when one taps his patella tendon, he can see like any other observer the kick of his own leg, but he experiences what observers do not experience: (a) an awareness, which he terms a sensation, which seems to be produced by the blow of the hammer, and (b) a group of sensations of another character which derive from the passive movement of the leg. These experiences, which he can observe but those who look on cannot observe, are termed conscious experiences.

Considerations such as these define in a descriptive manner, but with adequate clearness, what we mean by a state of consciousness as contrasted with unconsciousness and our own conscious experiences which others cannot observe as distinct from various reactions or responses which may be observed by others as well as ourselves.

These conscious experiences are the proper subject matter of psychology.

A logical classification of the phenomena of consciousness is given on page 106.

In comparing our mental life to a stream that is constantly flowing, we have implied that consciousness is continuous and not a group of unconnected states of mind. While this is so, it does not prevent or exclude the possibility of recognizing in our mental life various elements and typical combinations of elements different from and capable of being identified with each other, but which evidently have the one characteristic in common—that they are conscious or in some manner concerned with consciousness.

Fundamental differences in the states of consciousness have been recognized from the earliest days of Greek philosophy, or at least from the time when Alcmaeon and Anaxagoras (500 B.C.) distinguished the νοῦς from sensory forms of mental content. This distinction between sensory and intellectual forms of presentation was recognized as fundamental from the days of Alcmaeon and Anaxagoras until the rise of sensationalism in modern philosophy. Besides this distinction there was recognized very early a fundamental difference between the two forms of *cognition*, sensory or intellectual, and the *affective* life of the emotions, desires, and volitional activity. The philosophy of Socrates clouded this distinction between

intellect and will when it did away with the virtue of temperance and maintained that all virtues were forms of prudence. Stoics attempted to explain the affective mental states in terms of our intellectual life. But in scholastic philosophy, the twofold distinction between the sensory and the intellectual, the cognitive and the appetitive, was made the fundamental basis for the classification of the forms of consciousness. So that the following dual classification became the basis of scholastic psychology.

*SCHOLASTIC CLASSIFICATION*

Mental faculties
- Cognitive—soul takes in object
  - Rational
  - Sensuous
    - External
    - Internal
- Appetitive—soul turns towards or away from object
  - Rational
  - Sensuous

*Origin of Triple Division.* The dual classification was dominant until the eighteenth century. John George Sulzer (1720–1779) in his Berlin lectures in 1751 is said to have departed for the first time from the traditional division of mental faculties into representative and appetitive. At all events, Immanuel Kant made the triple division of psychical functions into ideation, feeling, and willing the systematic basis for his philosophy. It is questionable, however, whether this triple division is justifiable, for feeling and willing, as we shall see, seem to be more closely united to each other than to ideation. They may, therefore, be conceived as subdivisions of one group rather than as parallel divisions of the forms of consciousness.

None of these classifications clearly distinguishes the following three forms of mental activities.

1. *Mental functions.* By this I mean the mechanism by which the forms of awareness are produced.

2. *Mental products.* By this I mean the resultant of the activity of the mental functions, the forms of awareness themselves.

3. *Mental dispositions.* By this I mean the trace that is left of the change that is wrought in the psyche as a result of the activity of any of the mental functions.

Let us now consider this tripartite division a little more in detail. It is a tripartite division in a different sense from that of Kant. Kant was classifying mental products. We are here classifying the fundamental activities of the psyche. The mental products, as we shall see, naturally fall into a binary classification.

1. *Mental functions.* When consciousness first appears in the mental life of a child, or when, in later life, a state of consciousness suddenly bursts upon the mind, there is always some sort of mechanism, mental or

physiological or both together, which is involved in its production. Thus, whenever we perceive a sensation of any kind whatsoever, there is an activity of the sense organ and a corresponding activity of the psyche, as a result of which we become aware of some sense quality as a light or a tone, an odor, etc. This awareness of sense quality is a sensation. We may clearly distinguish between sensation and *a* sensation, that is, between sensation as a function and sensation as a product. In the same way we may distinguish between association as a function and association as a product, memory as a function and memory as a product; in fact, for every single one of the forms of awareness, there must be a corresponding mechanism of production. There are, therefore, just as many mechanisms of production as there are products, just as many functions of the mind as there are forms of awareness. It is characteristic of all our mental functions that they are themselves unconscious both in their physiological and their psychological stage, if such a psychological stage is present as something distinct from the end product, or the state of awareness itself. No one is conscious of what goes on in his eye when he sees, nor in the optic nerve, nor in the brain; no one is conscious of what takes place in the brain or in the psyche when one remembers, or when one attends, etc. We are only aware of the end result, *a* memory, not the process of remembering, *a* judgment, *an* insight into the truth of a sequence of propositions that we term reasoning, *an* increase of clearness when something passes from the background of consciousness to the focus point in the act of attention.

2. *Mental products.* Mental products are the elements of consciousness *par excellence*, the elements that have been classified in most attempts to analyze our states of mind. It is to the mental product that James refers when he likens consciousness to a stream. They constitute, too, those subconscious mental elements that he spoke of as the fringe of consciousness, and they also constitute the elements of mental life, if any such there are, that make up the fabric of the unconscious. There are no mental products before the operation of the machinery of the mind. What is native to the mind, what is inborn and not made, is the mechanism of the mental functions, the ability to see, to hear, to understand, to read, and to attend, etc. No mental product could be in the mind before the machinery is sufficiently developed to fulfil its normal functions.

3. *Mental dispositions.* The mind at birth has been likened to a *tabula rasa*. As life proceeds the tablet of the mind commences to be filled with all sorts of writings. Whenever a mental function operates, it not only produces a transitory glow like the flashing of a firefly in the night, but it leaves a trace that is more or less permanent on the psyche. These traces, the abiding resultant of the activity of the mental functions, constitute what we may term our mental dispositions. We might term these mental

dispositions unconscious mental products to distinguish them from the conscious mental products, the states of awareness that make up the flow of consciousness.

## Classifications of Mental Functions

Theoretically, every mental product, as we have said, must have its corresponding mental function by means of which it comes into being. We might, therefore, classify our mental functions, just as we do our mental products. When, however, we come to analyze the mechanism of the mind, we find that while we know a great deal about the mental functions that produce our representative mental states, that is, sensations, ideas, judgments, reason, etc., we know very little about the mental functions that result in the affective elements of our mental life. On this account, in the schema that is to follow we shall make no attempt to include the affective mental functions, but simply refer to those functions concerning which we have a considerable amount of information.

There are three classes of mental functions, those that have to do with (1) reception, (2) construction, and (3) conservation. *The functions of reception* are those by means of which knowledge is received into the mind. The chief functions of reception are attention and perception. Attention is conceived of here as truly a function by means of which a state of consciousness is brought from the background to the focus point of consciousness. According to Titchener, attention is not a function but a definite form of awareness, namely, sensory clearness. In the schema here outlined, attention is a mental function, its product is what Titchener terms "clearness." Certainly there must be some mechanism by means of which what is in the background of consciousness is brought to the foreground. This mechanism, whatever it may be, we speak of as attention.

Perception is the other receptive function. It may be defined as that mental function by which we interpret stimuli, or as that mental function by means of which incoming sensations are assimilated to appropriate images and pertinent categories of past experience.

The second group of mental *functions* are those *of construction.* Here we have association, judgment, and reason. The attempt of Binet to identify perception, judgment and reasoning and explain them as forms of association can no longer be regarded as tenable since Lindworsky's[10] brilliant analysis of the process of reasoning.

Light may recall, by association, red, but that is a very different thing from the statement which corresponds to the judgment that the light

[10] *Das schlussfolgernde Denken*, Freiburg, 1916, pp. xvi and 454; *Ergänzungsheft zu den Stimmen der Zeit. II Reihe: Forschungen*, no. I.

is red, different because of its objective reference and the actual assent of the mind to the validity of the reference. It is this objective reference and inner assent based upon insight which differentiates judgment from mere association. Two truths may be in the mind some time before one sees the relation between them. Once this relationship is perceived, there may dawn upon the mind the truth of a third principle different from the others, but evidently implicitly contained in them. This insight into the fact that because this truth is so and the second truth is so, therefore, a third must be so, is something different from a mere judgment or the association of one idea with another. It is a perception of dependence, an insight into causal background, which cannot be identified with the mere objective reference with assent that characterizes judgment.

The third group of mental functions has to do with the *conservation of the data of perception*. This function may be broadly designated as memory. Just as perception is both sensory and intellectual, so also memory, which is the conservation of the data of perception, is sensory and intellectual. One may have an image of the dome of the capitol or the Washington monument and may remember that both the dome and the monument are white and that both at times are illuminated at night; one may also recall the steps in the demonstration of a proposition in geometry. The insight into relationships which facilitates the memorizing of geometrical sequences is quite a different thing from the rising before the mind of visual images. It is impossible to learn geometry by heart; it is fairly easy for some to learn it by insight into relations. We have, therefore, both a sensory and an intellectual memory. But, you may ask, why is memory brought in as among the mental functions? How is the mental function of conservation to be distinguished from the traces which are classified under mental dispositions? Memory may be regarded from two points of view. In the first place it may be looked upon as a trace, and, if one looks upon it in this way, it belongs to the group of mental dispositions. It may, however, be looked upon from a very different point of view. In order that one may actually recall, the trace must be activated. It must not remain an unconscious affair in the brain or in the psyche but *a* memory must result, *an* image must come before the mind, *a* relationship must be perceived. Conceived of in this way, memory is a function which leads to the product, the individual memory, just as the process of sensation leads to its product, a particular sensation.

## Classification of Mental Products

The foundation of the dual classification of mental products is found in the fact that the mind receives impressions and reacts to the impressions

that it receives. The impressions received are the representative or cognitive elements. The reactions to these impressions are the affective or appetitive elements of our mental life. The mental products of reception may be conceived as actions of the mind in the presence of stimuli. They are representative in character; they picture to us the world outside. These pictures are of two kinds, corresponding to the two kinds of perception, i.e., sensory and intellectual. The sensory representative mental states may be subdivided into external and internal. The external are sensations, the internal are our images, the *phantasmata* of scholastic philosophy. The intellectual representations are our abstract ideas, different from the images and sensations themselves.

The mind not only receives impressions from without but reacts to these impressions in characteristic ways. These reactions of the mind to the stimuli that it receives are the elements of our affective mental life. It is possible for us to react to impressions in two ways.

*a*) We may welcome them, choose them, accept them or reject them, draw our mind away from them or open it to the fullness of perception. These voluntary reactions of the mind are our acts of will.

*b*) Not all reactions of the mind are voluntary. Some are necessary. Thus some things please us whether we will or not. Others displease us without any design on our part. Several forms of necessary reactions may be distinguished. We may mention here reflex action. It is not, strictly speaking, a conscious process. It belongs not to psychology but to physiology. Nevertheless, the school of behaviorism maintains that conscious phenomena are to be interpreted in terms of reflex action. And so in the schema of the elements of our mental life, reflex action may be mentioned here, as it were, in parentheses. It is nothing more than a mechanically aroused response of a muscle or gland to the stimulus with which it is organically associated, as, for instance, when the pupil of the eye contracts to light. The necessary reactions of our mind are of two kinds:

1. The affective reactions in the stricter sense. When a perception arouses our mind to activity, it is frequently pleasant or unpleasant. This peculiar way in which we are affected by the impression so that we like it or dislike it, is termed by psychologists a *feeling*. It is still a mooted point in psychology just how many elementary feelings there are. It is generally conceded that feelings are elements of our mental life. Whenever an affective reaction of this kind is violent, it embraces much more than mere pleasantness or unpleasantness. In the flow of emotional events there are sometimes deep intellectual insights into the present situation, a tremendous resonance throughout the whole body, all of which may be united into one complex, termed *emotion*.

2. The second group of reactions of consciousness may be termed conative. Every mental ability, every function has a native tendency to set itself in action. We have not only eyes but a curiosity to look, not only ears but a craving to hear, not only touch but a tendency to fondle. Thus every ability that we have creates a tendency within us to exercise it. Whenever we are in the presence of an opportunity of exercising any one of our mental abilities or mental functions, we perceive this native tendency. The awareness of this tendency to exercise one of our abilities or mental functions is what we term an *impulse*. There are just as many impulses as there are abilities. The term *instinct* is nothing more or less than a name in popular usage given to a group of impulses. Genuine instincts have a negligible role in the mental life of man. Thus, the instinct of self-preservation is the name describing the tendency of a human being to make use of all his abilities, whatever they may be, to help him out of danger. By *desire* we may designate the craving that we experience to exercise abilities when an opportunity for doing so is not present. Desires, therefore, may be classified in the same way as impulses and they are measured by the number of human abilities.

### Classification of Mental Dispositions

Mental dispositions may be subdivided into general and special. An arbitrary division may be made of the general into temperament and character, a distinction similar to that which Kant made between what he spoke of as the sensory and intellectual character. Thus, he said that at birth an individual is endowed with a group of tendencies and impulses so that the child seeks what he wants without regard to any ideal of conduct or any principle whatsoever. As time goes on, however, the mind comes under the influence of the ideals of conduct that Kant spoke of as the "categorical imperative." Then the original native dispositions are modified and made to conform to an ideal. This distinction put forth in the writings of Kant is not original with this German philosopher, it goes back to St. Paul himself, who complained that "I do not that good which I will; but the evil which I hate, that I do." (Rom. 7:15.)

We may designate the primitive, unformed, native dispositions of a child as temperament. Temperament modified by training and the implantation of ideals of conduct results in something which may be externally very different from its beginning. It is the character of the individual.

Besides these general dispositions of the mind there are special ones, habits, which are formed and facilitate the performance of numerous activities. These habits, from the ethical but not psychological point

of view, may be classified as good, bad, or indifferent. Bad habits are vices and good habits are virtues.

- Elements of Mind
  - Mental functions
    - Reception
      - Attention
      - Perception
        - Sensory
        - Intellectual
    - Construction
      - Association
      - Judgment
      - Reason
    - Conservation
      - Sensory
      - Intellectual
  - Mental products
    - Representative, *actions* of consciousness
      - Sensory
        - External—sensations
        - Internal—images (phantasms)
      - Intellectual—abstract idea
    - Appetitive, *reactions* of consciousness
      - Necessary
        - (*Reflex action*)
        - Affective
          - Feeling
          - Emotion
        - Conative
          - Impulse
          - Desire
          - (Instinct)
      - Free—act of will
  - Mental dispositions
    - General
      - Temperament (native)
      - Character (acquired, result of voluntary action)
    - Special
      - Habits
        - Good—virtues
        - Indifferent
        - Bad—vices

Of such elements then is the stream of our mental life composed. In dynamic psychology we consider only one group of these elements—the reactions of consciousness. It is a group, however, that is most necessary to comprehend in order to understand ourselves and others, and to develop our lives so that it will be possible to come to a satisfactory solution of the eternally persistent riddle of existence.

# PART III
# HUMAN EMOTIONAL LIFE

## CHAPTER 8
## THE PSYCHOLOGY OF THE EMOTIONS

A CONSIDERATION of the schema of the classification of mental phenomena in the previous chapter has already revealed to us something about the nature of the emotions.

1. They are reactions to cognitive experience.

2. They are involuntary or necessary reactions. St. Thomas would express this by saying that they are reactions of the sensory *appetitus* to values perceived.[1] Let us use the term "sensory craving" to express the Thomistic concept of *appetitus sensitivus*, and "will" to designate *appetitus intellectivus*.

What is it that reacts *in affective experience*? The whole nature of man. Allers expresses this as follows:

> An emotion is a mental state of peculiar character by which an individual responds to the awareness of a pleasant or unpleasant situation, or any other aspect of a situation entailing goodness or badness. This response is of the whole individual, mental and bodily, not of the mind or of consciousness alone.[2]

The importance of the bodily resonance in emotional experience was expressed by St. Thomas in the words: *Passio proprie invenitur ubi est transmutatio corporalis*.[3] "Emotion has as its home a substrate in which bodily changes transpire."

It might be well to point out here that the specific essential emotional reaction is one thing and a much simpler thing than the entire sequence of events in an affective experience. *Essentially* an emotion does not involve the higher generalizations of the intellect nor true volitional activity, but both may appear *concomitantly* or successively in the entire sequence of events in an affective experience. And it may at times be important to consider the entire sequence of events in order to understand a person's behavior rather than to confine our attention to what might be termed the bare essence of the emotion as such.

Emotional reactions are not called forth by events and objects in the out-

[1] 1.2 Q XXII, iii.
[2] Rudolf Allers, "The Cognitive Aspect of Emotions." *The Thomist*, 4: 590, 1942.
[3] *Loc. cit.*

side world which have nothing to do with a person's weal or woe, but by such things as are of importance to the welfare of the individual.

"The good and evil which call forth the activity of our power of sensory craving are in the things themselves."[4]

How are these things known as good or evil? Let us first stop for a moment to analyze the interior senses according to St. Thomas.

Every animal must be equipped to receive information from the outside world, to store the information received and evaluate new information in the light of past experience.

The external senses in the first place transmit the primary sensory impression from the outside world. Then the internal senses come into play. The *synthetic sense* (sensus communis) enables the animal to be aware of a unit object, not merely a medley of isolated sensations.

*Imagination* as conceived of by St. Thomas stores sensory experience but does not label it as belonging to the past.

*Sensory memory* transcends the bare conservation of these sense qualities and enables us to recognize reawakened images of the past as having been perceived before.

Then there is in animals a power of evaluating present perceptions in the light of past experience, which power evidently cannot be the function of any specific sense such as vision, which merely transmits shades of color and brightness.

In man the analogue of this *vis aestimativa* was termed by St. Thomas the *vis cogitativa*. This power takes cognizance of and evaluates the perception of individual objects[5] in the light of intellectual experience.

Consequently, when an emotion is aroused by the perception of an individual object, one need not suppose any higher activity than that of the *vis cogitativa* of St. Thomas.

Thus Allers in the illuminating article above referred to writes,

> Emotions (or the *passiones animae*) arise—according to traditional interpretation —as correlates to the movements of the sensory appetites. These appetites are roused by the awareness of goods or evils envisioned in the particular object or situation actually confronting the individual. This awareness is the achievement of the cogitative power (*vis cogitativa*). This internal sense is the faculty which mediates the cognition implied in emotion.[6]

But there are situations in which no mere single object is involved and the emotional reaction is not an evaluation of the singular followed by a

[4] *Summa Theologica.* 1.2 Q XXII, ii.

[5] Cf. T. V. Moore, *Cognitive Psychology.* Philadelphia, J. B. Lippincott Co., 1939, p. 123.

[6] *Loc. cit.*, p. 642.

prompt reaction of the apparatus of sensory craving; there takes place a complex series of events in which the whole man and all his powers are involved and the affective reaction is associated with complicated deductions and evaluations of consequences, clinging to ideals which intellect alone can conceive, along with volitional determinations and rejections.

It is well to point out here that all affective experiences are not reactions to cognitive experience. For there is much evidence, which will be presented later, to show that emotions are in a certain way similar to sensations; they may be directly aroused by the electrical, mechanical, or chemical stimulation of certain regions in the brain.

One might draw up a schema of mental life and recognize, in the first place,

*a*) Sensations produced by physical stimuli acting upon the organs of sense.

*b*) Intellectual insights and judgments that are transcortical in their essential nature and are not in themselves the physiological activities of nerve cells.

*c*) Volitional choice, which is also a transcortical function of the soul itself, selecting between ends, and means to ends, presented by intellectual insight.

One might then ask, what are emotions and where do they belong in the schema? And the answer is that they occupy a certain middle ground, inasmuch as

*a*) They may be aroused by stimulation of a certain region of the brain and in this way bear a resemblance to the sensations, for sensations involve the stimulation of certain areas of the cortex by means of the sense organs and the sensory pathways to the brain.

*b*) They bear a kind of resemblance to the will, because at times they are reactions to realizations of the whole meaning of a situation and its various implications, a realization which intellect alone is capable of obtaining. Let us take an example presented by the Jesuit Jungmann in his valuable treatise *Das Gemüth.*

As the prince of the Apostles denied his Master for the third time on the night of His passion—the cock crowed. And the Lord turned around and looked at Peter. And Peter remembered the word that the Lord had spoken to him, "Before the cock crows thou wilt deny Me thrice." And he went out and wept bitterly! In this case what was the object of the activity of the intellect that was followed by the emotion—the pain of the Apostle's remorse? The Evangelist has indicated it clearly enough. Peter remembered the word that the Lord had spoken to him. He thought of his Master and the happy days he had spent at His side—of the words of salvation that he had heard from His mouth, of the sublime graces he had received from Him. Those last hours came up before his mind which belonged to this very night of his own infidelity and cowardice—those hours of tender farewell, of the divine love, of the

incomprehensible condescension, of the first unbloody sacrifice of the New Testament, of the trembling and the agony of approaching death and the bloody sweat. And when over against all this he held up his thrice-repeated sin, he felt deep down in his heart how unworthily he had acted, because he had been ashamed of his Master and his God, because he had been false to the fidelity he had sworn and had torn asunder the bond of his friendship and his love. These were the thoughts that filled his soul with so much bitterness. This was the evil, the idea of which sunk his soul in a sea of burning pain. These were the goods on account of whose loss the tears of remorse streamed from his eyes. That such thoughts the reasoning soul alone is capable of thinking, that of such goods sense has no intimation, that such an evil would not worry the lower self, all that certainly needs no proof.[7]

Any candid examination of a profound emotional experience in man will reveal a very complex concatenation of events. No man reacts to a complex situation merely through the channels of sensory experience. All his powers of perception are involved, intellectual as well as sensory, and his reaction to what is perceived involves not only the sensory feelings, the clingings and rejections of sensory nature, but also the turning to or away from intellectual ends; and so, along with desires and cravings and sensory avulsions there is the higher spiritual activity of the will that turns to or away from ends of which intellect alone can be aware.

Considering the emotional reaction as a whole, Jungmann is certainly right in defining it as "a simultaneous activity of both appetitive faculties, the higher and the lower, called forth by the actual knowledge of a good or evil, which as such, reason alone can understand."[8]

From what we have just said it is clear that we regard the emotion as a specific conscious experience which results from a cognitive insight and evaluation of the good or ill that lurks in a present object or situation. Emotions however, as we have said, may be produced by appropriate stimulation of the hypothalamus, which sometimes gives rise to an intense affective experience, as well as a whole series of organic reactions.

Could the emotion be really nothing more nor less than the awareness of various bodily sensations resulting from cerebral stimulation or be produced in a reflex manner by cognitive presentations? This concept was put forward by James. It involves the denial of affective experience as a specific psychic entity and analyzes emotions into a number of sensations.

It is rather important for the theory of emotions to attempt to come to some conclusion on the validity of this interesting concept.

The problem raised by James makes a study of the physical manifestation of the emotions and the point of appearance of the conscious emotion in the sequence of events in an affective experience a matter of profound importance.

[7] Joseph Jungmann, *Das Gemüth*, Freiburg, Herder, 1885, pp. 88-89.
[8] *Ibid.*, p. 92.

There are three possibilities here:

1. If the emotion is the physiological resonance, it must always appear with the physiological resonance and fade when the resonance fades.

2. If the emotion is the perception of the resonance, it cannot arise before the resonance but must come a fraction of a second after the resonance.

3. If, however, it is the emotion itself which produces the resonance, the emotion must arise at least a fraction of a second prior to the resonance. If this is the case, then the emotional experience itself is the essential causal element in the affective sequence.

Let us therefore attempt to throw light on the nature of an emotion by a study of the point of appearance of the emotion in the sequence of events in affective experience. This, as we shall see, opens the way to the concept of the emotions as a reaction of the mind to cognitive experience.

We shall then enter more fully into the concept of the relation between emotions and cognitive experiences.

We shall commence with an outline of James' theory.

Is the bodily resonance the cause or the effect of the emotion? By bodily resonance is here understood the many phenomena which go to make up what is usually termed the expression of the emotion, that is to say, the activity of the facial muscles, the changes in the rate of heartbeat and of its intensity, the changes in respiration, the visceral effects, the glandular secretions, such as the beads of perspiration, or the paralysis of secretions, such as the dry throat, etc. These phenomena constitute bodily resonance. From the days of Aristotle through medieval philosophy, down almost to the present, these phenomena have been looked upon as the effects of the emotion and not its cause—as the emotional expression and not its constituent elements. In the nineteenth century two men at approximately the same time put forward the view that the ordinary interpretation of the situation is just the reverse of what it should be, namely that a perception produces the emotion, but that the perception of the bodily resonance is the emotion. According to the traditional view, the perception produces the emotion and the emotion produces a bodily resonance. The new theory is named after the two men who first propounded it and is therefore termed the Lange-James theory of the emotions. James states the theory as follows:

> Our natural way of thinking about these coarser emotions is that the mental perception of some fact excites mental affection called the emotion, and that this latter state of mind gives rise to the bodily expression. My theory, on the contrary, is that the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur, is the emotion.[9]

[9] William James, *Psychology* (Briefer Course), New York, Henry Holt & Co., 1907, p. 375.

According to this view, therefore, it is more true to say that we are afraid because our hair stands on end rather than that our hair stands on end because we are afraid; that we are sorry because we cry rather than that we cry because we are sorry. To put the matter in James' own words:

> Common sense says, we lose our fortune, we are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble; and not that we cry, strike, or tremble because we are sorry, angry, or fearful, as the case may be. Without the bodily states following on the perception, the latter could be purely cognitive in form, pale, colorless, destitute of emotional warmth. We might then see the bear and judge it best to run, receive the insult and deem it right to strike, but we should not actually feel afraid or angry.
>
> Stated in this crude way, the hypothesis is pretty sure to meet with immediate disbelief. And yet neither many nor far-fetched considerations are required to mitigate its paradoxical character, and possibly to produce conviction of its truth.[10]

James' proof of his theory is developed in an argument which may be summed up in three fundamental statements:

1. "Objects do excite bodily changes . . . so indefinite, numerous, and subtle that the entire organism may be called a sounding board which every change of consciousness, however slight, may make reverberate."[11]

This statement is proved by the citation of numerous examples of the bodily resonance.

In order, however, to prove the Lange-James theory, it is not sufficient to cite the fact of bodily resonance, but it is necessary to show its position in the temporal sequence of perception, resonance, and emotion. Does the emotion commence prior to the bodily resonance or is it perceived only at the time the subject perceives the bodily resonance or somewhat afterward? The *effect* cannot precede its *cause* in a temporal sequence of events. The all-important matter in deciding between the traditional and the new theory is precisely this temporal sequence. No massing of citations which refer only to the fact of bodily resonance suffices to clear up the problem of temporal sequence.

2. "Every one of the bodily changes whatsoever it be is felt, acutely or obscurely, the moment it occurs."

James proves this by an appeal to introspection. Here again the fact is common property. According to the traditional view as well as the Lange-James theory, the bodily resonance is perceived. There is no dispute about the perception of the bodily resonance. Everybody admits this. What

[10] *Ibid.*, pp. 375–376.

[11] *Principles of Psychology*, II, Chap. xxxv, 450.

we want to find out is whether or not the perception of the bodily resonance causes the emotion or the emotion causes the bodily resonance, which is then perceived as a further element in the affective complex.

3. "If we fancy some strong emotion and then try to abstract, from our consciousness of it, all the feelings of its bodily symptoms, we have nothing left behind."

This James proves by an appeal to introspection:

> What kind of an emotion of fear would be left if the feeling neither of quickened heart-beats nor of shallow breathing, neither of trembling lips nor of weakened limbs, neither of goose-flesh nor of visceral stirrings, were present, it is quite impossible for me to think. Can one fancy the state of rage and picture no ebullition in the chest, no flushing of the face, no dilation of the nostrils, no clenching of the teeth, no impulse to vigorous action, but in their stead limp muscles, calm breathing, and a placid face? The present writer, for one, certainly cannot. The rage is as completely evaporated as the sensation of its so-called manifestations, and the only thing that can be supposed to take its place is some cold-blooded and dispassionate judicial sentence, confined entirely to the intellectual realm, to the effect that a certain person or persons merit chastisement for their sins. In like manner of grief, what would it be without its tears, its sobs, its suffocation of the heart, its pang in the breast-bone? A feelingless cognition that certain circumstances are deplorable, and nothing more. Every passion in turn tells the same story. A disembodied human emotion is a sheer nonenity.[12]

It is quite true that we cannot imagine an emotion without its bodily expression any more than we can imagine ourselves standing by a hot fire without getting warm. And still, when we stand by a hot fire, the fire is the cause of our warmth and not our warmth the cause of the fire. We cannot imagine a cause operating without producing its effect. If we attempt to rid our imagination of the picture of the effect we spirit away the cause. James has simply pointed out in this stage of his argument that there is a causal relation between the emotion and its resonance. Everybody admits this. The question is which is cause and which is effect. James' argument does not help us to decide the point at issue. For even though I cannot imagine an emotion without its bodily expression, this does not prove that the emotion is the result of the bodily expression. For the reason why I cannot imagine myself in a great rage without certain bodily disturbances is that I cannot imagine a cause acting without producing its effect.

James maintains that there has been no experimental test of his theory. This would require, he says, a patient who would be absolutely anesthetic inside and out. He knew of only 3 such cases. In 2, he said, there were no data as to the emotional states. The third, he said, seemed to have manifested some emotion. This he explains by the supposition that this patient's emotional expressions may have been accompanied by a cold

[12] William James, *Psychology* (Briefer Course), 1907, pp. 379-380.

heart. It might be interesting, therefore, to examine what we know about the expression of the emotions in the light of the Lange-James theory.

Are the emotions produced by the perception of the bodily resonance or is the bodily resonance the effect of an emotional state? Later, we shall consider individually the various types of emotional expression, and we shall ask ourselves whether or not any one of these forms can possibly constitute the main element in the emotion. It is practically impossible to find a living human subject who is completely anesthetic both inside and out, as James admits, for the test of his theory. Such a patient, were the condition cerebral, would have to have a lesion completely separating the cortex from the subcortical ganglia. Such a patient would probably not live, and if he did live, he would be unable to tell us anything about his emotions. Were the lesion lower down, it would have to be multiple and involve all the sensory cranial nerves, both cervical sympathetics, both vagi as well as a cord lesion involving a complete sensory interruption. This would have to be below the origin of the phrenics in order that respiration might be maintained. A patient suffering from such multiple lesions would probably not live, and if he did, it is not likely that his vocal apparatus would be left intact and that his intelligence would remain unimpaired to give us a reliable account of his emotional states. It is very likely that most cases which have been reported of complete external and internal anesthesia are not organic but of an hysterical nature. From an hysterical patient we might learn anything that our theory of emotions would suggest. Cases such as those reported by M. d'Allonnes[13] are evidently of an hysterical nature. The woman he speaks of complained of being unable to feel either good or evil, content or regret. She said that she was "just like a dressed-up broomstick." His account of the case and the physical examination indicate an hysterical condition rather than an organic lesion. Only an organic loss of sensibility would suffice to test the Lange-James theory, because if one found a functional loss of sensibility and there accompanied it a loss of emotions, this also might be functional and due not to the loss of sensibility but to the factors which lay at the basis of the hysteria.

[13] D'Allonnes, R. G., "Rôle des sensations internes dans les émotions et dans la perception de la durée," *Rev. philosophique*, IX: 592–623, 1905.

## Chapter 9

# THE EXPRESSION OF THE EMOTIONS

## 1. Facial Expression

One of the most characteristic expressions of emotion is afforded by the play of the facial musculature.[1]

In 1807, Moreau (*Traité de Physionomie*) divided emotions into convulsive, oppressive, and expansive. Convulsive emotions were supposed to cause a general action of all the muscles of the face; the oppressive emotions cause a loss of tonus in the muscles of the face and therefore a lengthening of the face such as we see in the depressions. The expansive emotions, according to Moreau, produced an increase of tonus in the facial muscles and therefore a widening of the face, as in joy and pleasure.

In 1844, Charles Bell, in his *Anatomy and Philosophy of Expression*, put forward the view that the activity of the facial muscles is intimately connected with the action of the heart and lungs. The mouth and nose are organs of respiration. Respiration affects the movements of the mouth and the nose as well as the circulation. The circulation in turn affects respiration. Through the interplay of respiratory and circulatory functions the facial muscles are thrown into the activity of emotional expression.

In 1862, Duchenne of Boulogne published his *Mécanisme de la physionomie humaine*. This classical work put forward the view that each emotion has its typical expression. This expression is brought about by the activity of one or at most a few facial muscles. This view is demonstrated by photographs of facial expressions that were caused solely by electrical stimulation of the muscles involved. His subject was an elderly man who had lost sensibility to pain in the face. The skin of the face could, therefore, be stimulated by a faradic current without causing pain. It was, therefore, possible to stimulate his facial muscles without any tendency to cloud the effect by the expression of pain due to the stimulation itself. Anyone who has examined the photographs that Duchenne has given will recognize what excellent imitations they are of real emotional expressions. Thus, he found that the muscle of attention is the *frontalis;* the muscle of reflection, the *orbicularis oculi* (superior portion); the muscle of pain, the *corrugator supercilii;* the muscle of aggression, the *pyramidalis nasi;* the muscle of lasciviousness, the *transversalis nasi;* the muscle of joy and benev-

[1] For a history of the theories of physiognomy, cf. A. C. M. Audibert, "Étude sur la physionomie," *Thèse Bordeaux*, **26**: 120, 1892–93.

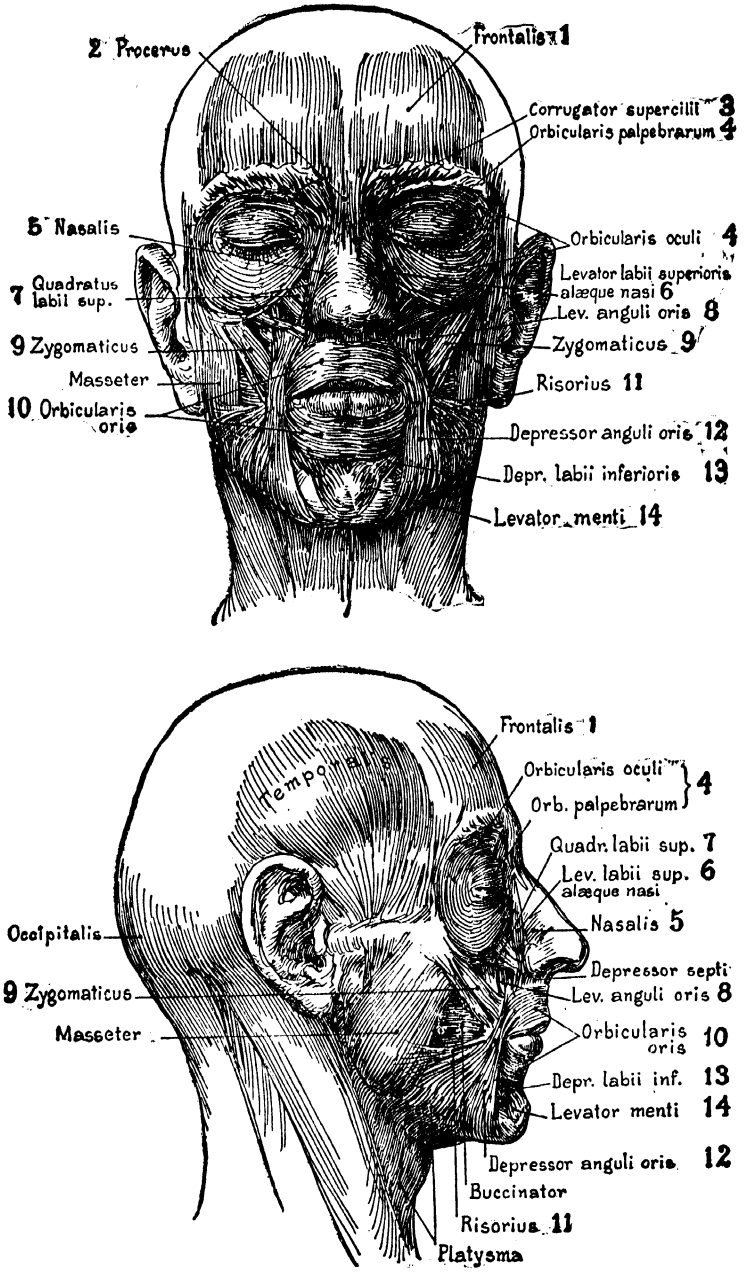



FIG. 12. MUSCLES OF EXPRESSION

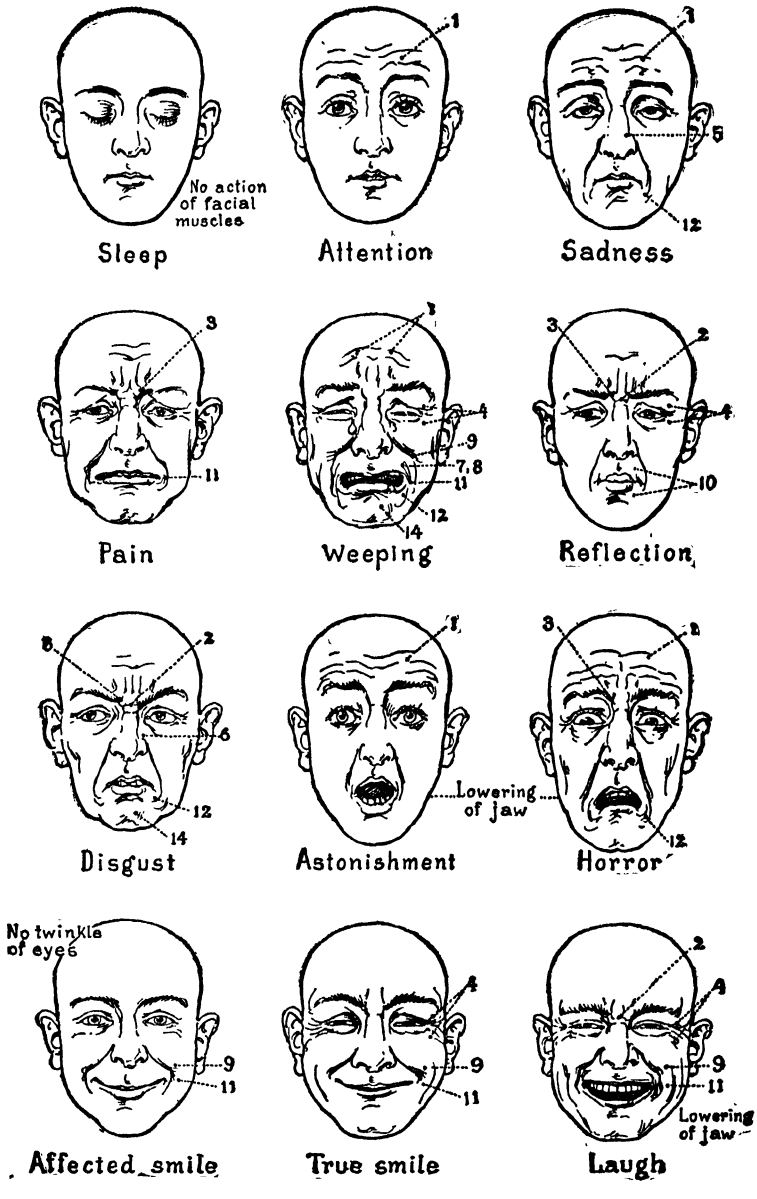



FIG. 13. MUSCLES OF EXPRESSION IN ACTION

Numbers are those of muscles shown in Figure 12. Each emotion is associated with a specific group of tension areas in the skin, whose production is due to a definite kinetic unit. The function of the emotional kinetic units is to manifest the subject's feelings to others, not to reveal them to himself.

olence, the inferior portion of the *orbicularis oculi* and the *zygomaticus major*, etc.

According to Duchenne, stimulation of the nerve trunk of the facialis can cause only a grimace and not an emotional expression. To obtain the emotional expression, one must stimulate definite muscles or groups of muscles at their points of election. If this is the case, and it seems likely that it is, the emotional expression must be elaborated somewhere within the encephalon.

G. Dumas[2] attempted to show that any light stimulation of the facial nerve would cause a smile. He gives three photographs of the results obtained. Two of these would seem rather to bear out the view of Duchenne that stimulation of the facial nerve produces a grimace, but not an emotional expression. In only one of the photographs does the expression resemble a smile, and this he admits was the best he was able to obtain. The smile in this case is a sickly smile, lacking in the smile of the eyes. Duchenne pointed this out as characteristic of the artificial or society smile. Anyone can raise the corners of his lips when he pleases, but he cannot when he pleases produce the merry twinkle of the eyes which is caused by the contraction of the *orbicularis oculi*. It would seem, therefore, that Dumas' theory that any light stimulation of the facial nerve causes a smile is unlikely. The emotional expression is elaborated in the central nervous system and is specific in character for each emotion. It is not the mere overflow of stimulation into motor channels of outlet.

The experiments of Bechterew[3] would indicate that the elaboration of the emotional expression is not in the cortex but probably in the optic thalamus or hypothalamic region, and perhaps also in parts of the lenticular and caudate nuclei. Bechterew separated the cortex from the optic thalamus in animals and found that mimicry was still possible with them. This, he says, was so in spite of their loss of intelligence and emotional life. It is hard to see how Bechterew proved that emotions were not present in these animals. He points out that mimicry was still possible with them. That is to say, they acted and behaved like animals experiencing an emotion. How does he know that they did not experience it? He simply assumes that the emotion was absent because the cortex was separated from the whole central nervous system from the thalamus down. His argument for assuming that the emotional expressions in these animals is pure mimicry was, *first*, because the uninjured animal often makes them spontaneously without sensory or visceral stimulation, but the animal deprived of its hemispheres makes these movements solely in response to external stimuli. *Second*, the uninjured animal is capable of inhibiting its facial movements

[2] "Le sourire," *Rev. philosophique*, LVIII: 1–23, 136–151, 1904.

[3] See d'Allonnes, J. psychol., III: 132–157, 1906.

in the presence of an external stimulus. His work does not show conclusively that the thalamic animal is absolutely devoid of emotional life.

Something akin to Bechterew's experiments with animals happens occasionally when a human being is afflicted with a thalamic lesion. Such patients, on wholly inadequate provocation, in spite of themselves, break out into spasmodic laughing or crying. They seem to be affected by the most violent sorrow or hilarious joy. If the Lange-James theory is correct, these individuals should experience the emotion corresponding to the outward expression, but, as a matter of fact, when thalamic patients burst out into laughter or into sobbing and tears, the only emotion they experience is, at times, one of shame for making such fools of themselves. They are neither gay nor sad but are forced against their will to give forth the most violent expressions of intense sorrow or joy. Otto Spiegel reports:

> The laughing is not the effect of mental abnormalities, but takes place without a happy idea and feeling of pleasure. Oppenheim has followed up this symptom carefully and has come to the conclusion that this laughter which takes place against the patient's will is to be numbered among the common symptoms (of multiple sclerosis) and is often present early in the disease. . . . But the inclination to passionate, convulsive outbreaks is by no means always present. But this mimicry is called forth only more easily than in healthy days and without a corresponding occasion. Its duration and intensity are generally more or less reinforced.
>
> On the basis of the cases I have studied, I have come to the same conclusions. This forced laughing was present in seven cases (out of thirty-four) and was experienced by the patients as really painful. Thus, a patient told me that it cost him a great deal of trouble during the period of his military service to suppress his laughter. And he designated this involuntary emotional expression as most tormenting.[4]

The pathological data of the phenomena of forced laughing and crying give negative evidence, therefore, against the Lange-James theory. Where one would expect to find confirmation of the theory, one discovers that the perception of bodily resonance does not constitute the emotion.

We may now ask whether or not facial expression helps to give a specific character to the whole emotional complex. It seems that it may be one of the elements in determining the peculiar specific characteristic of a definite emotional complex. The facial expression certainly varies with every emotion. This expression is produced mainly by the activity of one muscle or a group of muscles. Other muscles act in a secondary manner, reinforcing the effect of the principals. It is also true that we are conscious, though only dimly conscious, of the tension of these facial muscles—a tension which varies in its locality and distribution with every emotion. If we ask our-

[4] *Über psychische Störungen bei der disseminierten Sklerose,*" Berlin, 1891, III, p. 27.

selves whether or not the emotion consists in the perception of this facial expression, it must seem to impartial introspection that the perception of this facial tension, so obscurely conscious, is a very small element in the complex experience of the emotion. It may help to specify that experience, but its aid is unimportant and almost negligible. Persons suffering from a unilateral facial paralysis certainly do not have their emotional life reduced one half by such a trauma, nor could we get rid of a depression, or influence perceptibly a person's normal emotional life, by sectioning both facial nerves. We cannot hope, therefore, to get very far with the explanation of our emotional life by confining ourselves to a study of the tension of the facial muscles.

### 2. Cardiovascular and Respiratory Changes

The changes in respiration, increase in its frequency, variation in its depth or shallowness; variations in the rate and frequency of the heart-beat; the rise and fall of the blood pressure are phenomena which constitute a considerable portion of the bodily resonance of our emotions. It is possible for us to study these changes experimentally by two pieces of apparatus, the plethysmograph and the pneumograph. The plethysmograph was first used by the Italian physiologist, Mosso. It consists of a glass cylinder. One end of the cylinder is closed except for a stopcock through which water may be let in or out. The other end is open and provided with some kind of rubber cuff, or sleeve, into which the arm may be placed and by means of which the water in the cylinder is prevented from escaping. From the top of the cylinder projects a small tube into which the water rises when the cylinder is somewhat overfilled with water. The column of water in this tube rises and falls with each beat of the heart. It also rises and falls with increase and decrease in the volume of blood in the arm. This volume of blood in the arm is dependent upon the distribution of the blood in the rest of the body, which is again dependent upon the distribution of the vascular tension. This vascular tension varies in emotional states. By this apparatus, therefore, we have a means of studying the cardiovascular changes present in the emotions. A curve of these changes is obtained by connecting the top of the tube with a recording device known as a Marey tambour. This consists of a shallow metal cup covered above with a rubber diaphragm. The wall of the cup is pierced by a little tube which connects by a rubber tube with the top of the tube of the plethysmograph. It is readily seen that when the volume of the arm increases, the water in the tube of the plethysmograph rises and forces the diaphragm upward. A lever connected with the top of this diaphragm moves up and down, therefore, with the water in the plethysmograph. This lever writes on the smoked paper of a

revolving drum or kymograph, and thus a curve of the cardiovascular changes is obtained.

The pneumograph consists essentially of some kind of an elastic tube or capsule which is placed around the chest of a subject. The interior of this tube or capsule is connected by rubber tubing with a Marey tambour. It

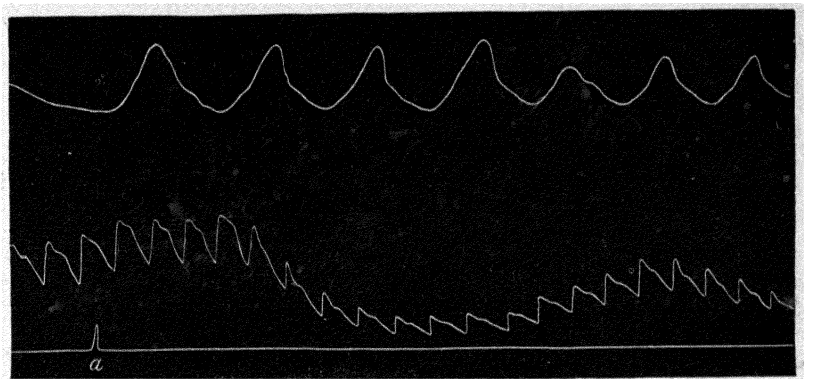



FIG. 14. Respiratory and volume-pulse curve following an emotion of fear. At (a) the emotion is experienced.

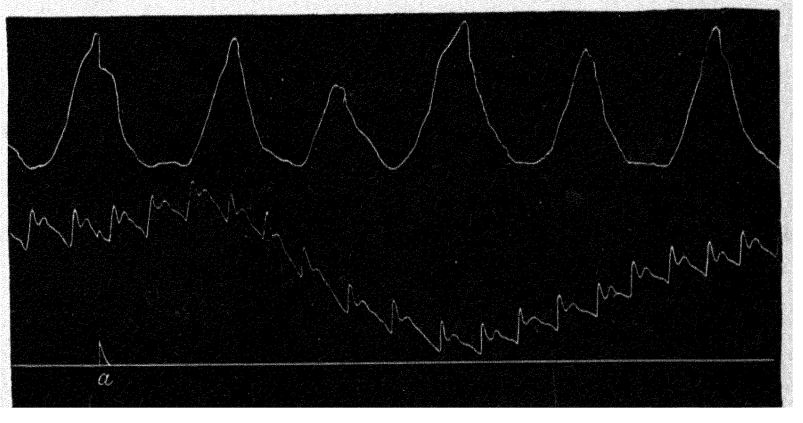



FIG. 15. Respiratory and volume-pulse curve during a weak pleasant-unpleasant emotional state. At (a) transition from pleasant to unpleasant mood.

is evident that, with the expansion and contraction of the chest, pressure is exerted upon the tube or capsule and air is forced out of the pneumograph or sucked back into it. This current of air operates the diaphragm of the Marey tambour which records the movements of respiration on the smoked paper of a revolving drum or kymograph.

One may experiment upon the emotional expressions in two ways.

1. By attempting to produce the emotion by external stimuli. This is easily possible for the simpler feelings of pleasure or pain. It is rather difficult for the more complex ones of joy, anger, etc.

2. By telling the subject to imagine something which makes him sorrowful or sad and to indicate the moment when he first feels his emotion by pressing some kind of a recording device.

According to the Lange-James theory of the emotions, one should experience the *emotion* after or at least simultaneously with the cardiovascular and respiratory changes, but, as a matter of fact, *these changes* take place always after experiencing the affective state. There is a definite interval between the stimulus causing pleasure or pain or between the movement made by the subject which indicates his emotion and the subsequent rise and fall of the lever indicating a change of blood volume in the arm.

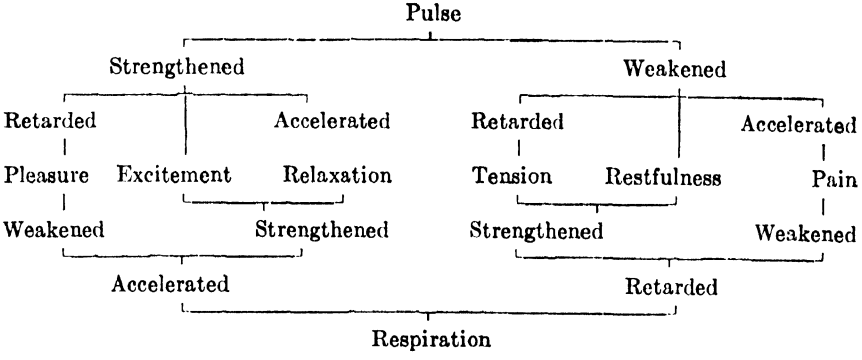
Experiments in hypnotism with suggested emotions give results which have some bearing upon the Lange-James theory of emotions. A suggested feeling such as a pleasant taste or a bad smell or a pain in the arm has no sensory cause which could reflexly determine the emotional expression. If the Lange-James theory is correct and the perception of the changes constitutes the bodily resonance, then we should expect that it would come definitely later than the changes recorded by the plethysmograph and the pneumograph. Experiments on this subject were made by the writer in association with Doctor Wrinch at the University of California. We found that suggested feelings produced qualitatively the same plethysmographic and pneumographic changes as feelings caused by actual sensations. There was no doubt, therefore, about the expression of the suggested feeling being identical with that of the real feeling caused by actual stimulation. The plethysmographic changes came definitely after the suggestion and at approximately the same interval of time as elapsed between the sensory stimulation and the cardiovascular and respiratory changes. There can be no cause of these changes except a mental state. The changes are not suggested by the experimenter but the emotion. It would seem, therefore, that suggested emotions produce the bodily changes and not that the bodily changes produce the suggested emotion.

We may now ask ourselves whether or not the cardiovascular and respiratory changes are specific in nature so that they vary with our different emotions. There can be no doubt that, in general, pleasant emotions slow and strengthen the pulse, unpleasant ones accelerate and weaken the pulse. Pleasant emotions, in general, accelerate breathing; unpleasant ones in general retard it. One will find variations from these characteristic changes in a series of experiments, but they may well be due to the clouding of one simple feeling by effects that are due to concomitant mental states. Wundt goes so far as to point out definite specific changes for all of his six forms of

feeling. He claims that characteristic respiratory and cardiovascular changes are to be found for these six forms of feeling in accordance with the accompanying schema. Other observers have not been able to confirm the results that were obtained in his laboratory.

It may be, though, that variations from the schema are due to clouding of a simple feeling by the presence of other feelings in consciousness. At best, however, the extent to which cardiovascular and respiratory changes are characteristic and specific to each emotion is a matter of serious doubt.

Quite another problem arises when we ask ourselves, can the perception of these changes constitute the emotion itself? Against this supposition is the fact that for milder intensities of feeling the normal subject is not aware




of any change in the action of his heart or of his respiration. He is, however, experiencing an emotional state and has no difficulty in reporting this as a fact of introspection. Whether or not his blood pressure is rising or falling, whether his heart is beating more or less intensely or with increased or reduced rapidity—of all this he has no inkling. Changes, therefore, that we may record, but of which we are not aware, cannot be looked upon as facts of experience, the consciousness of which constitutes our affective mental states. It would, therefore, seem that while cardiovascular and respiratory phenomena may to some extent be specific for different feelings and emotions, nevertheless, the dim perception of these changes cannot be looked upon as constituting the emotion itself. At most the perception of these changes can be an element in the sequence of events of intense emotional experiences. Here in all probability they become a very perceptible element in the bodily resonance and they may help to give to the emotion its peculiar characteristic, specific tone.

### 3. Visceral Changes

The perception of visceral changes comes to us, in the main, from afferent impulses that are brought to the sensory nervous system by sympathetic

fibers which pass from the sympathetic ganglia by way of the gray *rami communicantes* to the posterior roots of the spinal cord. Besides this route there is another. A considerable number of impulses get to the brain through the vagus and the glossopharyngeal nerves. Sherrington has made some experiments on dogs[5] which indicate that the perception of these visceral changes has nothing to do with the apparent emotional life of these animals. Sherrington severed the spinal cord of 5 puppies in the lower cervical region. This cuts off all visceral sensations except those that are mediated by the vagus and the glossopharyngeal. During many months of observation the dogs manifested no change whatever in their emotional behavior. Impartial observers were unable to detect any difference in their behavior from that of normal dogs. In two of the animals he later on cut both of the vagi. The emotional behavior of these animals remained entirely unaffected. There are two possible interpretations:

1. We may assume that the emotional expressions manifested after the operation represented true emotions. If this is so, then the perception of the visceral changes has nothing to do with an emotion.

2. The emotional expressions were merely mechanical reflexes and real emotions were lacking in these animals because the visceral changes were unperceived. If we assume that emotions were lacking in these operated animals, we must also assume that the perception by these animals of their emotional expressions could not constitute the emotion.

In other words, Sherrington's experiment, while not conclusive, rules out either the visceral changes or the facial expressions (pricking up the ears, etc.) as the essential constituent elements of the emotions.

The problem cannot be solved by animal experiment, for we can never learn from the animal whether or not it has any emotions. In human beings, however, who have suffered a fracture of the spine, producing a complete interruption somewhere in the cervical region of the cord, we do not find that their sorrow over their plight, their despair, their chagrin, or their depression when they look forward to the future of incurable paralytics are any less than that of other patients who because of some other injury are incapacitated for life. Loss, therefore, of all the visceral sensations except those mediated by the vagus or glossopharyngeal does not deaden the emotional life of human subjects. He would be a rash theorist indeed who would attempt to lessen the inner depression of the spinal paralytic by suggesting a sectioning of the vagi.

When James said[6] "that the best proof that the immediate cause of emotion is a physical effect on the nerves is furnished by *those pathological cases in which the emotion is objectless*," he should have considered that a patient's

[5] *Proc. Roy. Soc.*, LXVI: 390–403, 1900.

[6] *Psychology* (Briefer Course). New York, Henry Holt & Co., 1907, p. 377.

mode of action often seems objectless to us and wholly unmotivated because we do not know his inner trend of thought. The deeper we study the abnormal mind, the more we find that bizarre and unreasonable types of behavior have their roots in definite complexes which are often unconscious, at least in their relation to the subject's behavior. It is the complex which produces their apparently unmotivated emotional states. As for patients that he refers to, who suffer from precordial anxiety, modern psychoanalysis has found psychogenic factors in precisely this type of case. This anxiety is sometimes due to a buried complex and this buried complex by producing the anxiety causes the cardiac changes. In other cases in which there is an organic basis, such as in angina pectoris, the cause of the patient's anxiety is not merely the sensations he experiences in the cardiac region but also the fact that he realizes that some day he is going to die in one of these attacks. This knowledge produces his anxiety.

Walter B. Cannon[7] gave us a new method of studying cause and effect in the visceral changes of emotional resonance. He attempted to find out whether or not adrenalin is secreted in the emotions and what effect it has upon the bodily changes which are known to accompany the various emotions. To do this he made some very interesting experiments on cats. With ethyl chloride he anesthetized the skin directly over the femoral vein, high in the groin. With this anesthetic and by gently handling the animal it was possible to manipulate it without causing any emotional disturbance whatsoever. The femoral vein was bared, cleared and opened, and a long, fine flexible catheter lubricated with vaseline was passed into it and thence through the iliac vein and vena cava to a point where the opening in the catheter was about at the level of the opening of the renal vein into the vena cava. In this way blood could be withdrawn from the renal vein without disturbing the animal. Cannon says that he has known cats to purr gently during the whole operation. The presence of adrenalin in the blood was determined physiologically with a special apparatus for recording the movements of a short segment of a rabbit's intestine. If a substance containing adrenalin is added to the solution in which this intestinal loop is suspended, it produces a series of contractions. So sensitive is this procedure that adrenalin may be detected by it with dilutions as great as one part in 200,000,000. By this apparatus one may compare the effects of normal blood obtained from the renal vein when the animal was unexcited with blood taken during the excitement of some emotion. To produce this excitement, the animal might be etherized or a vicious dog brought before the cat tied down on its board, etc. We were thus provided with a new method of studying effects of emotions.

[7] *Bodily Changes in Pain, Hunger, Fear and Rage.* New York, D. Appleton-Century Co., 1915.

Cannon points out the following physiological effects of the emotions.

1. *The secretion of adrenalin.* In every violent emotion whatsoever adrenalin is poured out from the adrenal glands into the blood. This secretion is the ultimate cause of all the other effects that he enumerates.

2. *The increase of blood sugar.* In normal individuals sugar is present in the blood from 0.06 — 0.1 per cent. When sugar is present to this extent, none escapes in the urine. If it rises higher than 0.2 — 0.3, sugar is found in the urine, i.e., a condition of glycosuria is produced. Such an increase in blood sugar can arise from emotional disturbance. Glycosuria, therefore, is one of the effects of the emotions. The evidence for this is

*a*) It is possible that some cases of diabetes are due to great emotional excitement.

*b*) States of depression are sometimes accompanied by glycosuria.

*c*) The injection of adrenalin can cause glycosuria.

*d*) Animals under the influence of pain and fear excrete sugar in the urine.

*e*) Experiments with human subjects show that glycosuria may be present after a hard examination. Twelve out of 25 football players had sugar in the urine after an exciting game. "The only excited spectator of the Harvard victory, whose urine was examined, also had a marked glycosuria which on the following day had disappeared."[8]

*f*) Cannon undertakes to prove that the increase of sugar in the blood and its subsequent appearance in the urine is due to the functioning of the adrenal glands, and in so doing he shows also that the functioning of the adrenal glands and the visceral changes that depend upon them are not at all necessary for apparent emotions in animals:

(1) It is evident that the secretion of sugar is due to the adrenal glands, because the artificial stimulation of the splanchnic nerves produces glycosuria. The splanchnic nerves contribute the fibers of the adrenal plexus, that is to say, the nerve fibers that govern the activity of these glands. It is thus likely that in an emotion the splanchnic nerves carry stimuli to the adrenal glands inciting them to activity. This results in the secretion of adrenalin and thus finally in the appearance of more sugar in the blood.

(2) If one removes the adrenal glands, the emotions no longer produce a glycosuria. "Although the animals deprived of their adrenals manifested a general lessening of muscular tone, they still display much of their former rage or excitement when bound. Indeed, one was much more excited after the removal of the adrenals than before."[9] One could not, however, by any degree of excitement produce in them a glycosuria. It thus appears not only that the adrenal glands are necessary for the secretion of sugar in

[8] Cannon, *op. cit.*, pp. 75, 76.

[9] Cannon, *op. cit.*, p. 78.

the emotions but that these glands and the visceral changes which they produce are apparently not necessary for the production of emotions.

(3) Improved muscular contraction: One of the effects of the emotions is, as we have seen, the secretion of adrenalin. Adrenalin has long been supposed to have an effect on the general muscular tonus. This supposition has been based upon symptoms which characterize Addison's disease, a pathological condition due to destruction of the adrenal glands, usually by tubercular process. In this disease one of the characteristic symptoms is general weakness—the loss of the tonus in the muscles and rapid fatigability. It would seem that the loss of the secretion of adrenalin due to destruction of the glands results in a decrease of muscular efficiency. Experiments made on rats show that when they are deprived of their adrenals they are more quickly exhausted in a revolving cage than normal animals. Experiments with the frog indicate that the injection of adrenalin had an invigorating effect on muscular contraction. Cannon has demonstrated the fact that in the living warm-blooded animal stimulation of the splanchnic nerves improves muscular contraction. The reader will remember that we pointed out above that the splanchnic nerves supply the fibers which go to constitute the adrenal plexus and that their stimulation produces an increased secretion of adrenalin. Cannon, therefore, isolated the tibialis anticus and its anterior tibial nerve and the splanchnic nerves. By proper protective devices against drying, etc., it was possible to stimulate continuously the tibialis anticus and during this stimulation to give the splanchnic nerves a series of rapid interrupted shocks from an induction coil. This produced a short rise in the height of the muscular contraction which might be attributed to the concomitant rise in blood pressure. This was followed by a prolonged rise which seemed to be due to the secretion of adrenalin into the renal veins. For if the renal veins were clipped and the splanchnic nerve stimulated, the rise of blood pressure and the concomitant brief increase in muscular contraction occur as before, but it is not followed by the prolonged rise which takes place when the renal vein is not obstructed.

(4) Restoration of fatigued muscle: Cannon and his students have found that within five minutes after an injection of 1.01–1.05 cubic centimeters of adrenalin (1–100,000) the fatigue threshold of a muscle is considerably lowered. That this reduction of fatigue is due to adrenalin and not to an improvement of circulation in the muscle by raising the blood pressure is evidenced by the fact that the improvement in muscular contraction takes place when the adrenalin is administered in such a dilute solution that it produces a fall instead of a rise of the blood pressure.

(5) Hastening the coagulation of the blood: Injecting adrenalin into the circulation reduces the time required for the coagulation of the blood. It

is interesting to note, however, that adrenalin does not produce this effect on the blood when it circulates only in the anterior half of the animal. Thus, if ligatures are tied around the aorta and the inferior vena cava immediately above the diaphragm, the coagulation time is not shortened. Furthermore, coagulation time is not shortened in an animal from which the gastrointestinal canal and liver have been removed. Mere failure, therefore, of the blood to circulate through the intestinal organs makes it impossible for adrenalin to shorten coagulation time. If the activity of the liver is ruled out by ligature of its vessels or by phosphorus poisoning, the coagulation time of the blood is lengthened. Cannon, therefore, supposes that the liver continually contributes to the blood one of the factors in the coagulating process. This factor can be stimulated by adrenalin. Moreover, stimulation of the splanchnics shortens coagulation time, but only if the adrenal glands are intact. Coagulation time is hastened as the result of painful stimulation and emotional excitement. One of the effects of emotion, then, is the decrease in the time it takes for blood to coagulate.

The work of Cannon and his pupils which has here been briefly analyzed is the most important contribution that has yet been made to our understanding of the bodily resonance. Cannon himself has pointed out the utility of the bodily changes which are produced by emotional excitement through the activity of adrenalin. The fundamental effect of the emotions is, first of all, the secretion of the adrenalin. The adrenalin then produces effects which would be of use to an animal in the conflicts which often follow upon emotional excitement. The increase of blood sugar is nothing more nor less than the mobilization of fuel whose metabolism sets free the energy of muscular contraction. In the struggle which is likely to follow upon emotional excitement, the energy of the organism will necessarily be called upon. The emotion, therefore, by a definite mechanism sets free the energy that will be required for the struggle. Furthermore, not only is the fuel increased but the mechanism of the machinery seems to be improved. Muscular contraction is increased and its fatigability is decreased, and the process by which the mechanism is restored to normal after fatigue is accelerated. If in the struggle the animal is wounded, the very anger which this wound produces sets into activity a mechanism by which the blood is more quickly coagulated and its loss so far as possible prevented.

We may now ask whether or not the visceral changes pointed out by Cannon could constitute a group of specific phenomena the perception of which would give to an emotion its peculiar characteristic quality. It would seem that this is not the case. The changes pointed out by Cannon are not specific but common to all emotional states. The perception of these changes, therefore, would give us only emotional excitement, not specific emotion.

Looking at the physiological mechanism for the production of visceral

changes in emotional experience, it is apparent that these changes must take place after the experience of the emotions, and, therefore, they cannot be the emotion, nor can the subject's perception of these changes, which come after he experiences the emotion, constitute the very essence of the emotion itself.

In order that these visceral emotions may take place, the splanchnic nerves must be stimulated. This is the first stage of the process. This stimulation must pass to the adrenal plexus, and the gland must be set in activity. The products of this activity must find their way into the renal veins, and the blood containing this adrenalin must pass to the vena cava and thence to the heart to be redistributed to the organs of the body and then affect these organs in characteristic ways. The changes in the visceral organs must then give rise to stimuli which pass to the brain and modify consciousness. To accomplish all this, something more is needed than a small fraction of a second in which an emotion, of fear let us say, arises in the presence of danger.

We have some evidence on the time it takes for an effective experience to arise after the presentation of a stimulus. F. L. Wells measured the reaction time for the discrimination between pleasantness and unpleasantness. He found a median value of 700 thousandths of a second.[10] The time for a discrimination choice reaction between two hands (as used by Wells) is over 300 thousandths of a second (Wundt). The upper limit of emotional latency, thus, is less than 400 thousandths or two fifths of a second.

That the complicated series of events that we have just described could take place in this period is physiologically impossible. Visceral changes are not for the manifestation of emotional experience but the *preparation* of the organism for vigorous activity in dealing with a critical situation.

It seems rational to look upon the realization of the critical situation as *causing* the emotion, and the emotion as bringing about the stimulation of the splanchnic nerves, which stimulation is responsible for the further sequence of events in the emotional display.

Once the series of processes has been initiated, the emotional resonance is no doubt perceived, and its perception constitutes an important element in the complex series of events constituting the emotional sequence.

[10] *J. Exper. Psychol.*, **8**: 64–76, 1925.

## Chapter 10

# THE PHYSIOLOGY OF THE EMOTIONS

There is abundant evidence to show that intellectual insight into the meanings of situations or the sudden evaluation of the import of an event without any full intellectual generalization or reasoning about what has suddenly appeared may give rise to what we term emotional experience.

But there is also at the present day a vast amount of evidence the burden of which tends to show that conscious emotional reactions may arise from somatic causes without the intermediation of any cognitive apprehension of an impending good or evil.

It is a matter of profound importance in our personal mental hygiene and in our attempts to treat the affective mental disorders that we should be familiar with the essentials of the literature in this important field.

In the following summary we have attempted to digest this literature by a citation of pertinent evidence. Much more could be adduced to strengthen the conclusions at which we have arrived, but the vastness of the available material would make a complete review of the literature a bulky volume in itself. We have tried not to neglect anything of critical importance that might tend to negate any of the conclusions we have drawn.

### 1. The Emotional Picture in Certain Organic Disorders of the Nervous System

Let us approach the matter from the point of view of pathology, for on this particular problem pathology casts a most illuminating ray of light.

There is a nervous disease known as multiple or disseminated sclerosis. It is so called because little spots in various regions of the nervous system become hardened or sclerosed.

This disease has most peculiar effects on the emotional life to which Cottrell and Wilson devoted a study of classical importance.[1]

They investigated 100 patients suffering from this disease. They came to the following most interesting conclusion relative to its emotional manifestations.

> No single symptom of the neurological series (nystagmus, tremor, scanning speech, paraesthesiae, spasticity, amaurosis, etc.) occurs with anything like the same frequency in an unselected century of cases of the disease, and that the cardinal symp-

[1] Samuel Smith Cottrell and S. A. Kinnier Wilson, "The Affective Symptomatology of Disseminated Sclerosis." *J. Neurol. & Psychopathol.*, 7: 1–52, 1926.

toms are not neurological in its limited sense, but belong to the emotional, affective, and visceral spheres, and are constituted by:

1. change in mood
2. change in bodily feeling
3. change in emotional expression and control.[2]

The authors raised the question whether or not multiple sclerosis itself is due to mental factors of some kind. Such a view was put forward by Dr. Smith Ely Jelliffe in the symposium on multiple sclerosis at the 1921 meeting of the Association for Research in Nervous and Mental Diseases. Jelliffe put forward the view that unconscious emotional factors produce vascular alterations which in their turn give rise to the hardened plaques in the nervous system. The vascular alterations, he thought, were due to "action patterns held under terrific repression."[3] If such were really the case, multiple sclerosis might be brought to a standstill by analysis and relief of repression. But though Jelliffe spoke of patients analyzed, he cited no remissions and had considerable difficulty during the discussion in explaining plaques that were evidently not due to vascular alteration.

Psychotherapy does not produce results in multiple sclerosis. A fair-minded consideration of the available evidence will lead one to the opinion that Cottrell and Wilson rightly came to the conclusion, with the general body of neurologists, that disseminated sclerosis is not a psychogenic disorder but both the affective and somatic symptoms "arise from the invasion of cerebral mechanisms by a toxic agent."[4]

One should not, however, deny that intense emotional shock can play some part in the etiology of disseminated sclerosis. Thus in 2 cases the dwelling places of the patients were destroyed by bombs while they were on the premises. The emotional shock was followed by a marked intensification of the sclerotic symptoms, which had not faded out when the patients were re-examined about a year later.[5]

Cottrell and Wilson studied their patients carefully "to determine whether or not there might be some dormant personality disturbance which might account for the facts of the emotional series."[6] They found no cases of schizophrenic cleavage, none of hysteria, no delusions, no hallucinations

[2] *Loc. cit.*, pp. 16–17.

[3] Smith Ely Jelliffe, "Emotional and Psychological Factors in Multiple Sclerosis." In Vol. II, *Multiple Sclerosis*, 1921. Association for Research in Nervous and Mental Diseases. New York, Paul B. Hoeber, 1922, p. 89.

[4] *Loc. cit.*, p. 23, (I might say that the patients I have seen with multiple sclerosis presented a normal personality, and apart from the disease itself had suffered little from the stress and strain of life.)

[5] Gerd Voss, "Das psychische Trauma als pathogenetischer Faktor bei der multiplen Sklerose." *Deutsche med. Wchnschr.*, **69**: 255–6, 1943.

[6] *Loc. cit.*, *p.* 26.

and only 2 cases of mild mental defect such as might be found in early senile dementia.

It would seem, therefore, that the emotional manifestations should be regarded as due to the disease process itself which underlies multiple sclerosis. Turning to this disease process, one finds that "periventricular sclerosis is an almost constant finding in the affection."[7]

Dawson, following Alexander Bruce, regards the condition as due to a toxin distributed by the lymphatics and the veins. "He formed the opinion that the lesions in the ependymal and periependymal tissues are probably of especial importance, and he argued that the existence of such marked lesions around the ventricles raised the possibility of the cerebrospinal fluid having toxic properties and that the causal agent entered along the lymphatics in the perivenous sheaths."[8]

The walls of the third ventricle were involved as well as the lateral ventricles in a number of the cases reported by Dawson. Now the walls of the third ventricle are constituted in part by the thalamus and the hypothalamus. The pathology of the condition suggests a reason why it so often involves marked emotional symptoms.

It is in the hypothalamus that we find the center of emotional expression and its stimulation may lead both to the reaction of affective resonance and to emotional experience.

It is rather interesting to note that the dominant type of affective reaction in multiple sclerosis is a paradoxical euphoria in the presence of a progressively crippling and finally fatal disease.

Brown and Davis give an account of a woman 31 years of age with multiple sclerosis.

> She cannot walk, she is nearly blind, her speech is so indistinct that she can scarcely make herself understood. She is so incoordinate in movement that she has to be spoon-fed.
>
> Despite the fact that she is reduced to a state of complete helplessness, she is

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[7] *Loc. cit.*, p. 26.

[8] James W. Dawson, "The Histology of Disseminated Sclerosis." Tr. Royal Soc. of Edinburgh, 50: 518, 1916. The etiology of disseminated sclerosis is not the main subject of our interest but the fact that in this disorder organic changes in the nervous system seem to be responsible for conscious emotional phenomena. It might be well, however, to call attention to a concept of its etiology somewhat different from that of Bruce and Dawson. Van Gehuchten regards it as a deficiency disease unlike any known avitaminosis which attacks primarily the myelin with a resulting glial and vascular reaction. Paul Van Gehuchten, "Études sur la sclerose en plaques." *J. Belge de neurol. et de psychiat.*, 125–140; 281–297, 1941–42. For an excellent study of the etiology of disseminated sclerosis, see A. Ferraro, "Pathology of Demyelinating Diseases as an Allergic Reaction of the Brain." *Arch. Neurol. & Psychiat.*, 52: 443–483, 1944.

very optimistic and cheerful, laughs and jokes about her symptoms and is not in the least concerned about her condition. Neither is she demented. She can give a full account of her past life without any discrepancies of memory. Euphoria was seen in 10 of the 14 cases showing mental symptoms which we had the opportunity of examining.[9]

It is interesting to note that Cottrell and Wilson found the same percentage (71) of euphoric cases in their 100 patients as did Brown and Davis.

Once the euphoria is established, it has a strong tendency to remain. This is what we would expect if it is produced by an anatomical lesion. One sclerotic patient was made much worse by a bomb blowing up the house in which he lived. In spite of a much increased disability as a result of the emotional shock, his unreasonable gaiety showed no sign of diminution.[10]

One would not be surprised if one found patients depressed when suffering from a progressively disabling and fatal disease. But its association with euphoria demands attention. If there is a center in the brain that can be irritated by an encroaching sclerotic patch and its stimulation leads to euphoria, we can understand the unreasonable gaiety of patients with multiple sclerosis.

The pathology of multiple sclerosis leads us to distinguish between euphoria and eutonia. Euphoria is an unreasonable unmotivated gaiety. Eutonia is a sense of well being and perfect health. They usually go together, but not always. Pathology therefore enables us to make the distinction and suggests that there are two distinct centers the stimulation of which *may lead to* the one or the other affective experience.

Cottrell and Wilson report that "some patients feel well physically but not mentally, though this particular combination is rare. Again once the symptom is established, it does not tend either to disappear or to become subsequently modified." Furthermore, the sense of well-being and perfect health may follow the patient to the death bed. These authors report the case of a woman "who was almost moribund when examined and who declared that physically she 'felt all right' and was neither tired nor weary but quite at ease."[11]

If now there is a station in the hypothalamus on the way to the cortex where the organic sensations from the various viscera of the body deliver their stimuli and in a state of health one feels the stimulation as the joy of well-being, and if this station can be irritated by an encroaching sclerotic

[9] Sanger Brown, 2nd and Thomas K. Davis, "The Mental Symptoms of Mental Sclerosis." In Association for Research in Nervous and Mental Diseases, II: p. 77, 1921.

[10] Gerd Voss, *loc. cit.*, *Deutsche med. Wchnschr.*, **69**: p. 256, 1943.

[11] *Loc. cit.*, p. 22.

patch, it would be possible to experience a sense of well-being, a pathological eutonia, to the very hour of death.

The work of Cottrell and Wilson does not stand alone. A recent study by Sugar and Nadell[12] confirms in general their findings (p. 277):

> Twenty-eight patients with multiple sclerosis, of more than ten years' duration, observed for six to eight months, were studied with special emphasis on their emotional affective symptomatology.
>
> In general we found in this series of patients with multiple sclerosis (1) a change in the emotional content or prevailing mood, most often in the direction of increased cheerfulness;[13] (2) a marked sense of well-being out of proportion to their physical condition; (3) a tendency toward an increase of the affective expression, which at times was incongruous with the underlying mood.

Sugar and Nadell regard the change in emotional condition as an accentuation of the previous type of affective trend due to the paralysis of inhibitions. But Cottrell and Wilson cite several cases in which the sclerotic mood was a reversal of the previous personality type. They say that this change "has become so striking, in some cases, as to constitute almost a change in personality."[14] The paralysis of inhibitions might account for an accentuation of previous emotional trends but not for their reversal.

Paralysis of inhibitions, however, is a real factor in the emotional picture in disseminated sclerosis. It is because inhibitions are paralyzed that emotional reactions are so violent. Cottrell and Wilson report that 97 per cent of their 100 patients reported that control over emotional expression was lost or imperfect[15] and it is interesting to note that in 48 per cent of their cases[16] emotional expression was not congruent with the underlying emotional experience, thus demonstrating that emotional expressions and emotional experience are independent variables. Therefore the two cannot be identified in the way required by the Lange-James theory of the emotions.

It is worth while calling attention here to a remarkable contrast in the effects of certain nervous diseases on emotional life.

> The intimate relationship of the basal region of the brain to the affective life has long been known to neurologists. There is a curious dissociation of emotional expression from affect in the so-called pseudobulbar palsies, giving rise to outward

[12] Carl Sugar and Raymond Nadell, "Mental Symptoms in Multiple Sclerosis." *J. Nerv. & Ment. Dis.*, **98**: 267–280, 1943. Further references to the literature may be found in the bibliography appended to this study.

[13] Fausto L. Marelli also refers to euphoria as the more common emotional manifestation in his study, "Esclerosis en placas." *Rev. argent. de neurol y psiquiat.*, **6**: 156, 1941.

[14] *Loc. cit.*, p. 21.

[15] *Loc. cit.*, p. 25.

[16] *Loc. cit.*, p. 19.

expression of joy or sorrow in the absence of the corresponding affective state. The opposite dissociation is often seen after epidemic encephalitis, namely, absence of external expression of the most acute affective states.[17]

It is quite clear, therefore, that conscious affective experience and emotional manifestation are demonstrated by pathology to be two independent variables.

We have previously pointed to the possibility of independent variation as the ground for distinction between one mental function and another. Using the term function in a very wide sense, we may say that the pathology of multiple sclerosis points to independent variation of euphoria, eutonia, and depression and also suggests that relatively small circumscribed regions in the hypothalamus may be centers whose stimulation can *give rise* to these types of mental experience.

The investigation of the thalamic and hypothalamic regions for circumscribed centers of this nature has only just begun.

Thus, the work of Hess and Bruger[18] suggests that the manifestation of emotional behavior is brought about through the agency of a number of narrowly circumscribed centers in the hypothalamus, each controlling a definite type of emotional manifestation. This *suggestion* is derived from the fact that they found a narrowly circumscribed region[19] in the septum pellucidum in the cat only 2 mm. in length and less than that in breadth whose stimulation led to the cat taking a marked defensive pose and sometimes attacking individuals in the neighborhood. The threatening poses he photographed resembled very closely those assumed by a normal cat.

We must not regard these centers as so fixed and stable that their destruction renders the experiences that they formerly mediated forever after impossible. That this is not the case is suggested by the results of removing tumors from the region of the third ventricle.

Although tumors in this region may bring on changes in the personality with unmotivated outbursts of violent rage and various symptoms of disturbance of vegetative functions, nevertheless "large tumors may come to fill the third ventricle, and so distort its walls as to leave no recognizable trace of them, without the slightest indication of any interference with the neurohypophysial mechanisms which have been so laboriously analyzed."[20]

This is so common that "tumors of the third ventricle are far more com-

[17] Fulton and Bailey, "Tumors in the Region of the Third Ventricle, Their Diagnoses and Relation to Pathological Sleep." J. Nerv. & Ment. Dis, **69**: 267, 1929.

[18] W. R. Hess and M. Brugger, "Das subkorticale Zentrum der affektiven Abwehrreaction." *Helvet. physiol. et pharm. acta*, **1**: 33–52, 1943.

[19] *Ibid.*

[20] Harvey Cushing, *Papers Relating to the Pituitary Body, Hypothalamus and Parasympathetic Nervous System.* Springfield, Ill., C. C. Thomas, 1932, pp. 44–46.

monly betrayed by ventriculography than by the neurological symptoms they provoke"[21] and "under favorable circumstances tumors of this region may be successfully removed without provoking any of the symptoms heretofore discussed." Cushing then reports the removal of a tumor filling the expanded third ventricle "leaving a raw cavity with no subsequent trace of personality change, of polyuria, adiposity, somnolence, hyperthymia or vasomotor disturbances, one or all of which might well enough have been expected."[22]

Results of this nature along with those following the removal of large cortical areas prevent our conceiving of neurological regions as containing permanent and essential structures for the performance of various physiological and psychological functions. The sense organs are essential for the reception of sensory stimuli. The eye, for example, is necessary for seeing and cannot be replaced by any other organ or region of the body. But cerebral "centers" are not necessary and irreplaceable in the same way. They are preliminary central connections which, if destroyed, can have their functions replaced by other connections. No region of the cortex, no part of the brain thinks or has emotions. Psychological functions are performed by the psyche which gives life and activity to the whole organism and uses the neurological connections available in order to carry out vital functions.

Let us now stop for a moment and try to express in a few words what we have learned from the study of "disseminated sclerosis" concerning the nature of emotions.

Disseminated sclerosis is a disease that

*a*) May intensify the previous emotional trend of the patient's personality.

*b*) Instead of intensifying the previous trend, it may bring about a reversal of the trend from sadness to gaiety, as a rule, although at times a prevailing mood of cheerfulness may give way to one of sadness.

*c*) It may intensify conscious emotional experience and the patient may express the intensified emotional experience by congruous and fitting forms of emotional expression.

*d*) On the other hand, it may produce emotional expressions which belie the inner emotional experience so that the patient laughs when he feels sad or cries when he feels happy.

*e*) It may produce a feeling of well-being and power to be up and doing when as a matter of fact the patient may be moribund.

*f*) In disseminated sclerosis the hardened plaques are often found in the walls of the third ventricle, the stimulation of which, as we shall see, leads

[21] *Loc. cit.*, p. 46.
[22] *Loc. cit.*, p. 47.

to violent emotional expression in animals. And in human beings, we may note, drugs which act on the hypothalamic centers may produce intensified emotional experience or violent emotional expression.

*g*) Evidence has been adduced to show that the hypothalamic centers cannot be loci of emotional experience. But the data presented warrant the conclusion that when nuclei in the hypothalamic region are irritated, the stimulation that results may lead to intensified emotional experience and also to reactions of emotional expression which may or may not be congruous manifestations of the conscious affective state produced by the irritation.

Closely allied to the information obtained by the study of multiple (or disseminated) sclerosis is the light thrown upon the physiology of the emotions by extirpation experiments in animals.

## 2. Emotional Reactions and Cerebral Operations on Animals

Let us turn now to a consideration of a few important studies of the effect of cerebral lesions on the emotions of animals.

Goltz[23] opened this field of investigation by removing both cerebral hemispheres from a dog. His dog did not manifest the intense "sham rage" which later authors found in decorticated animals. Goltz said of his dog: Every expression of joy is *lacking in our dog without a cerebrum.* Gentle stroking of the skin seems to be to him a matter of perfect indifference. Occasionally indeed he moves the tail, but a wagging [Schweifedeln] that might be taken as an expression of a pleasant mood could never be observed in his case. If he is tied and one attempts to untie him the more vigorous handling may cause defense reactions and "he bites the hand which attempts to set him free,"[24] whereas a normal dog would welcome the operation of untying.

Max Rothman in 1909 extirpated both hemispheres in a dog and after three years of study the animal was killed and the residual central nervous system was studied microscopically.[25] Rothman's dog seems at first to have manifested the violent outbursts of rage, on slight stimulation, that recent writers dwell upon. But they faded out in time.

From these early investigations it was clear that destruction of the cerebral cortex gave rise to abnormalities of emotional behavior. There was as

[23] F. Goltz, "Der Hund ohne Grosshirn." *Arch. f. d. ges. Physiol.*, 51: 577, 1892.

[24] *Loc. cit.*, p. 609.

[25] The data were published by Hans Rothmann, "Zusammenfassender Bericht über den Rotmannschen grosshirnlosen Hund. "*Ztschr. f. d. ges. Neurol. u. Psychiat.* 87: 247-313, 1923. See also Dusser de Barenne, "Recherches expérimentales sur les fonctions du système nerveux, central, faites en particulier sur deux chats dont le neopallium avait été enlevé." *Arch. néerl. de physiol.*, 4: 31, 1919.

yet no evidence of the association of this abnormality of behavior with any particular region of the brain.

A step forward was taken by Bard, who showed that the manifestation of this violent emotional reaction which he termed "sham rage," did not take place after the destruction of the caudal region of the hypothalamus.[26]

A recent study by Wheatley has demonstrated that "lesions destroying the immediate region of the ventromedial hypothalamic nuclei in cats result in loss of favorable response to friendly treatment and handling; and in a change from a friendly behavior pattern to one of malevolence and savageness, to a marked or an extreme degree."[27] Wheatley was unable to produce this behavior by destruction in other regions or to modify it by removing or injuring higher regions of the brain. It is thus seen that the ventromedial hypothalamic nuclei in the cats are in some way associated with what we might term normal social behavior. Wheatley leaves it an open question as to how the aggressive behavior appears. It persists long after convalescence from the operation. Wheatley remarks that there is no evidence of the manifestation of friendly behavior or euphoria by electric stimulation of the ventromedial hypothalamic nucleus, except perhaps the work of Gibbs, who obtained purring in the cat by the stimulation of the infundibular region.[28]

The study which we have just made of affective reactions and affective experience in disseminated sclerosis suggests that we raise the question here whether or not the emotional reactions resulting from injury to or removal of cerebral tissue or produced by electrical stimulation are mere physiological reactions or whether or not they are accompanied by conscious affective experience. By analogy with the phenomena in disseminated sclerosis, we might say that they may be either one or the other or both.

There has been a good deal of discussion about the matter. The general prejudice still prevailing in the minds of physiologists that consciousness is a function of the cortex has no doubt something to do with the tendency of physiologists to adopt the view that the affective behavior in decorticated animals is *behavior only* and is unaccompanied by any *conscious affective experience.*

Thus Bard writes, "It seems reasonable to believe that after removal of the higher parts of the brain, including the cerebral cortex, there is an absence, or at least a profound modification of the conscious aspects of

[26] P. Bard, "A Diencephalic Mechanism for the Expression of Rage with Specific Reference to the Sympathetic Nervous System." *Am. J. Physiol.* **84**: 490, 1928. We may look upon Bard's work as extended and confirmed by J. G. Dusser de Barenne and O. Sager (*Ztschr. f. d. ges. Neurol. u. Psychiat.* **133**: 231, 1931.).

[27] M. D. Wheatley, "The Hypothalamus and Affective Behavior in Cats." *Arch. Neurol. & Psychiat.* **52**: 316, 1944.

[28] E. L. Gibbs and F. A. Gibbs, "A Purring Center in the Cat's Brain." *J. Comp. Neurol.*, **64**: 1936.

emotion. The term emotion implies two things: a way of acting and a subjective experience. Therefore, in the case of a decorticate cat it would be confusing to speak unqualifiedly of its emotion. One may, however, speak with assurance of its *expression* of emotion."[29]

But the recent results of neurosurgery have cast considerable doubt on the concept of the cortex as a center of consciousness. When Dandy first thought of removing massive volumes of cerebral tissue in operating for brain tumor, he expected profound changes in the mental life of the patient. But they did not appear. Even when the whole right hemisphere was removed, there was no loss of memory for events of the past life, and no disability in orientation to the present. He then said that consciousness was a function of the left hemisphere. But somewhat later the left hemisphere was removed, and that too in a right-handed patient, and consciousness returned. We should not therefore be quite so certain that in decerebrate animals there is no such thing as conscious emotional experience.[30]

Then there are some who, like Masserman,[31] fail to see that it is one thing to maintain that affective experience may result from hypothalamic stimulation and quite another to say that the hypothalamus is a center in which and by means of whose neurological mechanisms affective experience takes place. Visual experience may follow stimulation of various points in the optic tract, but that does not mean that visual experience in some manner transpires at the point of stimulation.[32]

### 3. Emotional Changes and Tumor Growth in Man

The analogue of extirpation experiments in animals is the destruction of tissue by the growth of tumors in man. Let us look at the information that tumor growth, in the region of the third ventricle, throws on the physiology of the emotions.

One frequently finds disturbances of emotional life in patients suffering from the growth of tumors in the region of the third ventricle.

These emotional disturbances tend towards either of two extremes:

*a*) A loss of emotional life aptly termed by Fulton and Bailey a "fatuous serenity of mind."[33] A profound disturbance of memory which sometimes

[29] Philip Bard, "On Emotional Expression after Decortication with Some Remarks on Certain Theoretical Views." *Psychol. Rev.*, 41: 320, 1934.

[30] See T. V. Moore, *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., 1939, 57 ff.

[31] Jules H. Masserman, "The Hypothalamus in Psychiatry." *Am. J. Psychiat.*, 98: 633–637, 1942.

[32] For a critique of Masserman, see T. V. Moore, *The Nature and Treatment of Mental Disorders*. New York, Grune and Stratton, 1943, 255 ff.

[33] J. F. Fulton and Percival Bailey, "Tumors in the Region of the Third Ventricle. Their Diagnoses and Relation to Pathological Sleep." *J. Nerv. & Ment. Dis.*, 69: 1–32; 145–164; 261–277, 1929.

accompanies tumors of the third ventricle[34] may be in part responsible for the loss of emotional response. To regret an event one must remember that it happened. Thus one of Fulton and Bailey's patients was "apathetic, slow in response, absent-minded, forgetting the presence of food in his mouth, responding to questions only after long intervals of silence, finally answering with a nod or monosyllable."[35]

*b*) Manic excitement, depression, or anxiety of psychotic intensity.

From experiments on animals we know that lesions which leave the thalamus intact but sever its connections with the cortex give rise to the so-called condition of sham rage in which emotional expression, at least, is intensified. But lesions that are destructive of the thalamus lead to emotional apathy. It is quite evident that according to their locus tumors could produce either of these symptoms.

One might cite the report by Engel and Aring of the case of a 17¾ year old boy who was subject to attacks of hypothalamic dysfunction, in one of which he died. He had an old lesion which destroyed the ventral half of the right dorsomedial nucleus of the thalamus. The hypothalamus was intact. The authors conceive of the right dorsomedial nucleus as containing fibers, passing to the cortex, normally used in inhibiting the emotional reactions of the hypothalamus. "The boy found himself in one situation after another which provoked anxiety in him (school, scouting, competitions), but, because of the interruption of the corticohypothalamic pathways, the autonomic manifestation of the anxiety went far beyond normal expression, both qualitatively and quantitatively, and resulted in the clinical picture and finally in death."[36]

There are two important observations that are needed to complete the picture of the physiology of the emotions.

1. The stimulation of the hypothalamic centers in animals leads to violent emotional *behavior*. There is some evidence that in man it leads to intense emotional experience.

2. Drugs which act on the hypothalamic centers produce in man intense emotional experience or emotional reactions unaccompanied by a conscious affective state.

### 4. Stimulation of the Hypothalamus in Man

Of major importance in the study of the physiology of the emotions are studies in which the hypothalamic region has been stimulated in man.

[34] Due perhaps to hydrocephalus and the consequent general increase of pressure in the brain.

[35] *Loc. cit.*, p. 148.

[36] George L. Engel and Charles D. Aring, "Hypothalamic Attacks with Thalamic Lesion." *Arch. Neurol. & Psychiat.*, 54: 42, 1945.

Does such stimulation arouse mere reflex movements of emotional expression or also conscious affective experience?

A direct attempt was made on this problem by Grinker and Serota.[37] These investigators, basing their technique on the fact that the hypophysis and the overlying hypothalamus lie just above the sphenoidal sinus, passed an electrode through the nostril and pushed it into the sphenoidal bone.

That stimulation in this way caused hypothalamic activity was evidenced by the marked dilatation of the pupils, perspiration, rise in blood pressure, etc. But at times, besides the physical symptoms, "anxiety appeared during stimulation, and it persisted with crying and expressions of fear often for some minutes. In one subject protracted sobbing occurred. Several patients saw their lives pass before their eyes, as has been described in drowning."

The authors studied also the encephalogram in emotions aroused by electrical stimulation. In the emotion produced by telling a patient "that a sex habit, regarding which he had considerable anxiety, had probably irreparably damaged him,"[38] the character of the encephalograms was comparable with that produced by electric stimulation.

It is interesting to note that in electrical stimulation of the hypothalamus in schizophrenic patients no subjective emotional response is obtained, though in nonschizophrenic patients and normals it is easily elicited.[39]

The manipulation of the hypothalamus in operations gives interesting results. Thus Clark and his collaborators remark, "The emotional reactions evoked by interference with the hypothalamus during operations under local anaesthesia are of interest in this connection. Thus, one of Foerster's patients became maniacal; another, a woman, amorous; and a boy in whom Cairms tapped a suprasellar cyst was afterwards, for two or three days, talkative, excited and sleepless."[40]

However, White was unable to note any psychic changes in stimulating the hypothalamus electrically in patients under local anaesthesia.[41]

[37] Roy R. Grinker and Herman M. Serota, "Studies on Corticohypothalamic Relations in the Cat and Man." *J. Neurophysiol.*, **1**: 573–589, 1936.

[38] *Loc. cit.*, p. 586.

[39] Roy R. Grinker and Herman M. Serota, "Electroencephalographic Studies of Corticohypothalamic Relations in Schizophrenia." *Am. J. Psychiat.*, **98**: 389, 1941.

[40] W. E. Legros Clark, John Beattie, George Riddoch, and Norman M. Dott, *The Hypothalamus*. Edinburgh, Oliver and Boyd, 1938, p. 117.

[41] James C. White. "Autonomic Discharge from Stimulation of the Hypothalamus in Man." Association for Research in Nervous and Mental Disease. Research Publications, vol. 20, Baltimore, Williams and Wilkins, 1940, pp. 854–863.

## 5. The Production of Emotional Changes in Man by the Injection of Pharmacological Substances

Let us now touch upon the production of emotional conditions by the injection of certain pharmacological substances.

The classic study of this problem was made by an ingenious Spanish endocrinologist, Marañon.[42] When adrenalin is injected into human beings, we may get either of two effects.

*a*) A group of physical symptoms indicative of stimulation of the vegetative nervous system, such as precordial pressure, palpitation of the heart and even the flow of tears, but all without any emotional experience. The patient remarks that he feels as if he were going to be or were afraid but is not afraid, as if he ought to be happy or sad but is not.

*b*) An actual emotional outbreak, usually in the form of anxiety. The anxiety, strange to say, may be referred to events in his past life which were not troubling him just before the injection, or it may be what Freud would term a "free-floating anxiety."

These results have been confirmed by others.[43] Schizophrenic patients however, react to adrenalin with somatic symptoms only, showing no trace of anxiety This is in line with the findings of Grinker and Serota, mentioned above,[44] who were unable to produce emotional reactions in schizophrenics by electrical stimulation of the hypothalamus.

On the other hand, there is some evidence that mecholyl, a parasympathetic stimulant, tends to produce a kind of happy, silly mood.[45]

One might say that the general tendency is for sympathomimetic drugs to produce such emotions as fear and anxiety, and parasympathomimetic substances to produce a quiet happy peacefulness, or at least to lessen anxiety.

On the basis of this, a successful treatment of the agitated depressions has been carried out recently by Collins. He thus writes of the acute effects of the injection of desoxycorticosterone acetate:

> Our normal subjects all reported a subjective change following injection and this consisted chiefly in a feeling of drowsiness, and desire to sleep. Everything became

[42] G. Marañon, "Contribution a l'étude de l'action émotive de l'adrenaline." *Rev. franc. d'endocrinol.* 301, 1924. For a popular presentation of the results, see his address, "Patologia e higiene de la Emoción," *El Siglo Medico*, 76: 177–180; 202–206, 1925.

[43] For references, see T. V. Moore, *The Nature and Treatment of Mental Disorders.* New York, Grune and Stratton, 1943, p. 256.

[44] See reference 39.

[45] Erich Lindeman and Jacob E. Finesinger, "The Emotional and Somatic Responses of Psychoneurotic Patients to Adrenalin and Mecholyl." *Psychosom. Med.*, 2: 231, 1940.

very calm and most said that their breathing became slow and easy following injection. Four patients stated they could sleep the rest of the day. One subject said: "When I came in I was full of pep and all excited about this, but now I feel so tired and sleepy I don't even want to move my legs."[46]

Prostigmine methylsulfate has a similar but more profound effect than desoxycorticosterone acetate.

It is rather strange that Miller and Fulton say, "Although emotions are closely bound up with adrenergic and cholinergic, as well as with somatic responses, it is generally not possible to produce emotional states either by the administration of adrenergic agents, e.g., adrenalin (Peabody et al., Am.J.M.Sc., 1921, *161*, 508; Marañon, Rev. franc. d'endocrin. 1924, *2*, 301) or by cholinergic agents, e.g., mecholyl."[47] But Marañon points out that some individuals react to adrenalin by somatic responses only, others with anxiety, and though Peabody and his collaborators were interested for special reasons mainly in the measurable organic responses, they do not deny the occurrence of mental reactions and record the fact that one patient was made apprehensive.[48] Apparently Miller and Fulton did not see the study of Dynes and Tod, "The Emotional Somatic Responses of Schizophrenic Patients and Normal Controls to Adrenalin and Doryl,"[49] and Lindeman and Finesinger's work on adrenalin and mecholyl.[50]

From the fact that some emotional disorders are caused by organic lesions and various emotional reactions may be produced by stimulation, we should not commit the logical fallacy of saying that all emotional disorders are caused by organic lesions and therefore we should give up any attempt to trace back affective mental conditions to their psychological roots in the life of the patient. Thus Courtney, writing of the mental effects of encephalitis lethargica, says, "Many of the clinicial syndromes produced by this disease are not different from those which at present are ineptly considered of purely psychogenic origin. I contend, therefore, that the psychologic interpretation of the syndromes in question should be dropped entirely, and that they should be regarded as due to pathologic changes in the encephalon, identical in degree at least with those which exist in certain stages of epidemic encephalitis."[51]

[46] William J. Collins, "The Effects of Certain Parasympathomimetic Substances on the Emotions of Normal and Psychotic Indivduals." *Studies in Psychol. & Psychiat.*, **6** (no. 7): 37, 1946. This contains a good review of the literature.

[47] Heymen R. Miller and John F. Fulton, *Central Autonomic Regulations in Health and Disease.* New York, Grune and Stratton, 1942, p. 304.

[48] *Op. cit.*, p. 515.

[49] *J. Neurol. & Psychiat.* **3**: 1, 1940.

[50] Psychom. Med. **2**: 231, 1940.

[51] J. W. Courtney, "A Case of Postencephalitic Parkinsonian Disease with Polydipsia." Arch. Neurol & Psychiat., **19**: 189, 1928.

That some emotional changes are due to the disturbing events of life there can be no question. It is very interesting however, to keep a daily record of fluctuations of mood from the heights of joy to the depths of sadness.

A very interesting study of this kind was made by Hersey,[52] who found in men a manic-depressive cycle which varied from individual to individual between 3.00 and 9.25 weeks. A similar cycle exists in women, which varies independently of the menstrual cycle.

Each individual has a cycle that is characteristic of his personality. As Hersey says,

> A study, . . . man by man, shows that these apparently periodic changes almost never vary more than one week from the worker's individual average, and that each man would seem to have a time space from "low" to "low" peculiar to himself. In other words, if my usual time space from "low" to "low" is five weeks, I may have one of six weeks or of four weeks. If your space is usually seven weeks, you may have one of eight weeks or of six weeks. But almost never, in spite of all the buffets of misfortune, in spite of difficulties at home, in spite of great pleasure and unusual success, does the length of any particular span depart more than one week either way from the usual span length.[53]

I have not been able as yet to determine satisfactorily in a large number of cases the presence of cycles of a definite regularity of recurrence within more or less fixed limits. But one patient suffering from a mild depression had extreme diurnal variations from very happy in the morning to very sad in the evening. She also had tuberculosis and she may have confused fatigue with depression. There is a tendency for depression to follow fatigue but the correlation is not perfect. Furthermore, the advent of joyful news banishes fatigue.

In another subject there was a cycle with a five to seven day interval. In the course of an afternoon a depression would settle down but would disappear overnight. Very often there seemed to be no reason why these sudden short depressions should appear. Unfortunately, about the time he started the record the picture was clouded by his having received news of a threatened financial loss of great magnitude. It is barely possible that this threat hung on in his mind, as it were subconsciously, and his powers of repression gave way from time to time and he reacted consciously to the threatened loss by depression, without his depression being related consciously to the calamity he knew was impending. However, when the financial picture brightened, the weekly drops from gaiety to depression

[52] Rexford Brammer Hersey, *Workers Emotions in Shop and Home.* Philadelphia, University of Pennsylvania Press, 1932. Pp. 349.

[53] Hersey, *loc. cit.*, p. 347.

still continued and they often occurred without any association with untoward events in daily life.

By keeping a record another subject (a lawyer) found that every twenty-six to twenty-eight days he went through two or three days of deep depression. Formerly he experienced in these days a strong urge to resign his position as judge and retire from practice. Now he knows that in a few days he will be himself again and concludes to wait a bit till the clouds lift.

Let us assume that Hersey has established a constancy within limits of what we may term the cyclothymic span, the problem that at once arises is, what is the cause of the periodic variations?

It would seem that mental incidents occur too sporadically to give rise to a cycle of approximate constancy and so one is led to think of a rhythmic physiological function. There is as yet no evidence to throw light on the nature of this rhythmic physiological function. But the rhythm suggests some physiological function with a rhythmic character is responsible, in part at least, for the alternation of moods in human life.

This does not signify by any means that there are no marked sudden changes in mood due to mental experiences. These certainly occur, but they may be superimposed on a rhythmic cyclothymic curve in which the constancy of the rhythm is due to physiological factors.

When one looks at the available data, samples of which we have presented, it would seem that

1. The emotional picture presented by patients with multiple (or disseminated) sclerosis and the pathology of the disease indicate that emotional experience as well as emotional reactions may be produced by irritative or destructive lesions in the region of the hypothalamic nuclei and their connections. The encroachment of a sclerotic plaque might irritate a nucleus whose stimulation might give rise to affective experience. Or the destruction of fibers exerting an inhibitory influence on the activity of a nucleus might result in trivial stimuli, which normally would have no appreciable effect, producing a violent discharge of the nucleus and so leading either to a more or less intense emotional experience or its manifestation by various reactions, or to both conscious emotion and reflex activity of a physiological character.

2. Cerebral operations on animals may produce a profound disturbance in ordinary affective behavior. Whether or not the violent emotional behavior is associated with intense affective experience in animals cannot be denied or affirmed with absolute assurance.

3. Tumor growth in the human brain may give rise to profound changes in conscious emotional experience.

4. Electric stimulation of the hypothalamus in man may give rise to a subjective emotional response in normal human beings or in nonschizophrenic mental patients.

5. The manipulation of the hypothalamus in operations on the human brain may produce conscious emotional reactions.

6. Conscious emotional changes in man may be produced by injection of various pharmacological substances.

7. Observations which tend to indicate that each individual has a personal cyclothymic rhythm of approximate constancy suggest a physiological cause of the constancy of the rhythm, though as yet we do not know the nature of this physiological function.

From all this it seems evident that human emotional life stands in relation to the mental on one side and the somatic on the other and may therefore be profoundly affected by events that transpire in either body or mind.

## Chapter 11

# THE DEVELOPMENT OF THE EMOTIONS

One must not think that the human mind opens upon a world with all its mental powers in their full vigor ready to function in the conflict of life. Every cognitive mental faculty has what might be termed a capability of functioning which depends on the maturation of the faculty itself and on stowing up certain fundamental data of experience.

In the development of the emotions the problem is complicated by the distinction between emotional experience, emotional manifestation, and the control of emotional behavior. Psychologists who belong to the behavioristic school cannot make a distinction between emotional experience and emotional behavior and those who do not recognize the difference between affective experience and volition will encounter considerable difficulty in fully accounting for the facts of emotional control.

What are the beginnings of emotional life in the child? Perhaps Stern's surmise of the sensori-emotional life of the child at birth may be looked upon as fairly close to reality.

> All that we are possibly justified in assuming is the presence of a dull undefined foreshadowing of consciousness in which the sensorial and emotional elements are so inextricably intermingled that they might be designated as "sense-emotional states" or "emotional perceptive states." The presence of feelings of comfort or discomfort is evinced from the first day by the bodily habit as a whole, by the expression of the face and by the active expression of screaming.[1]

The first sign that the infant gives of an affective reaction to objects in the outside world with which he does not come in actual contact is probably, in ordinary circumstances, the sound of the human voice. "The two-months-old infant, in fact, smiles occasionally at the sound of the human voice, even though at this age he does not smile at other stimuli."[2]

One of the earliest emotional manifestations, therefore, is that of pleasure.

## 1. Emotional Experience

But is emotional life in its beginning more pleasant or unpleasant? Pessimists have expressed some extreme ideas about the misery of the first

[1] William Stern, *Psychology of Early Childhood Up to the Sixth Year of Age.* New York, Henry Holt, 1930, pp. 75–76.

[2] Charlotte Bühler, "The Social Behavior of Children." In *A Handbook of Child Psychology.* Edited by Carl Allamore Murchison. Worcester, Mass., Clark University Press, 1933, p. 376. Quoting H. Hetzer and B. Tudor-Hart, "Die frühesten Reaktionen auf die menschliche Stimme." (Quell. u. Stud. z. Jugendk. No. 5) Jena, Fischer, 1927, p. 19.

months of human existence, to say nothing of its last years. A truer picture is given by the observation of Stern:

> If a six-months-old child cries and screams for an hour a day—which is a fairly large estimate—the rest of his waking time is filled with overflowing joy in life, eating and drinking delicious food, pleasant baths, happy babble, eager play, the delight of kicking, struggling limbs, observant surprise, joy in the dear faces around him.[3]

Let us now turn to the various forms of emotional life in infancy.

Watson[4] maintained that children in the first few months of life presented only the three following forms of emotional reactions.

1. *Fear*, or the startle reaction to loud sounds or sudden loss of support.
2. *Rage*, or the stiffening reaction to the restriction of movement.
3. *Love*, or the expansive reaction to caresses, warmth or, stroking of erogenous zones.

He felt that these three types of emotional reactions were native and, therefore, given with the original endowment of the human organism. Further experiment led him to believe that very few of the objects of experience aroused spontaneous fear in the human infant. A young child, for instance, will accept and play with any object living or lifeless presented to it by an adult. There is, according to Watson, no innate fear of snakes, dogs, cats, rats, and so on. But fear may be conditioned to animals or objects of various kinds. Watson presented a number of animals to a child and found that he manifested no fear toward any of them. Finally he presented a white rat; and, just as the child was holding out its hands to receive it, he banged a bar of steel hanging behind the child's head. This frightened the child. After a few such presentations the child manifested fear at the mere sight of a white rat, and not only to a white rat but to a variety of white fuzzy objects as well.

This led Watson to put forward the theory[5] that the many fears of older children and adults are not primitive original reactions of the human organism but are conditioned by the behavior of other human beings and the incidents of life.

But "in a study of responses to a snake, H. E. and M. C. Jones have shown an absence of fear-behavior under two years; from two to five, fear of snakes is positively correlated with age, even when the possibility of conditioning is ruled out."[6]

[3] William Stern, *Psychology of Early Childhood*. New York, 1930, p. 125.

[4] John B. Watson and J. J. B. Morgan, "Emotional Reactions and Psychological Experimentations." *Am. J. Psychol.*, **28**: 163-174, 1917.

[5] John B. Watson, *Behaviorism*. New York, The Peoples Institute Publishing Co., 1925, 125 ff.

[6] H. E. Jones and M. C. Jones, "Genetic Studies of Emotions." *Psychol. Bull.*, **27**: 48, 1930.

Such studies raised the problem of whether or not certain emotional reactions are absent in very young children but appear later on by a process of maturation, just as first and second teeth have their various periods of eruption.

Gesell questioned whether or not emotions develop by the appearance of three primary emotions, and by the extension of the primary emotional reactions to various objects by conditioning.

He then maintained that much emotional behavior made its appearance by maturation and not by conditioning. He says,

> Consider the reactions of an infant to confinement in a closed space, approximately 2x2x4 feet. . . .
>
> At ten weeks he may accept the situation with complete complaisance, at twenty weeks he may betray a mild intolerance, a dissatisfaction, persistent head turning and social seeking which we may safely characterize as mild apprehension; at thirty weeks his intolerance to the same situation may be so vigorously expressed by crying that we describe the reaction as fear or fright. Here there are three gradations of response: first, no disquietude; second, mild disquietude; third, robust disquietude. Is not this a genetic gradation of fear behavior, which is based upon maturational sequence, rather than an historical sequence of extrinsic conditioning factors?[7]

Observation and study have limited very much the sphere that can be safely accredited to conditioning in the extension of emotional reactions to the objects of experience. But they have by no means ruled out all conditioning as a factor in the spread of our emotional reactions. Parents with special phobias who allow themselves to display their fear reactions before their own children thereby develop unreasonable fears in some of these children. The mother who sent her little girl for things she wanted down in the cellar, because she, the mother herself, was intensely afraid of a mouse that lived down there, finally conditioned her daughter to an unreasonable fear of mice. Some phobias are conditioned in this or other ways. Some fears arise by maturation. But there is still another way in which emotional reactions may arise as life lengthens and experience widens.

The intellectual life of man is in need of experience for the interpretation of reality. Concepts, or the intellectual categories of experience, must be developed if we are going to see objects in their true perspective. Principles must be stored in the mind if conclusions are to be drawn and problems solved by intellectual methods. And so if we are to understand situations and perceive danger and be afraid of consequences that might well occur, there must be a certain amount of intellectual development. The appearance of emotions in various situations must necessarily await a requisite degree of intellectual development.

[7] Arnold Gesell, "Maturation and Infant Patterns." *Psychol. Rev.*, 36: 317, 1929.

In the feeble-minded there is a relation between degree of intelligence and an emotional score in anger and affection.[8] Such a finding confirms the rational expectation that without appreciation and understanding of a situation emotional reactions are likely to be absent or inappropriate.

We may here summarize the main points in our study of the development of emotional experience in infancy. At a very early period of human life the infant seems to manifest various emotions. We have made no attempt to enumerate the original forms of emotional experience. Certain situations such as fondling, stimulating, and irritating call forth emotional manifestations very early in life. But as life progresses the objects that call forth emotional behavior increase in number. This increase may be due to any of three factors: (a) conditioning, (b) maturation, and (c) an intellectual appreciation of situations.

Let us take a glance now at the various types of emotional manifestations and ask ourselves, Does the infant enter life fully equipped to manifest in various ways his inner emotions or does emotional expression go through a process of development?

## 2. Emotional Expression

We might cite here the work of Mandel Sherman, who demonstrated that when observers did not know the situation producing the emotional behavior of an infant they were often unable to identify the emotion dominating the baby's mind when they observed the moving picture of the incident or actually looked at the living child. Sherman maintained that in forming one's opinion about the emotions of the child, the basis of judgment is not the behavior of the child, but the adult's knowledge of the situation giving rise to that behavior.[9]

In contrast to these findings one might cite the early study of Duchenne, who worked with an old man whose face was anesthetic and could therefore be stimulated electrically without any pain response. Duchenne mapped out the points of election for the stimulation of the various facial muscles and by the electrical stimulation of only one or two muscles he was able to produce the characteristic facial expression of various emotional conditions.

He maintained that the expression of certain emotional states could be

[8] Beulah May Morrison, "A Study of the Major Emotions in Persons of Defective Intelligence." University of Calif. Publications in Psychology, 3: 73–145, 1924. The correlation between I.Q. and anger was 0.67; between I.Q. and affection, 0.73; but the correlation between I.Q. and fear was only −0.018. In the environment of the population studied, only 22 per cent showed any fear at all (p. 125).

[9] Mandel Sherman, "The Differentiation of Emotional Response in Infants." *J. Comp. Psychol.*, 7: 265–268; 335–351, 1927. Also M. Sherman and I. C. Sherman, *The Process of Human Behavior*. New York, W. W. Norton & Co., 1929, pp. 227.

attained by the stimulation of a single facial muscle, for example, pain by the action of the *corrugator supercilii* on one side.[10]

A consideration of these two pieces of work suggests the conclusion that in infancy the reflex manifestation of emotion by the contraction of certain muscles of expression in the face has not yet attained its final stage of development. Later in life, however, the tendency of an emotion to involve the activity of a single facial muscle or a definite group of facial muscles is much better established.[11]

A great deal of work has been done on the problem of the facial expression of emotional states and the end is not yet in sight, but anyone who has examined Duchenne's photographs will feel that some emotions can be expressed quite well by the action of a single muscle and others by that of two or more muscles.

But facial expression is only one type of activity in the very complex bodily resonance which is called forth by emotional conditions. The matter is not quite so simple as it was conceived of by Cannon. Emotional resonance has not the character of a simple reflex.

Cannon thus expresses his concept of the reflex character of the emotional pattern of rage.

> All the main features of the simple reflexes—the unborn, prompt, constant, uniform, permanent and utilitarian nature of the response to a definite type of stimulus—all these features of the simple reflexes are reproduced in the characteristics of an outburst of rage.[12]

If we consider emotional behavior in all its aspects and as a whole, it partakes rather of the character of impulsive conduct rather than of a simple reflex. There are some elements which because of their involuntary character we might look upon as quasi-reflex in character, such as the play of action in the facial musculature, the changes in cardiac activity, and the increase in blood sugar.

But we must also consider that emotional responses undergo a process of development so that an emotion is not manifested by a fixed pattern of response but by any behavior possible to the child at its level of development.

Blatz in a valuable study[13] has given an account of the order of appear-

[10] Duchenne of Boulogne, *Mechanisme de la physionomie humaine.* 1862.

[11] See the summary in Christian A. Ruckmich, *The Psychology of Feeling and Emotion.* New York, McGraw-Hill, 1936, 251 ff.

[12] Walter B. Cannon, "Feelings and Emotions." In *The Wittenberg Symposium.* Edited by Martin Luther Reymert. Worcester, Mass., Clark University Press, 1928, pp. 257–258.

[13] See the interesting Table III in William E. Blatz and Dorothy A. Millichamp, "The Development of Emotions in Children," *University of Toronto Studies.* Child Development Series, no. 4. University of Toronto Press, 1935, p. 19.

ance of forms of behavior during emotional episodes. As the child gets older new emotional responses appear and more primitive ones are dropped. For instance, the angry words of the child cannot, of course, appear in infancy and the stiffening reaction characteristic of the infant's rage disappears in later childhood.

In the appearance of these new forms of emotional reaction we can see the operation of maturation of the nervous sytem and also the development of insight into situations on the basis of experience. But the child is not a passive stimulus and response machine capable only of various types of reflex action but a unit organism with intellect and volitional control seeking an adjustment to the problems of life.

This leads us to the third point of our investigation—the development of control in emotional life.

### 3. The Development of Emotional Control

When the child is just born he is suddenly presented with his first problems of adjustment, as well as with the first possibility of exercising his latent abilities in coping with a new situation.

One interesting feature of the emotional development of the infant in the first twenty-four months of life is the fact that the frequency of emotional responses to situations drops rather rapidly in the first four months of life and this sudden drop is followed by a slow downward trend thereafter.[14]

Along with the decrease in the frequency of emotional episodes there takes place an increase in the variety and complexity of affective behavior. This increase in the complexity of emotional behavior is of such a character that the infant's reactions become progressively more adapted to a favorable solution of the problem which calls it forth.

"An examination into the qualitative nature of the behavior forms themselves shows them to be of a progressively less diffuse, random and undifferentiated nature, e.g., they become with age more specialized and appropriately directed towards the situation in which they occur."[15]

The type of behavior that Blatz and his fellow workers found to diminish as the infant becomes older was such things as: crying, screaming, restlessness, struggling, refusing, resisting, throwing things, stiffening, throwing self back, clinging, running away, hiding face, saying "no," slumping.

Emotionality of the angry, unhappy type tends to be replaced by peace and calm and a quiet effort to get out of difficulties in a reasonable and efficient manner.

It would thus seem that emotional behavior is not merely a medley of

[14] See the interesting curve in Blatz and Millichamp, *loc. cit.*, p. 15.

[15] Blatz and Millichamp, *loc. cit.*, p. 20.

reflexes but involves impulsive action more or less capable of voluntary direction and control.

Birth is the first precipitant of emotional behavior. But very soon the child must meet another marked change of environment with its attendant train of new and strange situations. The child goes to school.

In a second study Blatz and his associates found that the incidence of emotional episodes in children of school age falls rapidly from 4 to 7 years of age with a slow downward trend thereafter. It is interesting to note that the percentage of public school children having emotional episodes is less than would be expected for children of average I.Q. and greater than would be expected for children whose I.Q. is relatively high or relatively low. Maladjustment is therefore a factor in the production of emotional episodes.[16]

Furthermore what was true of the infant is true also of the school child. Emotional behavior becomes less chaotic with age "and better directed towards the problem situation as well as more socially acceptable."

In confirmation of the findings of Blatz is the observation of Bridges:

> When children first come to school at the age of two to two and a half, they cry fairly often, some children more than others, and their tears are predominantly due to distress or discomfort. . . .
>
> After a few weeks in school children usually cry very seldom, and by the time they reach three years it is rare for them to cry more than four or five times in the month.[17]

In confirmation, too, of the claim that children's emotional behavior becomes less chaotic with age and better adapted towards the problem situation is the experience of Bridges that "when three and four year old children dislike things, they usually make verbal complaints about them instead of crying."[18] Perhaps this is true mainly of children who have been taught by a good regime that crying does not work as well as verbal explanation.

Blatz draws the following valuable corollary from his study of the emotional behavior of infants.

> Pedogogically, the implication in these data would be that emotional training can best be advanced by guiding the child in developing more adequate forms of behavior, thus reducing the prevalence of unadaptive behavior. Punishment or mere discipline

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[16] William Emet Blatz, S. N. F. Chant, and M. D. Salter, *Emotional Episodes in the Child of School Age*. University of Toronto Studies. Child Development Series no. 9. University of Toronto Press, 1937, 10 ff.

[17] Katherine May Banham Bridges, *The Social and Emotional Development of the Pre-School Child*. London, Kegan Paul, French Frubner & Co., 1931, p. 105.

[18] *Loc. cit.*

with regard to emotional behavior would appear to occasion even more behavior of the same kind, but perhaps of a somewhat different type. What is needed is facilitation of the learning of adaptive behavior, intelligent guidance, reasonable routine and demands commensurate with maturity.[19]

Very early too in the infant's life one must introduce simple moral principles and ideals of conduct. When these are presented as they should be the child commences to control emotional behavior from within and does not feel blocked and thwarted by restrictions arbitrarily imposed by another human being from without.

Emotional growth, when we consider control as one of its integral parts, never ceases as long as we live.

If one had a continuous curve of the frequency of emotional reactions, it would probably show sudden rises as a human being is confronted with novel situations and new demands are made upon him. These rises would be followed by more or less sudden falls as the individual commences to understand his environment and devise means of meeting the new set of difficulties. The crests in the curve of emotional adjustment would occur at the following crises in human life: (1) birth, (2) the acquisition of the power to understand and use the spoken word with the new problems of obedience to spoken commands (the *Trotzalter* of the Germans), (3) entrance into school, (4) adolescence, (5) one's first employment, (6) marriage, and (7) retirement and old age.

From the data we have just presented it is evident that a human being whenever he is confronted with a new situation tends to react in an emotional manner to the challenging incidents of the novel environment.

Emotional development throughout the course of a lifetime means *not only* the appearance of specific types of emotional experience and the quasi-reflex manifestation of well formed units of expression *but also* the ability to inhibit many of the quasi-reflex manifestations of emotional resonance and the impulsive tendencies called forth by novel situations *and* the ingenuity to devise appropriate methods of handling a novel situation so as to attain a satisfactory adjustment and a worth-while objective.

[19] *Loc. cit.*, p. 44.

## Chapter 12

# AFFECTIVE EXPERIENCE AS A PSYCHIC OR ORGANIC REACTION

We have pointed out that emotional conditions may arise from a kind of total insight into all the implications of a situation.

We have also shown that emotional conditions may result from organic physiological conditions.

It will be of considerable value to illustrate these two different types of emotional experience from the life history of mental patients.

### 1. Affective Experience Arising from the Misfortunes of Life

There is much evidence to show that sudden intense emotional experiences may give rise to at times or, if you will, be followed by genuine psychotic conditions. The mental trauma seems to be intimately connected with and causative of the psychotic condition that follows closely upon it.[1]

There is also a good deal of evidence to show that violent emotions in childhood are connected with phobias which arose with and continued after the event which caused such a mental disturbance in early life. Furthermore, the emotional trauma may lie dormant for years and nevertheless be responsible for a phobia that appears later in life.[2]

And finally, there is evidence to show that chronic emotional strain has something to do with the development of psychotic conditions.[3]

It will be instructive to take an actual case in which a mental condition seems to grow out of emotional stress.

A number of years ago a lady in the middle forties was brought to me some months after she had made an attempt at suicide.

The course of her life had been somewhat as follows. After finishing two years of high school she went to work at 16 years of age, became a successful telephone operator, and eventually had charge of a busy office. Shortly after going to work her baby brother was born and she took great interest in planning a career for him and eventually saved her money to put him through college. When about 22 she developed an ulcer of the stomach and this plagued her intermittently ever afterwards.

[1] Cf. T. V. Moore, *The Nature and Treatment of Mental Disorders*. New York, Grune & Stratton, 1943. Pp. 76–83.

[2] *Loc. cit.*, pp. 89–110.

[3] *Loc. cit.*, pp. 83–88.

The greatest sorrow of her life, however, was the breaking of her engagement to a young man when she was about 28. From that time on she felt as if she did not have and never could have a true outlet for her affections. She naturally centered everything then on making a place for her young brother in the world, and so she undertook to put him through college.

When she was about 38, and her brother 21, he died and she entered into a period of low spirits and depression which lasted for some years.

About two years after her brother's death, her mother noticed that she cried a great deal. It was at this time that her mind was haunted by thoughts of suicide. She would lie awake at night thinking about how she could put an end to her life. Though a good Catholic she never opened up this matter in confession. The ulcer pains became a contributing factor by keeping her awake at night, and during her insomnia her mind was tormented by thoughts of suicide. She would picture herself dead in her coffin. And here another emotional factor entered into the complex—the craving for sympathy. She would imagine her relatives standing by her coffin and saying, "The poor child, how much she suffered." From a child she looked for sympathy, especially when sick, but seldom got it. When the stomach ulcer interfered so much with her eating that she became thin, her relatives showed some sympathy and concern. But with diet and treatment she commenced to fatten up and look well, and nobody thereafter seemed the least bit concerned. And this hurt her feelings, for the ulcer pains still continued and no one seemed to care. She wished she could die and said to herself, "If I really did die of this ulcer, then they would understand and feel so sorry for me for the way I have suffered."

One Sunday morning after returning from Mass, her mind was all upset. She had not slept the night before and felt sad and neglected. At Mass she prayed that God would take her out of this world. After Mass her sister drove her home, but only after attending to some little duties, and so she came back late for dinner. Her older brother scolded her in an angry manner for keeping everyone late for dinner. She had expected her mother to take her part and explain matters but she did not; her brother kept on scolding. She started to cry and went upstairs alone and no one seemed to care. She did not, however, go to her own room, but to her brother's, for she knew that her brother had a revolver there hanging in a holster. She took it out and for five or ten minutes kept saying to herself, "I can't stand it, I can't stand it any longer." She pointed the revolver several times at her abdomen. She told me later that she thought of the abdomen rather than the head for she felt that if she would shoot herself through the abdomen, she would be conscious for some time before her death and she would see the family standing about her and pitying her and

expressing sorrow for the cruel way in which they had treated her. Furthermore, after the deed she wanted to have a chance to go to confession before she died. Finally she shot herself twice in the abdomen and fell. The family heard the shots and came running to the scene. Her brother got there first and then her youngest sister. But instead of pitying, they scolded her and her sister said, "Can't you bear anything." After the doctor and the priest came, she, expecting to die, said to her sister: "You will be sorry you weren't kinder to me." But instead of dying and being pitied she recovered and went to the insane asylum. After being discharged from the mental hospital, she sought psychiatric help in attempting a readjustment.

From this case history we may learn a number of things about emotional reactions, and one is this:

*Some* emotional conditions are reactions to cognitive experiences and when these emotions are intense and profound this is at times due to the antecedent utter disruption of the patient's adjustment in life. An adjustment in life is the centering of our strivings and activities to attain the welfare of some individual or further some work in which we are profoundly interested. As long as it seems that we are promoting the welfare of this individual or helping the cause to which we have devoted our energies, life is vivified by enthusiasm and the mind attains to a stable happy condition of peace. But should the individual die or the project collapse or our connections with it be for some reason severed, enthusiasm dies out and peace is destroyed.

And this is what happened to our patient. The cognitive experiences were the knowledge of her brother's death and the realization that her engagement had been broken. These pieces of information were insights of calamity, for they meant the complete disruption of the patient's mental adjustment in life. The resulting sense of depression in such a juncture of unhappy events makes what reason suggests psychologically difficult or impossible, and the patient takes no steps to bring about a new mental adjustment and a substitute centering of affection and activity. "Who wants to, anyhow?" is the pouty disgusted reaction that often ensues.

Why do we say that *some* and *not all* emotional conditions are reactions to cognitive experiences? Because, as we have seen, states of mind involving profound sadness or anxiety may come on without anything occurring that disturbs the patient's adjustment in life, or any event transpiring to which we can ascribe the profound emotional reaction.

Let us first attempt to delve a little deeper into the concept of human affective experience.

Let us imagine that we hear a single tone sounded by an organ pipe.

We may first regard the pitch and the intensity of the tone as reactions of the human organism to certain vibrations of the air by means of the auditory apparatus. Considered merely in this way we have an auditory sensation.

But the auditory sensation is decidedly pleasant. What is this pleasantness? It is not directly and immediately the reaction of the human mind to vibrations in the air but the reaction of the human mind to an experienced sensation which, in turn, was derived from the vibrations of the air by means of the auditory apparatus. The pleasantness is what is known in psychology as a sensory feeling. This sensory feeling is a reaction to a cognitive experience, but a cognitive experience of a sensory character.

There has been a great deal of discussion concerning the nature, number, and characteristics of these simple sensory feelings. Many psychologists think that there are only two forms of simple sensory affective experiences, namely, pleasantness and unpleasantness. Külpe adopted this view and thought that feelings were characterized by two attributes:

*a*) *Universality*, in the sense that they have no specific dependence on a sense organ but can be produced by the activity of any sense organ. This attribute is easily understood if we bear in mind what was said above: that the simple affective experiences, or feelings, are reactions of the human mind to experienced sensations, not directly and immediately to the stimuli that act upon the sense organ. The immediate reaction to a sensory stimulus is a sensation. The reaction of the mind to the sensation is a simple affective experience or feeling.

*b*) *Actuality*. By this he meant that we cannot form a mental image of a feeling as we can of a sensation. The replica of a sensory experience is a cognitive experience belonging to the same sensory field but differing as a rule in intensity (or to some extent in quality) and lacking the bonds that a sensation has with objective reality. We can image a past experience which will cause pleasantness or unpleasantness, but the feeling thus aroused is an *actual* feeling in its own right, not an image of a feeling. The term image applies to our cognitive mental life, not to affective experience; and feelings, however aroused, are reactions to some kind of sensory experience, to sensations themselves, or to images of sensations.

According to Külpe, there are only two forms of affective experience, the pleasant and the unpleasant.[4] This was the more common view among psychologists until Wundt published his tridimensional theory of feeling in which he recognized three fundamental forms of feeling, each having paired opposites: (1) pleasantness and unpleasantness, (2) tension and relaxation, (3) depression and excitement. Wundt attempted to explain all complex emotional states as combinations in different proportions and with

[4] For the above analysis of Külpe's concepts, see Oswald Külpe, *Vorlesungen über Psychologie*. Leipzig, Hirzel, 1922. 217 ff.

different rhythms of incidence of these fundamental forms of feeling.[5]

We might repeat here in criticism of this theory what was said in the first edition of *Dynamic Psychology*. No one will be inclined to doubt the distinction between simple sensory feelings and the complex emotional processes. The question arises, however: How many simple feelings have we? Wundt recognizes that every resultant feeling has its own specific tone proper to the complex. There is no evidence which shows us conclusively that this specific tone (for instance, the tone of impatience in the emotion of anger, the peculiar delight in the emotion of joy) is a resultant feeling. It is a pretty theory to assume that it arises by the fusion of these simple feelings, but, for all we know, it may itself be a simple feeling. Can we analyze, for instance, the characteristic tone of feeling that one experiences in slight impatience into any simpler components? Is it something different from unpleasantness? It seems *sui generis*. It may be accompanied by unpleasantness, but at times, under different circumstances, one may experience the same unpleasantness but no feeling of impatience. Wundt's theory merely raises the question: How many simple feelings do we experience? He names six. He points out furthermore, according to his own interpretation, that there is a specific tone of feeling to every resultant feeling. Perhaps all of these specific tones are themselves simple feelings. The writer is inclined to believe that they are. There is no satisfactory classification of odors into definite groups. Our emotional life has a complexity of qualities similar in extent to the number of characteristic nuances that we recognize in sensations of smell.

The concept of the manifold nature of simple affective experience is associated with the name of Theodore Lipps.

According to Lipps, feelings "are the immediate modes of appearance in consciousness (Bewusstseinssymptome) of the ways in which psychic phenomena are related to the mind (Seele) or to the entire complex of mental life, or the ways in which they enter into the psychic chain of vital phenomena. These ways are indefinitely numerous. In exactly the same way the feelings are indefinitely numerous."[6]

Nevertheless he recognizes a certain universality of pleasantness and unpleasantness which he compares to the brightness of colors. Just as all colors while maintaining their specific qualities can be more or less bright or dark, so feelings while maintaining their individual differences can be, according to Lipps, more or less pleasant or unpleasant.[7]

Let us now return to our patient. Could her emotional state be analyzed

[5] Cf. Wilhelm Wundt, *Grudzüge der physiologischen Psychologie.*

[6] Theodor Lipps, *"Vom Fühlen Wollen und Denken." Schriften der Gesellschaft für psychologische Forschung*, no. 13 and 14 (series III) Leipzig, Barth, 1902, p. 5.

[7] Cf. *Leitfaden der Psychologie.* 3rd Ed. Leipzig, 1909, p. 314.

into various sensations to which in some manner various shades of pleasantness and unpleasantness had been attached? One has but to attempt a purely sensory analysis of her condition to see that tones of pleasantness and unpleasantness, plus certain mere sense qualities, are wholly inadequate to function as the sole elements in her mental state.

There stands out in the picture we have of her condition the craving of a human being for an object on which to center the affections and for the sympathy and interest of those about her.

The death of her brother and the loss of her fiancé were more than the disappearance of certain groups of sensations from her daily experience. Our knowledge of a human personality involves intellectual insight into values which can never be expressed in terms of mere sensory qualities, such as dark and bright, hard and soft; the tones of a voice as mere pitches and intensities, and so on.

Our major human emotional experiences arise from insights into the meanings of situations of which only a being capable of intellectual interpretation is capable. No matter how delicate might be one's powers of sensory discrimination, fineness of sensory discrimination would never account for the insights that give rise to human emotional experience.

There is something more that we notice in studying our patient. The stream of emotional experience has two important elements, not one. The patient was sad, but the sadness does not seem responsible for the suicidal attempt. The drive to suicide seems to have originated more in an attempt to get sympathy rather than a desire to put an end to the sadness.

What is this experience that we have when in great trouble and someone gives an honest spontaneous manifestation of feeling sorry for us and wishing that he could do something to help us? It is a much more intense and complex emotional experience if there already exists an affection on the part of one who received the sympathy for the one who extends it. Sympathy is often rejected when extended by one towards whom one feels antagonism. When accepted, it is pleasant, it is consoling. But is the pleasantness the same as any other pleasantness or a pure sensory pleasantness not to be distinguished from the pleasure that one has when enjoying a mouthful of delicious food? Pure sensory pleasantness derived from objects rather than persons is not subject to modification by antagonism in the same way that sympathy is affected.

The craving of the patient for sympathy is but one piece of evidence pointing to the complexity of human emotional experience, a complexity that seems to defy classification. And yet there are certain factors in emotional life which are capable of empirical demonstration when one makes use of factorial analysis, as we shall see later.

Let us dwell a little longer on the concept that the patient's emotional

condition was a reaction to the experiences of her life. We do so because of the theory that emotional experiences are not reactions to our insight into situations but are perceptions of changes going on in our own body.

In our patient there were two unfortunate experiences in life which contributed to her sadness: one was the breaking of her engagement and the other the death of her brother, who had become the center of her life. It is natural for us to think that each of these losses was an experience to which her personality reacted by sadness. It would be very difficult for us to conceive of the knowledge of the death of her brother producing directly and immediately, prior to any emotional experience, a certain beating of the heart, a flow of tears, changes in the respiration, muscular contractions and various gastrointestinal phenomena, and then to suppose that the patient's awareness of the physiological changes to be the emotional experience itself. But granted that this might be possible, a certain difficulty arises. These physiological phenomena are transitory events. They rise in an acute manner and fade away. But the sorrow remains. Superficially at least it seems as if the patient's sorrow is her reaction to the knowledge of the losses she has experienced. This knowledge does not fade out and the void it creates in the mental life lasts much longer than the acute changes that occur in the organism when the mind first learns of the unfortunate event which demands a reorientation of the whole mental life.

### 2. Affective Experience Arising from Physiological Changes

Let us introduce you to the organic emotional reactions by the presentation of a case.

A patient in his latter fifties came to me for help in a severe depression. I had seen him in his first depression for a single interview only. He was now in his fifth depression. One depression had followed another, each lasting almost a year with relatively short intervals of normality, or euphoria, between them. He had, in all, five of these attacks of sadness.

Unlike the patient whom we have just discussed, there was nothing that one could single out as a cause of the long deep periods of sadness from which he suffered.

The picture that he presented was one predominantly of sadness, though mixed with fear. The object of his fear, however, was the condition itself, lest it should deepen and become unbearable. His sadness was so deep that at times he was unable to do anything at the place where he worked. Fortunately, he had a sympathetic manager in his office who appreciated his past services and allowed him to hang on doing little or nothing of value to the business.

The patient was happily married and had a good income, and there was no reason that one can assign for the onset of his depressions. This onset was gradual and is best described in his own words.

This present attack began, after a six months' period of normality, following a previous year of depression. I began to notice a diminution of my cheerfulness and other slight symptoms only too well known and for which I always am on the watch. In May I was sure I was in for another attack. All the old symptoms began again in mild form, such as: (a) sensitivity to heat and cold; (b) shrinking from people; (c) distaste for my work; (d) loss of energy; (e) sleepiness and fatigue; (f) fear and uneasiness, and so forth. By mid-June I was worse and continued to slip further into the slough through July, August, and September. It was a bad summer and I suffered a great deal. I had no vacation and would have been unable to enjoy one, I felt the heat terribly.

My devotional attitude fell off greatly. It became a bore and then painful to go to church. I still went as often as before, but could not pray confidently and always had to force myself to go. This is mere repetition of previous experiences.

As I regain my normal condition, I also regain my faith and confidence in God along with all the other things in life that I anchor to. My faith and trust in God being but a human act is affected in the same manner as all my other acts.[8]

God seems far away. I cannot reach Him. My prayers have no echo—no response. They fall like arrows shot against a stone wall. They have no penetration.

I fight against this and say: "I believe Lord! Help Thou my unbelief!" This best expresses my attitude.

As I improve my prayers improve; I begin to sense the Presence and to feel secure in His care. I discovered after one of my severe attacks that I really loved God for the first time in my life. Not just respect or obedience or fear, but affection towards Him. I had never felt it before much as I had desired it. So now when I recover there comes a gradual upsurge of emotion, a sense of gratitude and affection towards God. Then it becomes a pleasure to go to Mass and I am able to lift myself.

This account raises the question as to what is the difference between a depression such as this patient experiences and the condition spoken of by St. John of the Cross as "the dark night of the soul."

St. John of the Cross points out that conditions similar to the condition he terms "the dark night" may arise "from one's own sins and imperfections" or from some evil "humor or bodily indisposition."[9]

The condition of which he speaks presupposes a certain amount of progress in the spiritual life. It arises after one has given up all things for the sake of God. Having made the complete sacrifice, there follows a period

[8] This should be understood as referring to the human side of what is called faith. As a matter of fact, during all his depressions a steady blind faith seems to endure without diminution, but he is more or less completely bereft of the consolations of faith.

[9] "De pecados e imperfecciones, o de flojedad y tibieza, o de algún mal o indisposicion corporal." Noche Oscuya I, ix, p. 1. Obras de San Juan de la Cruz. Edited by P. Silverio de Santa Teresa. Burgos, Typographia El Monte Carmelo, 1929, Vol. II, p. 389.

of joy and delight in the things of God, and then by God's own action, rather than any physical condition, all joy and delight in spiritual things is withdrawn and the soul is left hanging between heaven and earth but without any terrestrial or celestial pleasure and comfort. There is no actual memory of any sin committed for there has been no turning to creatures even for lawful consolation. In the "dark night" the soul is not in a state of negligence and lukewarmness, but on the contrary is ever turning to God with a certain earnest heedfulness.[10] The darkness is sometimes associated with a fear of having offended God that has no ground in anything that the person has done, and so there is a certain resemblance to the familiar picture of the anxious depression. St. John says that the condition may "be intensified by melancholia or some other abnormal condition, as it often is."[11] But when melancholy is due to purely natural causes, rather than to the divine action purifying and sanctifying the soul, the torment that the mind experiences is present indeed, but there is lacking that quiet firm desire of subjecting oneself to the divine will, no matter what one may have to suffer, which is characteristic of the supernatural process of purification that takes place in the "dark night of the soul."

One must look upon St. John's discussion of the condition as drawn from personal experience and his observation of many others who had made considerable progress in the spiritual life. The "dark night" is a fact of observation, not a speculative invention. He would be a rash psychiatrist, indeed, who, basing his opinion only on patients whom he had seen in mental hospitals and without experience in studying the mental life of those who dedicate themselves to the pursuit of spiritual perfection and the service of God, would deny any difference between the condition described by St. John as the "dark night of the soul" and those diagnosed by psychiatrists as an anxious depression or an involutional melancholia.

St. John of the Cross says that both conditions may be present at the same time and we must look upon this as based upon his own knowledge of persons leading a devout religious life. If this is so, it is very likely that the two are not always mixed in equal proportions, but that one may have either the supernatural or the natural as the dominating element.

Furthermore, it is important to point out to a patient who has some knowledge and appreciation of God and religious things that his depression has a value and is not just so much burning up of the span of life and its possibilities of accomplishment. *All* suffering, no matter what its origin, if patiently borne, purifies and sanctifies the soul and can be offered to God

[10] "Ordinariamente la memoria trae en Dios con solicitud y cuidado penoso." St. John of the Cross, *loc. cit.*, p. 3.

[11] "Aunque algunas veces sea ayudada de la melancholia u otro humor (como muchas veces lo es)," *loc. cit.*, p. 3, p. 390.

for the welfare and sanctification of others. And so the darkness can be made a little brighter and the sadness may be lifted just a little bit. But the brightening and the lifting, however little, is a great help when it seems that just one more straw will break the camel's back.

Let us now return to our patient. He may be taken as a good example of one whose condition is due to a mixture of what St. John of the Cross would term "the dark night and melancholia."

In what proportion are the two mixed? This is difficult and unnecessary to determine. The etiology of his condition contains a big physiological factor. But who can deny that part of the suffering is in some way permitted or caused by God for the purification of a human soul? The stress and strain of life seems, however, to play a minor role if any in bringing on his depressions. One could scarcely regard it as purely and simply the dark night of the soul, which seems to demand as a fundamental condition a preliminary utter rejection of all creatures in order to be wholly united to God. Our patient wrote of himself, "I lack spirituality; I still cry for the fleshpots of Egypt, legitimate decent fleshpots, but fleshpots none the less: animal comforts, money, travel, ease and so forth." And yet as one reads the notes he has made of his condition, we recognize an element of deep spirituality. There is more genuine sanctity in him than he has any conception of, and for this reason we can be sure that his mental suffering is a process by means of which he is made holy.

He has been able to see the value of his sufferings, not for himself, however, but as a prayer that he may offer for the welfare of others, and this insight makes it possible for him to endure his suffering with greater calm and patience. It is a good example of the value of religion in the treatment of a mental condition. The value is palliative indeed, rather than curative, but we must not despise the importance of easing the suffering we cannot entirely remove.

I have lately derived a bit of consolation from a new (to me) idea. I was never able to quite sincerely offer up my affliction for myself, either in expiation of past wrong doing or as a credit for the future. This was based partly on my refusal to believe in the "visitation of Providence" theory. In spite of the evidence of the gospel of the sparrow's fall, I cling to the permission theory and am strongly convinced that the thing is like an attack of typhoid and due to natural causes, both physical and mental, present and past. Somehow I have broken the laws of right living and am paying the penalty and God permits the law to work itself out to fit His own ends. It is good for me to suffer, it is His will.

Now to offer up this pain for myself seems a contradiction or at least it involves a sort of paradox. Maybe it is simply that I am unwilling to sacrifice myself for myself.

But to offer it up as a sacrifice for those I hold most dear and to believe that my suffering may redound to their benefit, this is in line with my paternal instinct and this I am trying to do more or less successfully.

This depression lasted about fifteen months and cleared, being followed by a hypomanic condition in which, however, he was a very hard and successful worker at his business.

To give you some idea of this hypomanic condition, I might quote the following message which was given to the secretary at the child center and taken down by her. He called the secretary Miss Window Shade and told her to tell me how he felt. The note taken down in shorthand ran as follows: "I'm broke. One hundred and ten dollars behind. When my ship comes in I will do something for the clinic. If I felt any better, I would be flying around. Never felt better in my life. I feel tremendously bouyant and elated. I'm at peace with the world, except the Republicans. I hate their gizzards. My mind is as clear as crystal. I am able to do all kinds of mental work including legal work. And for the past five weeks I have worked so hard that I only got five hours sleep every night."

Mental depressions are often followed by periods of elation, so frequently indeed that the two conditions formerly termed *melancholia* and *mania* were united by Kraepelin into one diagnostic entity: the manic-depressive psychoses.

In our patient there seem to be no particular events in his daily life that bring on, as adequate psychological causes, his depressions or his elations. But this does not mean that the major joys and sorrows of life are without any influence on his pathological records.

Let us see how sorrows and joys affect him when in a pathological condition of melancholy.

In a later depression, after it had lasted about sixteen months, he received word that his son, a fighter pilot, had been shot down in an airplane in France. "This," he said, "sank me, and had the following peculiar effect. It was about time for the depression to clear and those periods commenced to come when the ceiling in the mental sky lifts and one thinks that all is going to clear. But the knowledge of the boy's death kept the ceiling pretty low and my mind as it were would rise as if finally to be itself again and it would hit the ceiling: The boy is dead; there is no use of getting well anyhow; and so I would sink back again. I think if it had not been for the heaviness caused by the news of my son's death, I would have cleared sooner. But the depression hung hopelessly around me. Then one day my boy came home. He had been shot down, but had only been taken prisoner. But the joy of his return did not clear my mind; it however, enabled me to get better. When the 'lifts' would come, there was no ceiling to hit. My mind could rise to any height as I thought 'my boy is not dead but living' and after a bit I was entirely well again."

Another incident which shows the relative independence in this patient of the onset of depressions and the incidence of sorrows was the death of his

wife. He remarked in a later depression, "She died and I bore it normally." Nor was it a matter of estrangement between husband and wife, for he suffered keenly from her death but did not enter into another depression until nearly a year afterwards.

This patient is not unique; many such might be found. It is however, an extreme case, one in which the onset of depression seems to be quite independent of the patient's life. Our former case was also an extreme. In that patient the patient's sorrow was a reaction to the peaks in the stress and strain of life. Between the two are patients who react violently to a trivial cause, such as a patient mentioned by Kraepelin who entered into a pathological depression after the death of her canary bird.

We have introduced into this discussion of emotional conditions states of mind that are seldom met with by the psychiatrist, namely, certain conditions that arise in the course of one's spiritual development. Anyone who has attained to the concept of God as the Supreme Intelligence in a world of intelligible beings will recognize that the divine intelligence comes into contact with the mind of man. St. John of the Cross points out to us that at a certain stage in the development of the spiritual life, after a human being has renounced all things merely to be with God and after having enjoyed the first contacts with God in the inner depths of his mind, that according to the experience of the mystics God withdraws His presence and leaves the soul alone. There often results a state of mind which, in its manifestations but not in its etiology, is closely akin to the pathological depressions.

Psychiatrists will very seldom meet with conditions of this kind, but it would be well for them to know that they occur.

Leaving these conditions aside we have ordinarily two factors in the production of abnormal emotional conditions, one psychological, the other physiological, so that

1. *Some* emotional states are due to intellectual insights into situations.
2. *Some* emotional states have their origin in factors that are quite independent of mental experience.

## Chapter 13

# THE FACTORIAL ANALYSIS OF EMOTIONAL LIFE

Let us now approach the field of emotional life from the point of view of factorial analysis.

Factorial analysis has been one of the most interesting and valuable developments of modern psychology. It grew out of a discussion about the existence of mental faculties. Philosophically the net result of factorial analysis is the conclusion that the human mind is endowed with a number of faculties, each one of which is concerned with a specific type of mental performance. When one thus expresses the contribution of factorial analysis, anyone unsympathetic towards a mathematical approach to psychological problems might say: Well, is that all that one gets after the long and tedious calculations? And the answer is: No, that is not by any means all; but it is something, nevertheless, very important and I might say, also gratifying to discover that a philosophical conclusion which has been widely criticized, I can even say ridiculed, has been confirmed by a mathematical procedure.

What other important contributions has factor analysis made besides the confirmation of the fact that the human mind is endowed with specific faculties? Let us see.

It is a useful thing to be able to describe a faculty by concrete terms or phrases which show its manner of operation. It is also a useful thing to be able to study a human being and measure the individual power and strength of his faculties. Sometimes this will be very important and useful. The results of factorial analysis enable us to do this; but it does not come at all within the range of philosophical procedure.

Let us give an illustration of what is here meant.

Sister Rosa McDonough attempted to make a factorial analysis of character by the study and observation of a number of character traits. Fifty students in the seventh and eighth grades served as subjects and, unknown to themselves, they were studied as to various traits by three teachers, who then rated the extent to which their behavior was more or less strongly characterized by each of these traits. Thirty-four traits were studied. These traits were intercorrelated and the intercorrelations are given in the accompanying table of Pearson product moment coefficients.

For the reader to understand what follows he must know or assume:

1. That a coefficient of correlation

$$r = \frac{\frac{1}{N}\Sigma xy}{\sigma_x \sigma_y}$$

measures the tendency for two things to vary together. If the two sets of measurements really measure only one and the same thing or two things that vary absolutely in the same way, their $r = +1$. If the two things vary inversely in perfect proportion, their $r = -1$. If there is no dependence of any kind of one thing on another, their $r = 0$. If the variation in one thing is due partially to a group of causes that affect the other thing, whereas a number of causes affect one of the two things but not the other, their $r$ will range from 0 to $\pm 1$, according to the proportion of identical causes to all the causes concerned. This latter is the more common situation.

2. It may be shown that when there is one and the same cause or group of causes accounting for all the intercorrelations in the table, then the following equations hold good:

$$r_{12}\, r_{34} - r_{13}\, r_{24} = 0 \pm pe$$
$$r_{12}\, r_{34} - r_{14}\, r_{23} = 0 \pm pe$$
$$r_{13}\, r_{24} - r_{14}\, r_{23} = 0 \pm pe$$

These equations involve the concept that when certain products of correlation coefficients (each product involving four different variables) approach zero within the limits of the probable error, then only one cause (or group of causes, that act as a unit) account for all the intercorrelations in table 1.[1]

The study of the coefficients of correlation by this technique gives a relatively simple method of picking out various factors in a table of correlations. Let us look at the table of correlations presented. You will notice that in the upper left-hand and lower right-hand corners the correlations are all positive and in between they are all negative. There is evidently some kind of order and arrangement in the table. Affective mental life is not a chaos but has a principle of organization.

We see that there is a group of traits centering around the central core of strength of will that is negatively correlated with a group of traits centering around a central core of emotionality or irritability.

The will traits give rise to a worth-while, strong, capable personality. The emotionality traits give rise to an unsatisfactory, weak, incapable type of personality. Would it not be useful to be able to classify children as belonging to the worth-while or strong type of personality by traits that could be observed and whose relative importance in measuring the type could be even given an arithmetical weight? Clearly it would be. Let us look at Sister Rosa's data and see how this can be done.

We have attempted to build up a set of traits centering around will and

[1] Cf. T. V. Moore, *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., 1939, p. 595.

another centering around emotionality.[2] If we look over the rating scale given in the appendix,[3] we will have a good example of how a statistical procedure enables us to give an empirical description of a mental function or faculty or type of character and also enables us to measure the degree of its development.

If we look at the traits (table 2, p. 170) that belong to the worth-while, strong, capable type of personality, we shall see that they suggest that these individuals have good control over their conduct, whereas in the emotional, unsatisfactory, incapable type of personality, this control seems to be lacking. The negative correlation of $-0.895$ expresses this concept in a statistical manner.

Now we know that in many psychologies no place is found for volitional control. Could we conceive of will as the mere absence of strong emotions? This concept might explain the negative correlation. But, seeing that the multiple correlation of each battery of tests approaches 0.99, if will were a mere lack of emotionality the negative correlation should also approach 0.99, but it does not. Furthermore there is something, though not everything, in the concept that those who lack a strong emotional drive will appear to have strong wills. But it is also true that those who have a strong power of control will seem to lack emotionality. There is an overlapping in the two batteries. Were it possible to partial this out, the high negative correlation between the two types of character would be considerably lessened. Will therefore is something more than the lack of an emotional drive.

A study of the distribution curves of the two groups (figures 16 and 17) would indicate that the battery of will tests is more homogeneous than the battery of emotionality tests. Unfortunately we have these distribution curves only for the smaller batteries originally published by Sister Rosa McDonough. These curves are here reproduced. It will be noticed that the will test gives a roughly unimodal curve and the emotionality test a strongly bimodal one. One group has a peak in the low emotionality region, the other in the high emotionality region. If we took weights of a number of mastiffs and also of a number of fox terriers and put them together and made a distribution curve, we would have just such a bimodal curve. For some reason our group of seventh and eighth grade pupils belong in two distinct classes from the point of view of emotionality. We cannot without

[2] This was done by a technique developed in our laboratory but not yet published. The calculations referred to (table 2) were done by Dr. En Hsi Hsü, the statistical assistant in our laboratory. The method is illustrated by the Rev. James F. Moynihan in his work, "The Concept of the Synthetic Sense and a Technique for Its Measurement." *Studies in Psychol. & Psychiat.*, **5** (no. 5): July 1942.

[3] P. 445ff

TABLE 1

*Intercorrelations for the Averaged Ratings on the Traits*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Will | | 0.82 | 0.81 | 0.81 | 0.80 | 0.78 | 0.75 | 0.74 | 0.73 | 0.71 | 0.69 | 0.68 | 0.68 | 0.63 | 0.62 | 0.57 | 0.48 |
| 2. Attention | 0.82 | | 0.88 | 0.78 | 0.73 | 0.83 | 0.70 | 0.68 | 0.64 | 0.67 | 0.77 | 0.74 | 0.75 | 0.50 | 0.65 | 0.44 | 0.36 |
| 3 Truth | 0.81 | 0.88 | | 0.82 | 0.70 | 0.83 | 0.75 | 0.69 | 0.71 | 0.76 | 0.78 | 0.81 | 0.84 | 0.58 | 0.69 | 0.61 | 0.48 |
| 4. Reliability | 0.81 | 0.78 | 0.82 | | 0.84 | 0.68 | 0.79 | 0.82 | 0.77 | 0.68 | 0.65 | 0.69 | 0.69 | 0.52 | 0.79 | 0.48 | 0.34 |
| 5. Attitude to work | 0.80 | 0.73 | 0.70 | 0.84 | | 0.60 | 0.73 | 0.85 | 0.81 | 0.66 | 0.64 | 0.54 | 0.60 | 0.47 | 0.67 | 0.55 | 0.43 |
| 6. Self-control | 0.78 | 0.83 | 0.83 | 0.68 | 0.60 | | 0.71 | 0.67 | 0.64 | 0.64 | 0.81 | 0.70 | 0.74 | 0.59 | 0.47 | 0.70 | 0.22 |
| 7. Response to reproof | 0.75 | 0.70 | 0.75 | 0.79 | 0.73 | 0.71 | | 0.80 | 0.85 | 0.68 | 0.72 | 0.62 | 0.69 | 0.71 | 0.51 | 0.55 | 0.51 |
| 8. Obedience | 0.74 | 0.68 | 0.69 | 0.82 | 0.85 | 0.67 | 0.80 | | 0.81 | 0.62 | 0.67 | 0.51 | 0.59 | 0.51 | 0.54 | 0.59 | 0.38 |
| 9. Respect | 0.73 | 0.64 | 0.71 | 0.77 | 0.81 | 0.64 | 0.85 | 0.81 | | 0.66 | 0.65 | 0.66 | 0.68 | 0.59 | 0.54 | 0.49 | 0.54 |
| 10. Generosity | 0.71 | 0.67 | 0.76 | 0.68 | 0.66 | 0.64 | 0.68 | 0.62 | 0.66 | | 0.58 | 0.79 | 0.75 | 0.65 | 0.52 | 0.27 | 0.66 |
| 11. Stability | 0.69 | 0.77 | 0.78 | 0.65 | 0.64 | 0.81 | 0.72 | 0.67 | 0.65 | 0.58 | | 0.63 | 0.63 | 0.57 | 0.58 | 0.69 | 0.29 |
| 12. Religion | 0.68 | 0.74 | 0.81 | 0.69 | 0.54 | 0.70 | 0.62 | 0.51 | 0.66 | 0.79 | 0.63 | | 0.77 | 0.60 | 0.46 | 0.32 | 0.58 |
| 13. Refinement | 0.68 | 0.75 | 0.84 | 0.69 | 0.60 | 0.74 | 0.69 | 0.59 | 0.68 | 0.75 | 0.63 | 0.77 | | 0.46 | 0.56 | 0.33 | 0.56 |
| 14. Contentment | 0.63 | 0.50 | 0.58 | 0.52 | 0.47 | 0.59 | 0.71 | 0.51 | 0.59 | 0.65 | 0.57 | 0.60 | 0.46 | | 0.27 | 0.39 | 0.60 |
| 15. Independence | 0.62 | 0.65 | 0.69 | 0.79 | 0.67 | 0.47 | 0.51 | 0.54 | 0.54 | 0.52 | 0.58 | 0.46 | 0.56 | 0.27 | | 0.32 | 0.46 |
| 16. Self-consciousness | 0.57 | 0.44 | 0.61 | 0.48 | 0.55 | 0.70 | 0.55 | 0.59 | 0.49 | 0.27 | 0.69 | 0.32 | 0.33 | 0.39 | 0.32 | | −0.14 |
| 17. Cheerfulness | 0.48 | 0.36 | 0.48 | 0.34 | 0.43 | 0.22 | 0.51 | 0.38 | 0.54 | 0.66 | 0.29 | 0.58 | 0.56 | 0.60 | 0.46 | −0.14 | |
| 18. Neatness | 0.40 | 0.25 | 0.31 | 0.44 | 0.53 | 0.40 | 0.40 | 0.59 | 0.56 | 0.21 | 0.37 | 0.24 | 0.37 | 0.23 | 0.14 | 0.45 | 0.13 |
| 19. Sympathy | 0.40 | 0.31 | 0.36 | 0.29 | 0.31 | 0.28 | 0.35 | 0.23 | 0.32 | 0.54 | 0.26 | 0.50 | 0.43 | 0.56 | 0.10 | 0.00 | 0.57 |
| 20. Intelligence | 0.33 | 0.49 | 0.50 | 0.56 | 0.40 | 0.18 | 0.24 | 0.25 | 0.26 | 0.39 | 0.20 | 0.46 | 0.50 | 0.08 | 0.67 | −0.08 | 0.51 |
| 21. Order | 0.28 | 0.35 | 0.29 | 0.29 | 0.34 | 0.36 | 0.22 | 0.32 | 0.30 | 0.14 | 0.25 | 0.21 | 0.25 | 0.22 | 0.15 | 0.40 | 0.06 |
| 22. Affectionateness | 0.07 | −0.07 | −0.03 | 0.03 | 0.04 | −0.22 | −0.06 | −0.11 | 0.03 | 0.35 | −0.21 | 0.19 | 0.20 | 0.23 | 0.03 | −0.46 | 0.60 |
| 23. Activity | −0.11 | −0.13 | −0.14 | −0.07 | −0.11 | −0.39 | −0.32 | −0.24 | −0.28 | 0.07 | −0.49 | −0.07 | −0.05 | −0.33 | 0.10 | −0.58 | 0.31 |
| 24. Humor | −0.23 | −0.34 | −0.17 | −0.14 | −0.16 | −0.45 | −0.18 | −0.26 | −0.20 | 0.18 | −0.43 | −0.06 | −0.11 | −0.07 | −0.12 | −0.45 | 0.32 |
| 25. Sociability | −0.27 | −0.27 | −0.29 | −0.23 | −0.32 | −0.53 | −0.34 | −0.43 | −0.30 | −0.10 | −0.50 | −0.09 | −0.12 | 0.19 | −0.12 | −0.78 | 0.37 |
| 26. Credulity | −0.34 | −0.44 | −0.43 | −0.52 | −0.32 | −0.24 | −0.20 | −0.27 | −0.17 | −0.23 | −0.15 | −0.14 | −0.32 | 0.11 | −0.60 | −0.08 | −0.25 |
| 27. Expressiveness | −0.48 | −0.49 | −0.52 | −0.38 | −0.37 | −0.82 | −0.60 | −0.52 | −0.49 | −0.28 | −0.71 | −0.38 | −0.42 | −0.44 | −0.18 | −0.80 | 0.11 |
| 28. Looking for sympathy | −0.50 | −0.74 | −0.87 | −0.69 | −0.59 | −0.81 | −0.70 | −0.63 | −0.59 | −0.69 | −0.77 | −0.70 | −0.67 | −0.61 | −0.56 | −0.68 | −0.49 |
| 29. Conceit | −0.56 | −0.61 | −0.75 | −0.49 | −0.46 | −0.73 | −0.61 | −0.55 | −0.53 | −0.58 | −0.71 | −0.58 | −0.58 | −0.57 | −0.30 | −0.74 | −0.20 |
| 30. Quarrelsomeness | −0.64 | −0.67 | −0.81 | −0.66 | −0.51 | −0.82 | −0.77 | −0.62 | −0.74 | −0.69 | −0.75 | −0.74 | −0.79 | −0.75 | −0.42 | −0.49 | −0.46 |
| 31. Irritability | −0.64 | −0.65 | −0.79 | −0.60 | −0.54 | −0.77 | −0.76 | −0.62 | −0.68 | −0.73 | −0.81 | −0.72 | −0.69 | −0.77 | −0.41 | −0.54 | −0.51 |
| 32. Impulsiveness | −0.70 | −0.74 | −0.79 | −0.63 | −0.61 | −0.86 | −0.75 | −0.64 | −0.65 | −0.57 | −0.78 | −0.57 | −0.67 | −0.53 | −0.45 | −0.82 | −0.10 |
| 33. Emotionality | −0.70 | −0.75 | −0.76 | −0.65 | −0.64 | −0.88 | −0.75 | −0.75 | −0.69 | −0.54 | −0.86 | −0.63 | −0.61 | −0.62 | −0.50 | −0.77 | −0.22 |
| 34. Forwardness | −0.70 | −0.82 | −0.89 | −0.68 | −0.62 | −0.89 | −0.77 | −0.68 | −0.70 | −0.74 | −0.84 | −0.65 | −0.54 | −0.73 | −0.45 | −0.74 | −0.57 |

| | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Will | 0.40 | 0.40 | 0.33 | 0.28 | 0.07 | −0.11 | −0.23 | −0.27 | −0.34 | −0.48 | −0.50 | −0.56 | −0.64 | −0.64 | −0.70 | −0.70 | −0.70 |
| 2. Attention | 0.25 | 0.31 | 0.49 | 0.35 | −0.07 | −0.13 | −0.34 | −0.27 | −0.44 | −0.49 | −0.74 | −0.61 | −0.67 | −0.65 | −0.74 | −0.75 | −0.82 |
| 3. Truth | 0.31 | 0.36 | 0.50 | 0.29 | −0.03 | −0.14 | −0.17 | −0.29 | −0.43 | −0.52 | −0.87 | −0.75 | −0.81 | −0.79 | −0.79 | −0.76 | −0.89 |
| 4. Reliability | 0.44 | 0.29 | 0.56 | 0.29 | 0.03 | −0.12 | −0.14 | −0.23 | −0.52 | −0.38 | −0.69 | −0.49 | −0.66 | −0.60 | −0.63 | −0.65 | −0.68 |
| 5. Attitude to work | 0.53 | 0.31 | 0.40 | 0.34 | 0.04 | −0.11 | −0.16 | −0.32 | −0.32 | −0.37 | −0.59 | −0.46 | −0.51 | −0.54 | −0.61 | −0.64 | −0.62 |
| 6. Self-control | 0.40 | 0.28 | 0.18 | 0.36 | −0.22 | −0.39 | −0.45 | −0.53 | −0.24 | −0.82 | −0.81 | −0.73 | −0.82 | −0.77 | −0.86 | −0.88 | −0.89 |
| 7. Response to reproof | 0.40 | 0.35 | 0.24 | 0.22 | −0.06 | −0.32 | −0.18 | −0.34 | −0.20 | −0.60 | −0.70 | −0.61 | −0.77 | −0.76 | −0.75 | −0.75 | −0.77 |
| 8. Obedience | 0.59 | 0.23 | 0.25 | 0.32 | −0.11 | −0.24 | −0.26 | −0.43 | −0.27 | −0.52 | −0.63 | −0.55 | −0.62 | −0.62 | −0.64 | −0.75 | −0.68 |
| 9. Respect | 0.56 | 0.32 | 0.26 | 0.30 | 0.03 | −0.28 | −0.20 | −0.30 | −0.17 | −0.49 | −0.59 | −0.53 | −0.74 | −0.68 | −0.65 | −0.69 | −0.70 |
| 10. Generosity | 0.21 | 0.54 | 0.39 | 0.14 | 0.35 | 0.07 | 0.18 | −0.10 | −0.23 | −0.28 | −0.69 | −0.58 | −0.69 | −0.73 | −0.57 | −0.54 | −0.74 |
| 11. Stability | 0.37 | 0.26 | 0.20 | 0.25 | −0.21 | −0.49 | −0.43 | −0.50 | −0.15 | −0.71 | −0.77 | −0.71 | −0.75 | −0.81 | −0.78 | 0.54 | −0.85 |
| 12. Religion | 0.24 | 0.50 | 0.46 | 0.21 | 0.19 | −0.07 | −0.06 | −0.09 | −0.14 | −0.38 | −0.70 | −0.58 | −0.74 | −0.72 | −0.57 | −0.63 | −0.65 |
| 13. Refinement | 0.37 | 0.43 | 0.50 | 0.25 | 0.20 | −0.05 | −0.11 | −0.12 | −0.32 | −0.42 | −0.67 | −0.58 | −0.79 | −0.69 | −0.67 | −0.61 | −0.54 |
| 14. Contentment | 0.23 | 0.56 | 0.08 | 0.22 | 0.23 | −0.33 | −0.07 | 0.19 | 0.11 | −0.44 | −0.61 | −0.57 | −0.75 | −0.77 | −0.53 | −0.62 | −0.73 |
| 15. Independence | 0.14 | 0.10 | 0.67 | 0.15 | 0.03 | 0.02 | −0.12 | −0.12 | −0.60 | −0.18 | −0.56 | −0.30 | −0.42 | −0.41 | −0.45 | −0.50 | −0.45 |
| 16. Self-consciousness | 0.45 | 0.00 | −0.08 | 0.40 | −0.46 | −0.58 | −0.45 | −0.78 | −0.03 | −0.80 | −0.68 | −0.74 | −0.49 | −0.54 | −0.82 | −0.77 | −0.74 |
| 17. Cheerfulness | 0.13 | 0.57 | 0.51 | 0.06 | 0.60 | 0.31 | 0.32 | 0.37 | −0.25 | 0.11 | −0.49 | −0.20 | −0.46 | −0.51 | −0.10 | −0.22 | −0.57 |
| 18. Neatness | | 0.00 | −0.09 | 0.49 | −0.23 | −0.33 | −0.17 | −0.42 | −0.01 | −0.42 | −0.35 | −0.33 | −0.19 | −0.33 | −0.40 | −0.45 | −0.41 |
| 19. Sympathy | 0.00 | | 0.19 | −0.13 | 0.64 | 0.11 | 0.21 | 0.22 | 0.14 | −0.06 | −0.27 | −0.30 | −0.36 | −0.43 | −0.22 | −0.23 | −0.32 |
| 20. Intelligence | −0.09 | 0.19 | | 0.13 | 0.21 | 0.46 | 0.34 | 0.33 | −0.77 | 0.17 | −0.32 | −0.04 | −0.24 | −0.15 | −0.13 | −0.08 | −0.50 |
| 21. Order | 0.49 | −0.13 | 0.13 | | −0.29 | −0.19 | −0.35 | −0.31 | −0.15 | −0.34 | −0.32 | −0.25 | −0.32 | −0.20 | −0.33 | −0.41 | −0.36 |
| 22. Affectionateness | −0.23 | 0.64 | 0.21 | −0.29 | | 0.45 | 0.45 | 0.55 | 0.11 | 0.52 | 0.12 | 0.16 | 0.08 | −0.02 | 0.27 | 0.31 | 0.17 |
| 23. Activity | −0.33 | 0.11 | 0.46 | −0.19 | 0.45 | | 0.56 | 0.70 | −0.41 | 0.69 | 0.21 | 0.43 | 0.38 | 0.36 | 0.47 | 0.50 | 0.44 |
| 24. Humor | −0.17 | 0.21 | 0.34 | −0.35 | 0.45 | 0.56 | | 0.58 | −0.18 | 0.51 | 0.16 | 0.22 | 0.22 | 0.13 | 0.36 | 0.48 | 0.33 |
| 25. Sociability | −0.42 | 0.22 | 0.33 | −0.31 | 0.55 | 0.70 | 0.58 | | 0.13 | 0.78 | 0.42 | 0.44 | 0.40 | 0.29 | 0.62 | 0.62 | 0.47 |
| 26. Credulity | −0.01 | 0.14 | −0.77 | −0.15 | 0.11 | −0.41 | −0.18 | 0.13 | | −0.04 | 0.33 | −0.04 | 0.14 | 0.06 | 0.16 | 0.11 | 0.12 |
| 27. Expressiveness | −0.42 | −0.06 | 0.17 | −0.34 | 0.52 | 0.69 | 0.51 | 0.78 | −0.04 | | 0.62 | 0.67 | 0.70 | 0.62 | 0.76 | 0.83 | 0.76 |
| 28. Looking for sympathy | −0.35 | −0.27 | −0.32 | −0.32 | 0.12 | 0.21 | 0.16 | 0.42 | 0.33 | 0.62 | | 0.81 | 0.85 | 0.83 | 0.78 | 0.76 | 0.86 |
| 29. Conceit | −0.33 | −0.30 | −0.04 | −0.25 | 0.16 | 0.43 | 0.22 | 0.44 | | 0.67 | 0.81 | | 0.77 | 0.82 | 0.76 | 0.74 | 0.90 |
| 30. Quarrelsomeness | −0.19 | −0.36 | −0.24 | −0.32 | 0.08 | 0.38 | 0.22 | 0.40 | 0.14 | 0.70 | 0.85 | 0.77 | | 0.88 | 0.74 | 0.79 | 0.87 |
| 31. Irritability | −0.33 | −0.43 | −0.15 | −0.20 | −0.02 | 0.36 | 0.13 | 0.29 | 0.06 | 0.62 | 0.83 | 0.82 | 0.88 | | 0.70 | 0.78 | 0.87 |
| 32. Impulsiveness | −0.40 | −0.22 | −0.13 | −0.33 | 0.27 | 0.47 | 0.36 | 0.62 | 0.16 | 0.76 | 0.78 | 0.76 | 0.74 | 0.70 | | 0.82 | 0.87 |
| 33. Emotionality | −0.45 | −0.23 | −0.08 | −0.41 | 0.31 | 0.50 | 0.48 | 0.62 | 0.11 | 0.83 | 0.76 | 0.74 | 0.79 | 0.78 | 0.82 | | 0.84 |
| 34. Forwardness | −0.41 | −0.32 | −0.59 | −0.36 | 0.17 | 0.44 | 0.33 | 0.47 | 0.12 | 0.76 | 0.86 | 0.90 | 0.87 | 0.87 | 0.87 | 0.84 | |

any more ado say what precisely it was that divided our population into two classes. It is merely one possibility to conceive of the uninhibited as suffering from some kind of specific defect that differentiates them from other people.

Volitional control appears from this study to be a real factor in mental life. It is not merely the lack of an emotional drive. There are of course many other lines of evidence to which the statistical approach affords a gratifying confirmation, but a statistical study gives us also an insight into

TABLE 2

R is the multiple correlation of each group, considered as a battery of tests, with its underlying general factor.

| Will $G$ | $r$ with will $G$ | Weight | $R$ |
|---|---|---|---|
| Attention | 0.94 | 0.2388 | |
| Truthfulness | 0.93 | 0.2091 | |
| Self-control | 0.89 | 0.1194 | |
| Will | 0.87 | 0.1070 | |
| Reliability | 0.83 | 0.0818 | |
| Stability | 0.82 | 0.0759 | |
| Refinement | 0.81 | 0.0748 | |
| Religion | 0.79 | 0.0667 | |
| Response to reproof | 0.77 | 0.0543 | |
| Attitude to work | 0.75 | 0.0447 | |
| Generosity | 0.74 | 0.0456 | 0.985 |
| **Emotionality $G$** | **$r$ with emotionality $G$** | **Weight** | **$R$** |
| Quarrelsomeness | 0.94 | 0.2533 | |
| Forwardness | 0.94 | 0.2533 | |
| Irritability | 0.93 | 0.2104 | |
| Looking for sympathy | 0.91 | 0.1627 | |
| Emotionality | 0.84 | 0.0831 | |
| Impulsiveness | 0.82 | 0.0724 | |
| Expressiveness | 0.65 | 0.0346 | 0.986 |

$r$ between will $G$ and emotionality $G = -0.895$

the ways in which volitional control operates and a means of measuring the extent of its development in a given individual.

These two factors found by Sister Rosa in her study have been discovered previously but each in a separate study. Sister Rosa's "will" factor is evidently the same as that found by Edward Webb in his classic study, "Character and Intelligence."[4] The two studies are good examples of how independent statistical analyses lead to essentially the same result.

On the other hand, Sister Rosa's emotionality factor is evidently the same as Cyril Burt's "general emotionality." Burt, speaking of his general

[4] *British J. Psychol. (Mon. Supp.)*, **3**: 1–83, 1913.

emotionality and Webb's will factor says, "Both enter into voluntary behavior and individual differences in both form an essential element in what

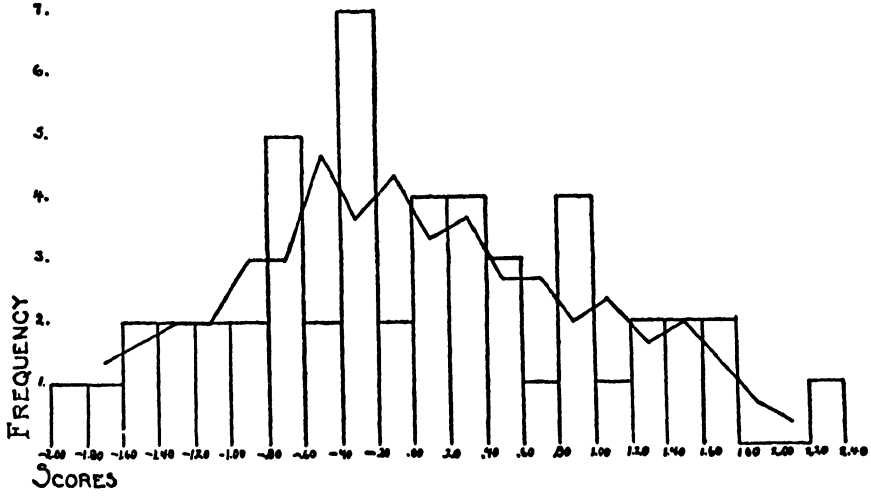



FIG. 16. DISTRIBUTION OF WEIGHTED SCORES OF WILL GROUP. HISTOGRAM WITH SMOOTHED CURVE SUPERIMPOSED

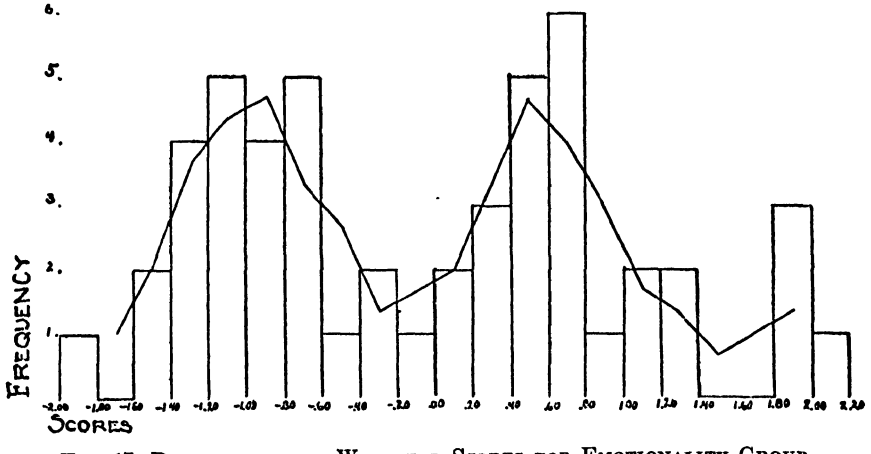



FIG. 17. DISTRIBUTION OF WEIGHTED SCORES FOR EMOTIONALITY GROUP. HISTOGRAM WITH SMOOTHED CURVE SUPERIMPOSED

may be called character. So far as they overlap my factor is the negative of his."[5]

How many factors are there in human affective life? This question

[5] Cyril Burt, "The Factorial Analysis of Emotional Traits." *Character and Personality*, 7: 253, 1939.

cannot as yet be answered by a statistical analysis. We can however, differentiate empirically a number of these factors. For this purpose let us turn to another study.

It was made on mental patients in an attempt to find out whether or not mental disorders may present any grouping whatsoever of mental symptoms or whether certain symptoms for some reason go together and so constitute a kind of disease entity. This is a psychiatric problem of considerable difficulty. The difficulty arises from the lack of a definite anatomical pathology for most mental disorders. When patients die from lung disease, heart disease, kidney disease, and so on, we can hold an autopsy and find a definite relation between groups of symptoms and diseased organs. But with mental disorders this is not possible except in such conditions as paresis and arteriosclerosis; but even here the relation of the specific mental symptoms to circumscribed lesions is, in general, vague.

But it would be possible to correlate the symptoms of certain mental disorders and make a factorial analysis and so find out whether or not certain symptoms tend to hang together in groups. Furthermore, if this is the case, the groups of mental symptoms should help us to analyze human affective life. The results of factorial analysis should differentiate for us the fundamental factors in human emotions. These factors should have real bases in the psychophysical organism; and the pathological disturbance of these real factors must be what gives rise to the psychotic condition. So that a mental disorder must have its specific pathology, whether it be psychopathology or somatopathology, even as such physical diseases as those of the heart and kidneys and so on have each its own specific, though organic, underlying pathological condition.

Let us turn now to the study in question. It was decided to investigate what has been termed the essential psychoses rather than alcoholic, syphilitic, and various organic mental disorders. The essential psychoses are those that Kraepelin would enumerate as the "manic-depressive" and "dementia praecox" groups. They seem to be intrapsychic disorders of the personality, and, therefore, their analysis might give some knowledge of the natural innate factors of human affective life, the disturbance of which could give rise to a specific disease picture.

A factorial analysis of forty symptoms gave evidence of five factors or syndromes in one table of intercorrelations. One of these was definitely a cognitive factor and was characterized by disturbances of reasoning, perception, and memory. Another seemed to be a cognitive factor of another kind: a disturbance of the sensorium in which hallucinations and delusions were in evidence rather than the loss of power to perceive, remember, and reason.

That left us with three emotional syndromes: one characteristic of

catatonic dementia praecox, one of the manic type of manic-depressive insanity, and one of the anxious depressed type of manic-depressive insanity.

The catatonic syndrome had the following specific traits.

1. *Mutism,* that is, a condition in which for days on end the patient will not speak to anyone.

2. *Negativism,* a condition in which the patient is unreasonably uncooperative, refusing to comply with simple ordinary requests, sometimes doing just the opposite of what might be asked, for example, standing when requested to sit.

3. *Refusal of food,* a condition in which it is necessary to resort to tube feeding in order to keep the patient from starving himself to death.

4. *Stereotypism of attitudes.* By this is understood a kind of cataleptic condition in which the patient maintains fixed and often bizarre attitudes for long periods of time.

Now underlying all these symptoms there is one and the same factor which may manifest its presence in any of these four ways. Psychologically, it appears to be a hypothymic condition, that is, one in which the tendency to manifest affective states of mind is considerably below normal. If one were asked to describe its emotional mood in a positive way, one could say it is the shut-in reaction type. The person retires into himself rather than fight his way and conquer. One can say this because of the extension of the syndrome calculated by Dr. Hsü; "being shut in" was the most important trait after the four mentioned above.[6]

In the prepsychotic character of patients who suffer from catatonic dementia praecox, we found a certain weakness of the inhibitions which manifested itself in a tendency to frequent outbursts of anger and a loud manner when these outbursts occurred. The tendency to cry easily which these patients manifested in their earlier life may be also conceived of as a natural weakness of the inhibitions. Otherwise their prepsychotic personality seemed fairly normal. They have not the queer attitudes of mind and the visionary trends of those who developed paranoid dementia praecox, nor the scrupulosity of those who succumbed to an anxious depression.[7]

Anyone who has followed what we have said about the physiology of the emotions will not be surprised when we say that the syndrome *catatonic dementia praecox* has in all probability a strong organic factor and is not merely a mental reaction of withdrawal from the difficulties of life. In fact it might be said in general that if emotions may be produced by mental

[6] See T. V. Moore, *The Nature and Treatment of Mental Disorders.* New York, Grune & Stratton, 1943, p. 23.

[7] See T. V. Moore, *Personal Mental Hygiene.* New York, Grune & Stratton, 1944, p. 4.

reactions as well as organic stimulation, then the affective psychotic conditions will in general have a twofold etiology: mental stress and strain and various physiological factors. These two types of causes are to some extent interdependent but in all probability possess a certain degree of independent variation.

A good deal of light has been thrown on this matter by the long series of studies emanating from Herman Holland DeJong and his collaborators and recently digested in his work, *Experimental Catatonia*.[8]

The peculiar stereotypisms of action mentioned above, which constitute the manifestations of catatonia, may be produced experimentally in a great variety of ways: (1) chemically by the injection of such substances as *bulbocapnine*, an alkaloid from the plant *Corydalis cava;* and (2) by injection of substances produced normally in the human body. Rather interesting is the fact that neurotoxines normally present in human urine can produce catalepsy and negativism in animals; and that DeJong extracted from human urine and biologically standardized a substance he named "catatonine" which produces catalepsy in animals and showed that "the urine of normal men, women, and children contains a higher amount of 'Catatonine' than urine from patients suffering from schizophrenia and other organic or mental disease,"[9] thus suggesting that this substance is not oxidized more rapidly by certain mental patients and so exerts a toxic influence and produces catalepsy, or that for some obscure reason it is bound more rapidly and in being bound produces pathological changes.

The *manic syndrome* had the following groups of traits: euphoria, irritability and excitement, which in the mental patient was likely to be manifested by tantrums and destructiveness. Underlying all these symptoms there is one and the same factor which accounts for the intercorrelations between the traits. It would seem to be a weakness of the inhibitions in virtue of which there is an exuberant manifestation of emotional experience. Irritability has the highest correlation with the general factor.[10]

What stands out in the prepsychotic temperament of the manic patient is his love of contact with other people, his ability to make friends and be the life of the party, and his love of outdoor activities. He is likely, however, to have trouble with the members of his own family and to think of suicide when in trouble.[11]

The manic patient seems to us one in whom certain well known trends

[8] Baltimore, Williams and Wilkins Co., 1943. Pp. xiv 225.

[9] *Loc. cit.*, p. 170.

[10] T. V. Moore, "The Essential Psychoses." *Studies in Psychol. & Psychiat.*, **3** (no. 3): 52, 1933.

[11] Cf. T. V. Moore, *Personal Mental Hygiene*. New York, Grune & Stratton, 1944, p. 3.

of the ordinary man are violently exaggerated. In this way his behavior differs profoundly from the bizarre conduct of the catatonic patient. The former might easily pass for a moderately excited human being without being recognized as really insane; but the conduct of the latter would be at once recognized as abnormal and psychotic even by the casual observer without psychiatric training.

The third type of emotional syndrome determined by statistical analysis was termed constitutional hereditary depression. It was thus described:

"A psychosis with an evident tendency to clear and relapse. It is produced by the disturbance of a general factor underlying a group of symptoms that manifests itself by depression, anxiety, tearfulness and the tendency to recovery and relapse. These symptoms seem to have their basis in a constitutional hereditary defect, for the presence of a hereditary taint enters into the tetrads on the basis of which this grouping of symptoms was discovered. The hereditary defect manifests itself in an emotional instability rather than an intellectual defect."

A closer study of patients suffering from sadness reveals the fact that they fall into two classes:

1. Those who are also anxious and in whom a good deal of motor activity and tearfulness is associated with their sadness.
2. Those in whom anxiety and its active manifestations are less apparent but who on the contrary are retarded, that is to say, slow in speech and in action and who seem to be physically tired and worn out.

Let us pause for a moment to consider this medley of symptoms. Anxiety and depression are evidently mental states, two related forms of emotional experience. The flowing of tears is a physiological reaction. The hereditary factor must be associated in some way with the chromosomes and therefore be organic rather than psychic in its intimate nature. What is it that brings about the recurrent attacks of mental disturbance? This too may well be physiological in nature. It would be easy to go beyond the symptoms we have studied in our intercorrelations and build up a syndrome with a number of anthropological measurements. In fact in the original investigation the anthropological measurements were made but were studied separately. It was found that the above-mentioned catatonic patients were in general a slender asthenic group but our cases of constitutional hereditary depression, in accordance with the work of Kretschmer, were as a group somewhat more heavy set. But they were not nearly so sturdily built as the paranoid dementia praecox cases, that is to say, those patients who qualified under the syndrome mentioned above in which delusions and hallucinations were prominent.[12]

[12] See Cornelius Joseph Connolly, "Physique in Relation to Psychosis." *Studies in Psychol. & Psychiat.*, 4 (no. 5): 1939.

No one familiar with the hylomorphic concepts of scholastic philosophy will be surprised at this intermingling of psychic and somatic traits as manifestations of one and the same factor; for there are many causes and groups of causes which directly or indirectly may affect both body and mind.

Furthermore, the finding of general or group factors enables us to simplify our study of emotional life. One has but to look at Mercier's[13] table as modified by Seashore and presented by Ruckmick[14] to realize we would be very much helped in our study of human life were it possible to discover certain natural groupings of emotional manifestations. Our five factors in psychotic conditions, derived from what we might term a preliminary attempt to factorize emotional life, are very helpful in the diagnosis of the essential psychoses and they give us an insight into the structure of the human personality. That this structure has an organic element there can be no doubt. Our study of the physiology of the emotions indicates that there may be special centers more or less definitely circumscribed whose focal stimulation will give rise to particular emotional expressions, such as purring in the cat. The plaques of multiple sclerosis may give rise to euphoria, a typical symptom of our manic syndrome, or a general sadness such as we have in a retarded depression. Electrical stimulation may give rise to an outburst of rage. Now all this indicates that there is an organic side to the structure of the personality in the region of its affective manifestations. But there is a psychic side to the picture. A human being not only sobs and sheds tears and clenches his fist and strikes, but he experiences sorrow, anxiety, anger, and various subjective emotional experiences. And our syndromes, with their medley of *psychic* and *somatic* manifestations all due to *one and the same cause*, have a philosophical meaning of profound importance.

Man is not a mere physical organism manifesting stimulus and response. Certainly he is not a mere psychic being without a body. Nor is he two complete and separate individual beings such as a soul living within a body. He is one psychosomatic unity and factors which may be determined by statistical analysis bear witness to the psychosomatic unity by the presence of both psychic and somatic symptoms which statistically must have one and the same cause. This cause is not purely psychic or it could produce only psychic effects. It is not purely somatic, for then its action would be followed by purely somatic effects. But our emotions are activities of the whole human being who by nature is not a pure spirit nor a mere physical substance, nor two such substances, one living in the other, but one unitary, living, psychosomatic organism.

[13] C. Mercier, *The Nervous System and the Mind.* New York, Macmillan, 1888.

[14] Christian Alban Ruckmick, *The Psychology of Feeling and Emotion.* New York, McGraw-Hill, 1936. Pp. 127–131.

Were the soul a substantial being complete in itself and the body another substantial being complete in itself, one would expect that they would vary to a large extent independently in their various activities. Certain activities might have one underlying somatic factor and certain psychic activities might have their underlying psychic factor, but there would then be two factors rather than one unless we would have refuge in the concept of an all-embracing pre-established harmony. It is not, however, necessary to have recourse to any such mythical notion if the human being is a psychosomatic unit substance. In this substance there will be functions that are dominantly somatic and others, like the "will" function we have discussed above, that are essentially spiritual. But the organism is a unit and various faculties of the organism act as unit causes. The fundamental factors in emotional life are psychosomatic faculties of man. Some of these factors have been determined, and evidence has been brought forward to show that one and the same psychosomatic emotional factor may have both somatic and psychic forms of manifestation.

A psychosis, in its essential psychological nature, is a profound pathological disturbance of one or more of the psychosomatic factors of the mind. The symptoms of a psychosis do not occur as random manifestations but are linked by the underlying psychosomatic factors of human emotional life.

# PART IV

# THE PSYCHOPATHOLOGY OF EMOTIONAL LIFE

## CHAPTER 14

## THE GASTROINTESTINAL NEUROSES

WE SHALL DISCUSS in Part V certain minor anomalies of emotional life to which we have given the name *parataxes*. These are emotional drives of abnormal intensity or duration or of a bizarre nature in virtue of which one persists in the manifestation of one of the various forms of emotional reactions of which human nature is capable.

The same name parataxis could be given to some of the abnormalities of emotional life we are about to discuss, but most of these reactions are so persistent and peculiar that they have long been known by the special name of *psychoneuroses* or *neuroses*.

The term *neurosis* was not originally conceived of as a manifestation of emotional life. It originated in this way: Physicians could divide disorders (particularly those that were thought to involve primarily the nervous system) into those that were due to a demonstrable injury to the nervous system and those in which no such lesion could be discovered. The former were known as diseases of the nervous system, the latter as *neuroses*. In the course of time various conditions that had been considered neuroses were taken off the list and given a place among the organic diseases of the nervous system or other various organs of the body, for example, locomotor ataxia and hyperthyroidism (known as Grave's or Basedow's disease). However, he would be a rash prophet indeed who would maintain that all *neuroses* will eventually be recognized as having a physical or organic pathology. Some neuroses are psychogenic in origin.

The fact that some neuroses are psychogenic in origin gave rise later to the term *psychoneurosis*, which is now often used synonymously with *neurosis*.

Psychogenic symptoms are both physical and mental. Thus, for example, one may have cardiac or gastrointestinal disorders of a psychogenic origin. One might well speak of these as *neuroses*. On the other hand one may have unreasonable fears and compulsions with a psychogenic origin. Such conditions might be termed *psychoneuroses*.

According to Freud the neuroses are conditions deriving from inadequate sex satisfaction in one's present life. Freud lists two forms of neuroses: (1) neurasthenia manifested by "cranial pressure, tendency to fatigue,

dyspepsia, constipation, irritation of the spine, and so forth," and (2) anxiety neurosis manifested by an unrelated "free-floating anxiety" to which all other symptoms are contributory.[1]

The psychoneuroses, on the other hand, have their origin, according to Freud, in factors which belong to infancy. Hitschmann thus expressed the Freudian distinction between the *neuroses* and the *psychoneuroses:*

> In a classical study, Freud has separated from the vague term neurasthenia the "anxiety neurosis" and further sharply marked off a symptom-complex as real or true neurasthenia. He calls these two clinical pictures true neuroses because their cause lies in the present abnormal condition of the sexual function of the individual and in opposition to these he calls hysteria and the obsessional neurosis, psychoneuroses. In these latter, the real causative factors in contrast to those of the true neuroses belong not to the actual sexual life but to a long past period of life in early childhood.[2]

The study of these abnormal emotional conditions throws a great light on the nature and mode of activity of our emotions.

We shall approach their study in an empirical manner by studying certain abnormal manifestations of emotional life in individual patients and from the study of these patients try to derive some insight into the origin and nature of the *neuroses*, by which term we will include all that is usually referred to by the psychoneuroses and the various terms that Freud has made use of to indicate certain subtypes of these emotional disorders.

To understand the interplay of *psyche* and *soma* in the gastrointestinal neuroses, we must have before our mind the general picture of the vegetative nervous system in its relation to the gastrointestinal tract and the various viscera of the body.

According to Langley the autonomic (or vegetative) nervous system has two divisions:

*a*) The thoracolumbar or sympathetic outflow;

*b*) The craniosacral or parasympathetic outflow.

The fibers leave the central nervous system as preganglionic fibers and terminate in a ganglion which lies either in the chain of ganglia along the vertebral column or less frequently in more distal plexuses such as the coeliac, the superior and inferior mesenteric plexus. From these ganglia postganglionic fibers pass to the various viscera of the body.[3]

[1] See Sigmund Freud, "Sexuality in the Aetiology of the Neuroses." In *Collected Papers*. London, International Psychoanalytical Press, 1924. See also "The Justification for Detaching from Neurasthenia a Particular Syndrome the Anxiety Neurosis," loc. cit., pp. 76–106.

[2] Eduard Hitschmann, *Freud's Theories of the Neuroses*. Translated by C. R. Payne. New York, Moffat Yard and Co., 1917, p. 2.

[3] See John Farquhar Fulton, *Physiology of the Nervous System*. New York, Oxford University Press, 1943, 194 ff.

It is frequently stated in works on physiology that stimulation of the sympathetic fibers leads *in general* to a reduction of tonus and peristaltic activity and a closing of the sphincters throughout the entire gastrointestinal tract along with a reduction in flow of the digestive juices. Stimulation of parasympathetic fibers in general leads to just the opposite effect —an increase in peristalsis, and the secretion of digestive ferments and relaxation of the sphincters. Parasympathetic stimulation promotes digestion and increases appetite, whereas sympathetic stimulation paralyses digestion and abolishes appetite.[4]

There is some evidence at the present time that each of these sections manifests dominantly the functions enumerated but subdominantly the antagonistic functions; and just what effect is going to result from stimulation of sympathetic or parasympathetic fibres depends on the existing tonus of the organ under investigation.

That emotions profoundly affect gastrointestinal functions has long been a matter of common observation, but since the classic work of Cannon, more and more attention has been given to the matter.

The following observations of Alvarez[5] are of considerable interest. "It has long been known even to the layman that disgust, excitement, fear, anxiety, anger, fatigue, pain or injury will stop or reverse the movements of the digestive tract. A child who has suffered injury or severe fright shortly after a meal will often, after several hours, return the food quite unchanged. I remember once examining a neurotic young man with the fluoroscope and finding every bit of the barium meal eaten six hours before still in the stomach. There were no symptoms or signs of organic disease, so I began inquiring and learned that all that day he had been much upset over a political row in his lodge which that evening was to be fought to a finish. Miller and his associates [Miller, Bergeim, and Hawk: The Influence of Anxiety on Gastric Digestion. Proc. Soc. Exper. Biol. & Med., **17**: 97–98, 1920. Miller, Bergeim, Rehfuss, and Hawk: The Psychic Secretion of Gastric Juice in Normal Men. Am. J. Physiol. **52**: 1–11, 1920] related similar observations on students worrying over an examination, and Cohnheim [München. med. Wchnschr. **54**: 2581–2583, 1907] and Carnot [Arch. d. mal. de l'app. digestif. **I**: 651–666, 1907] found while studying dogs with duodenal fistulas that the slightest uneasiness, excitement or fear would immediately close the pylorus and keep it closed for some time."

It will be noticed that the symptoms described by Alvarez might well be ascribed to a sympathetic stimulation.

In an excellent study of the problem by Mittelmann and Wolff which

[4] *Op. Cit.*, p. 214.

[5] Alvarez, Walter C., "Ways in which emotion can affect the digestive tract." *J.A.M.A.*, **92**: 1231–1237, 1929. (Extensive bibliographical references.)

we shall now abstract, some symptoms seem to be rather of a parasympathetic type.

These authors studied patients with gastritis, duodenitis, and peptic ulcer. They were unable to associate either the extroverted or introverted type of character with these conditions. But their study of them showed that they were typical psychoneurotic personalities, although on the surface they might appear to be successful well adjusted individuals. In the background there was a sense of frustration and desperation along with a severe anxiety. The most apparent emotional reaction was resentment, though "feelings of guilt and self-condemnation were common."[6]

Unhappy influences in childhood were universal. In every instance there was a failure of the home to provide a sense of security. The attempt was made to study the dominant emotions of these patients, and artificial situations were reproduced in the laboratory similar to those that affected them in real life. The result was "emotions and gastrointestinal changes like those recurring in the individual's day-to-day experiences." A recrudescence of symptoms could thus be produced even after a patient had become symptom-free.

> Tension, anxiety, resentment, anger, guilt, obsequiousness and desperation already present, accentuated or induced, were almost always accompanied by an increase in hydrochloric acid, mucous and pepsin secretions. Peristaltic activity became continuous, and contractions increased in magnitude. Respiration became more rapid and shallow, with frequent sighs. There was usually a drop in finger temperature. Often in patients with ulcer, pain of a burning and gnawing quality was precipitated and unusual amounts of bile and moderated amounts of fresh, unclotted blood appeared in the extractions. . . . During and after interviews which engendered emotional security, functional over-activity decreased and approached normal.[7]

The symptoms present in the gastrointestinal neuroses are the same as in the organic disorders of the digestive tract.

They might be classified as

*a*) Disorders of appetite such as *anorexia* or loss of appetite; *bulimia*, an excessive drive to eat, literally the hunger of an ox; and *pica* or a perverted drive to eat the inedible or disgusting, earth, chalk, filth, etc. Here may be mentioned also the bitter taste in the mouth to be found in so many conditions.

*b*) Disorders of motility. These are more fundamental and may be

[6] Bela Mittelmann and Harold G. Wolff. "Emotions and Gastroduodenal Function." *Psychosomat. Med.*, **4**, 5–61, 1942.

See also "The Influence of Psychologic Factors upon Gastro-Intestinal Disturbances: A Symposium." *Psychoanal. Quart.*, **3**: 501–588, 1934. The studies manifest a definite trend to discover the Freudian mechanisms.

[7] Loc. cit. p. 58.

the main factor giving rise to the disorders of appetite. There are three types of disorder of motility—inhibition of peristalsis, increased peristalsis, and reverse peristalsis. To this last Alvarez attributes a number of symptoms, such as vomiting, regurgitation, and nausea, though of course these symptoms may be produced in various other ways. "Most of the symptoms of gastrointestinal disease," he says, "are due to disturbances in the mechanical functions of the digestive tract.[8] And the motility of the intestines may be profoundly influenced by emotional conditions. It is not surprising therefore, that we should have a number of patients with mental disorders who manifest gastrointestinal symptoms.

*c*) Pain. Pain sensations due to impulses that arise in the gastrointestinal tract or in various viscera may be referred more or less roughly to the region of the tract irritated or the organ affected. But it is quite possible to have the pain referred to a skin area some distance from the organ that gives rise to the pain stimuli.

To understand this we must realize that in early embryonic life a human being was a tube with the central nervous system sending out encircling nerves that were confined to a single disk-like region. The skin of such a disk-like region is termed a dermatome. Each spinal nerve has its own dermatome. Organs of the body originally located in one of these disk-like regions do not always remain where they first started to develop. They migrate but carry with them their original nerve supply. In this way a region of the spinal cord receives cutaneous stimuli from the skin of a given dermatome and also visceral stimuli from an organ originally encircled by the dermatome but now some distance away from it. Let us exemplify by considering the cutaneous stimuli as distributed over a circular area, and the visceral stimuli as also distributed over a circular area, but the two circles overlap. Stimuli from the nonoverlapping cutaneous area give cutaneous sensations referred to the appropriate dermatome. Stimuli from the nonoverlapping visceral area give pain sensations referred to the offending viscus. But pain stimuli reaching the area that overlaps with the cutaneous stimuli give pain which, however, is referred to the dermatome in which the cutaneous fibres have their sensory end organs.[9]

If now emotional conditions, by disturbances of gastrointestinal motility, may induce pain, such pain might be either referred to the abdomen or to cutaneous areas of the body that one might think had nothing to do with the digestive tract.

[8] Walter Clement Alvarez, *An Introduction to Gastro-enterology*. New York, Paul B. Hoeber, 1940, p. 156.

[9] See William Henry Howell, *Text Book of Physiology*. Edited by John F. Fulton. 15th Ed. Philadelphia, W. B. Saunders Co, 1946, 397 ff.

It is quite possible to interpret a number of neuroses as habitual responses established by conditioning. The experimental work on the conditioned reflex gives us two important principles which may be utilized in attempting to understand the origin of certain neurotic conditions.[10]

1. Not only does a traumatic stimulus cause a violent emotional reaction, but the repetition of the stimulus or of similar stimuli or of other stimuli originally present with the traumatizing stimulus may call forth the same kind of emotional reaction as that produced in the original episode.

This is known as the principle of *sensory generalization.*[11]

Bromberg gives an illustration of how the principle of sensory generalization operates in the so-called war neuroses.

> The phenomena of sensory generalization and of response generalization of complex voluntary behavior as well as of reflexes and conditioned responses, largely explain the almost infinite variety of ordinarily innocuous everyday experiences which may be a source of physiological and emotional disturbances to one who has lived through terrifying war events. They account, when in a crowd of people, for the anxiety encountered in the sailor, who, on one or more occasions, was member of a group of shipmates crowding toward the only avenue of escape from a compartment of a ship that was sinking; or in the marine who through months of training and experience had learned the dangers of concentration of personnel during military operations. . . . In one man, even the state of feeling "hot and sticky," while on a naval base in the southern part of this country, was a source of anxiety reminiscent of a similar feeling experienced so frequently in the battle areas of the Pacific.[12]

2. It is not necessary that a "stimulus" should be frequently repeated in order to bring about a change in behavior. After a violent emotional shock, experimental animals may suddenly lose reactions established by long training or develop a conditioned fear reaction.

Gantt,[13] quoting Pavlov and recounting his own experimental data, shows how in temperamentally unstable dogs a single violent emotional shock will cause conditioned reflexes to disappear. But this is the negative side of the problem. I remember however, a dog who trotted willingly to the laboratory and was anesthetized with ether. But the second time he

[10] Norbert Bromberg called attention to these principles in his study, "The Role of Conditioned Responses in Emotional Disturbances of War." *Am. J. Psychiat.*, **103**: 26–32, 1946. The article gives a number of valuable references to the corroborating experimental literature.

[11] See Ernest R. Hilgard and Donald G. Marquis, *Conditioning and Learning.* New York, D. Appleton-Century Co., 1940, p. 177.

[12] Bromberg, *loc. cit.* p. 29.

[13] William Andrew Horsley Gantt, "Experimental Basis for Neurotic Behavior." *Psychosomat. Med. Monographs.* **3** (Nos. iii and iv) 28ff., 1944.

approached the laboratory he manifested intense anxiety. A single experience had established a conditioned reflex.

### Case History

The *presenting symptom* of this patient was that she was always complaining of her stomach.

*Present illness:* The patient entered a convent as a postulant rather precipitously. One day on coming home from work the idea came to her all of a sudden that she might become a sister. So she stopped in at a convent she passed on her way to and from work. She said she was shaking all over when she rang the bell and asked to see the mother superior. In the conversation that followed the mother superior told her that she thought she had a vocation and would give her a trial. She was thrilled and delighted and within a month she had entered as a postulant.

She was very happy on entering. "In fact," she remarked, "I had never experienced such happiness in all my life." But, after a bit, the peace and happiness commenced to be disturbed. The first symptom seems to have been scrupulosity. This grew out of the teaching she received during her postulancy. The ideal was placed before her of practicing all virtues in their perfection and she developed a strong desire to be perfect in all things and in every way. There is nothing wrong with the ideal, but one must have patience with oneself in the presence of one's own imperfections and quietly strive to correct the defects that one commences to see in the strong light of ideal sanctity and not allow oneself to be inwardly disturbed by the shortcomings revealed by the light of high ideals. But our patient had been scrupulous about chastity for years and now she commenced to worry about imperfections of every kind. She would perhaps have thrived better in surroundings in which more stress was laid on the love and service of God and man and less on the correction of personal imperfections, that is to say, in a spiritual life which had dominantly a theocentric rather than anthropocentric point of view.

To the conflict over personal perfection there was soon added another. This developed out of her life of day-dreaming. Before she entered she spent much of her time day-dreaming about her future home in which she would be surrounded by her children. At the same time she said that she had always been afraid of men and never wanted to get married, but nevertheless she always wanted a home and children "and did nothing but day-dream about how it would all come about at some future day."

After entering the convent the day-dreaming continued. In fact, even when teaching school she managed to live out her dream by imagining that the class room was her own home and that she was teaching and playing with her own children. But she could not help but think, "my dream can

never come true and I can never have my own children." This led to a drive to leave the convent and go home, but this seemed to be infidelity to Christ and utterly inconceivable. As the days, weeks, and months passed by the conflict kept increasing in intensity.

In an account she wrote for me of her difficulties she thus described what was going on within her:

My life really has two sides. One is most heavenly, the other, I can truthfully say that the Good God is letting me experience His Agony in the Garden. It is a dreadful feeling and something I can't believe ever happened after it is all over. Neither can I explain it without getting myself confused and also the listener. I can't understand myself or make anyone else understand. And the result is a renewal of the Agony. One consoling feeling is that God is very near and will help me. I repeat over and over again that I love Him and would rather die than leave Him. I give Him my whole self, but still this feeling lingers on. It comes with no warning and puts me in such a dissipation of mind that I actually feel that I will go crazy. Sometimes I feel that I'm crazy already and since my only desire in this world is to become a saint, I feel a gripping siege of despair come over me. I feel that if I am crazy, it's my own fault and I can never, never be a saint and might even lose heaven. Then I want to get away from myself, any place but not go crazy. At times the temptation comes so strong, that, maybe it's the convent-life that's doing it and then my mind becomes a blur. I try hard not to think and my mind seems to loose all reasoning power. I feel sick and can't eat. I hate food. I get terrible pains in my stomach and sides. If any one says any thing to me, I feel that I have done something dreadful and everyone hates me. I pick up everything I hear and think that it is all meant as a slur to me. I thank God heartily for this chance to practise humility and try so hard to take it humbly and silently. I thank God over and over but still my imagination works all kinds of tricks. I do what I think is virtuous and feel that God is very pleased. I try to smile and joke outside but inside it's a terrible storm. Then to add to this storm I get a mistrust in my own consolations. I feel that God is pleased and then I think that I'm only trying to excuse myself for my faults or maybe the devil is putting that thought in my head so I will continue on this downward road that I imagine I am traveling. I can't feel the presence of God but I hope and pray that He is permitting it all. Then come the doubts. I can find no human consolation at all and everything and everyone, even those whom I trusted most, seem to point to insanity (I imagine). Doubts upon doubts come into my mind. I begin to wonder if I have done something bad and am trying to deceive myself and so many others that I don't wish to ever call back to my mind. During all this my soul cries out "Save me, save me Lord or I will perish." I tell Him over and over that I love Him and wish to live only for Him. I beg Him to help me. "O Lord that I may see," and "Oh God! I will follow Thee wheresoever Thou goest" are my constant prayers. The anguish lasts sometimes for the space of a month during which I tell my Jesus over and over again, everywhere I am that I love Him. I make a complete offering of myself to Him and feel sure of His care but still the agony lasts and still I fear. And what a dreadful fear. My vocation seems to be ready to go overboard at any minute and the fear I have for that is indescribable. Sometimes my heart just breaks. "Why do they keep me here. If only they would think the matter over and see if I have a vocation. (I don't trust my own thoughts.) If not, send me home. I'm losing my mind and soul here." All

my thoughts, good and bad, I won't trust because I feel that no matter how I look at it my life is ruined. Here I'm not living the religious life and to return to the world of my own accord is the worst thing a person could do to grieve God. It's like divorcing God.

Is it that I don't love God? Is it self-pity, is it pride, is it tepidity? These are questions that come to disturb me even more.

The thing that seems to trouble me very much is a constant sick feeling. At first I think nothing of it and in a spirit of humility and simplicity I ask to take something to settle my stomach. My superior gets angry and I don't know why. Day after day I feel sick but can't take any remedy and as the days go by my fear for my superior grows. They tell me it's my imagination or that I'm selfish and think of myself too much or that I'm fighting my vocation. These things impress me and I begin to examine my conscience and there I am again in a whirlwind of doubts and self-condemnation.

I pick up a spiritual book to find comfort but it makes matters worse every time. It either leads to a scrupulous conscience or a peaceful understanding word from God which confuses my mind (thinking it a temptation) or leads to self-pity. I read in a book once that when temptations come the best thing to do is to tell your confessor or superior. So, when I got one of these temptations I would tell my superior —but every time was met with misunderstanding and contempt. This made me feel even worse. I had no one to turn to. I got so homesick for an understanding mother. It was during these moments that one of my great graces was answered. I turned to my Heavenly Mother for care and in her I have found great comfort. I have been praying for a long time for devotion to her and now my prayers are answered. I feel a deep conviction that God has permitted all this to draw me closer to Himself to separate me from all creatures and bring me closer to His Mother. I believe it is also a test to try my love for Him and strengthen me for what is yet to come.

Matters were made somewhat more difficult by superiors who dealt with her without understanding sympathy and kindliness.

And so her inner conflict commenced to have a somatic resonance, and she developed abdominal pains and nausea and even vomiting at times. The doctors could find nothing wrong with her in spite of her continuous pains and complaints about her stomach.

"I got discouraged," she wrote, "and wanted to go home away from everything where I could start life all over again. Shuddering at this thought I made up my mind to stay on and all my troubles persisted. Then I began to really feel sick and couldn't eat. I was taken to a doctor and had a slight operation, I never knew what kind. Then everyone began to treat me with scorn. I still felt sick and still had pain. I was told there was nothing the matter, and then I wondered if I were imagining these things or not. But I *did* and still *do* feel sick at times. Everyone seems to think it's my imagination and ignores me when I just mention it."

The sister who brought her to the University Clinic said, "She is all the time complaining of her stomach and often seems confused in mind. She is disturbed about her vocation. At times she says she wants to go home

and then contradicts herself and says she does not. She is twenty-two but acts as if she were much younger. She does not mingle with the others, but with it all she seems to be honestly trying to do her best."

Her personal history gave no evidence of any serious illness and never before in her life had she had any manifestations like her present symptoms. On finishing the first half of the tenth grade she went to work, entering the convent about three years before her visit to the Child Center. "In school," she said, "I had a hard time because I could not learn quickly." There were no cases of insanity in the family.

The psychopathology in this case seems clear. The patient has been fighting against admitting to her own mind that she wants to go home and in some way realize her dream of having her own family. The emotional tension by way of the vegetative nervous system gives rise to gastrointestinal symptoms.

Possibly the following neurological picture might be helpful in visualizing her condition. The sympathetic overflow produced a gastrointestinal stasis with the resultant loss of appetite and the stasis led eventually to the nausea, and perhaps was in various ways responsible for the pains for which physicians could find no organic cause.

In dealing with cases of this kind one must avoid two extremes:

*a*) Telling the patient that it's merely a question of a lively imagination and a temptation to be false to her vocation.

*b*) Telling the patient to leave the convent and get married.

The former mode of treatment is likely to intensify the conflict till it reaches the breaking point and you have a violent hysterical reaction or even a schizophrenic attack.

The second method may make the patient intensely unhappy for the rest of her life. Sometimes girls leave the convent and find adjustment in the world difficult, are unable to re-enter a convent, and are dissatisfied for the rest of their lives.

It is not for the psychiatrist to decide the patient's future but to bring the patient face to face with the difficulties that have been repressed and lead the patient to make his or her own decision. One's own personal decision sometimes terminates a conflict whereas the decision imposed by another only intensifies it. When, therefore, the mother superior tells the patient, "It is all a temptation and you must resist it," this will in all probability only intensify the patient's symptoms.

But if the psychiatrist attempts to put an end to the conflict by telling the patient to leave the convent and so terminate the conflict, he may merely get the patient out of one conflict to precipitate her into another.

It seems better to bring the patient face to face with herself, her present, and her future and let her decide to leave or stay as it may seem best after

thinking things over and discussing matters frankly with a prudent confessor.

This patient was seen only for a few interviews. In the first, after taking the history, a casual remark was made, "Your upset stomach *may* come from your anxieties."

In the second, after having her describe her difficulties, the question was put to her: "What would happen if you went home?" "I would want to come right back, but I would stay home with my mother, for I don't want to get married."

A little later she was asked: "When did you start translating conflict into pain?" "I was homesick and the conflict started. I felt if anyone would believe I was really in pain, I would be well and would never want to see a doctor. I really know that part of it is imaginary."

Evidently a major factor in the drive to complain about pain is an appeal for sympathy.

The patient continued: "I have been on the verge of going home several times. But when I think about going home those sad feelings come."

In the next interview there was a marked amelioration. The nausea had dwindled. Perhaps because the superior had told her to eat or not according to her appetite.

The drive to go home had ceased completely. In fact she said, "It seems that it commenced to disappear from the first time I told you about it." Since the last visit she has felt so well that she feels that she will not have to keep on making the long journey to the University.

In the course of this interview the patient told me that the mother superior wanted to know what I had said to her; she told her that we had talked over her conflict about leaving the convent and that I had said she should face the whole matter and come to a final decision and go if she wanted to go. This made the mother superior furiously angry. And it may be that the patient's desire to terminate the therapy is not entirely conditioned by the relief of tension but is due in large measure to an effort to appease the mother superior.

Some months later the patient visited the Child Center to make a report. The gastrointestinal symptoms had subsided. She was happy in her convent life and all signs of a conflict had disappeared.

## Chapter 15

# CARDIAC PSYCHONEUROTIC CONDITIONS

Of the various cardiac conditions which may have a mental factor in their origin, let us pick three for purposes of illustrating the part that the mind plays in psychosomatic disorders. These three are:

1. Essential hypertension.
2. Neurocirculatory asthenia.
3. Cardiac neurosis.[1]

## 1. Essential Hypertension

Before approaching the problem of hypertension as a psychoneurotic condition, let us cast a glance at the various ways in which the blood pressure of man is regulated.

We might classify them according to the following schema, in which the various subheadings are more or less extensively interdependent.

Blood pressure regulation
- Anatomical
  - Peripheral
  - Central
- Physiological
  - Hormones
  - Metabolites
  - $CO_2$ tension of blood

1. *Peripheral anatomical regulation.* This is accomplished by means of what have been termed "stretch" receptors.

In the walls of certain major blood vessels are located end organs similar to those in the tendons which react to stretching of the tissue in which they are located. These arteries are the arch of the aorta, the root of the innominate artery, and a dilatation of the internal carotid artery known as the carotid sinus. If the blood pressure rises, the tissue in which these "tension receptors" is located is stretched and these end organs send a stimulus to the cerebral centers and there results a reflex lowering of blood pressure.

Increase of blood pressure may be attained, independently of the secretion of adrenalin, by the stimulation of any sensory nerve except the depressor and the carotid sinus nerves.[2]

2. *Central regulation.* It has been demonstrated that stimulation of the premotor cortex of the brain in monkeys may cause either a rise or a

[1] We are not entering into the question of the appropriateness of these terms but merely use them because they are found in the literature and do refer to definite groups of symptoms.

[2] Cf. William Henry Howell, *Textbook of Physiology*. Edited by John F. Fulton. Philadelphia, W. B. Saunders Co., 1946, p. 703.

fall of the blood pressure according to the points stimulated. There are vasomotor centers also in the spinal cord and medulla oblongata.

Furthermore the vegetative nervous system regulates blood pressure so that, in general, stimulation of parasympathetic fibers slows the heart and lowers blood pressure, and a stimulation of sympathetic fibers accelerates the heart and elevates blood pressure.[3] Furthermore, appropriate stimulation of the hypothalamus may cause either a rise or a fall in the blood pressure.[4] The carotid and aortic bodies respond to blood flowing through them so that blood rich in carbon dioxide causes a rise of blood pressure and blood rich in oxygen causes a fall.

3. *Physiological factors.* It has long been known that adrenalin, a product of the medulla of the adrenal gland, increases blood pressure. Collins found that desoxycorticosterone acetate, a synthetic product of one of the hormones of the cortex of the adrenal gland, had the following effect on the blood pressure: "The systolic pressure rose very slightly immediately after injection, but fell and remained lower than the pre-injection level at the end of three hours. The diastolic blood pressure rose immediately after injection and continued to rise until two hours after."[5] There are many substances produced in various organs whose absorption leads to a dilatation of blood vessels and a lowering of blood pressure.

The carbon dioxide tension of the blood regulates blood pressure not only by its flow through the carotid and aortic bodies and individual organs of the body but also by direct action on the central nervous system.

Among the products of body chemistry which concern the blood pressure is renin, a substance which is secreted by the kidney whenever the blood flow to the kidney is interfered with. Renin itself does not increase blood pressure but gives rise to a substance that does.

The anatomy and physiology of hypertension has suggested various surgical procedures for its relief. But their value seems to be questionable, and the mortality (2.8 per cent in one type of operation,)[6] suggests that the patient think before he leaps.

[3] See the interesting digest of the literature by Detlev W. Bronk and R. F. Pitts and M. G. Larrabee, "Role of the Hypothalamus in Cardiovascular Regulation in The Hypothalamus." *Research Publications*, Assoc. for Research in Nervous and Mental Disease. Vol. XX. Baltimore, Williams & Wilkins, 1940, p. 324.

[4] Loc. cit., p. 332.

[5] William J. Collins, "The Effects of Certain Parasympathomimetic Substances on the Emotions of Normal and Psychotic Individuals." *Studies in Psychol. & Psychiat.*, **6**: 33, 1946. It has been found that prolonged administration of desoxycorticosterone acetate leads to an increase of blood pressure. G. A. Perera et al. *J. A. M. A.*, **125**: 1030, 1940.

[6] Edward Weiss reporting Crile's results in, "Recent Advances in the Pathogenesis and Treatment of Hypertension." *Psychosomat. Med.*, **1**: 191, 1939.

Can psychotherapy accomplish anything in cases of "essential hypertension"? The term essential hypertension was originally applied to cases of chronic high blood pressure which were not associated with renal involvement.[7] Since then arteriosclerotic hypertension has been taken out of the picture, as well as a few conditions such as tumor of the adrenals, and the term is applied to chronic high blood pressure, which is not explained by any specific pathological condition.

When we consider the known effects of the emotions on blood pressure, we should realize the importance of determining in any case of "essential" hypertension whether or not the patient is suffering from an abiding internal conflict. If this is the case and the patient can be led to give up kicking against the goad and to accept his situation and make the most of it, the result may be an abiding lowering of blood pressure as effective as in medical and surgical treatment. Franz Alexander has given an interesting example in which the psychotherapeutic adjustment of the patient led to a slow downward trend of both the systolic and diastolic blood pressure from an average of 160/111 to 141/99. Furthermore, from day to day as the patient was more or less emotionally tense or relaxed, the blood pressure tended to be high or low.[8]

Nor should we always lay aside all psychotherapy when we find organic causes for high blood pressure. Many human ailments have a mixture of organic and psychic factors and the internist will make a great mistake if he treats every patient as a mere test tube with its contents.

## 2. Neurocirculatory Asthenia

It is interesting to note that this condition was recognized in the Civil War. It seems that attention was first called to it by Alfred Stille in his presidential address before the Philadelphia County Medical Society, June 3, 1863.[9] It was a condition manifested by a rapid pulse, or a pulse that became rapid on slight exertion, or a condition of breathlessness that

[7] L. N. Katz and Lovis Leiter, "The Present Conception of Essential Hypertension." *Psychosomat. Med.*, 1: 106, 1939.

[8] Franz Alexander; "Psychoanalytic Study of a Case of Essential Hypertension." *Psychosomat. Med.*, 1: 139–152, 1939. For further cases, see Edward Weiss in same issue, 192 ff. The attempt has been made to determine the personality type associated with essential hypertension. See Leonard Gold, "Mental Characteristics Associated with Essential Hypertension." (*Psychiat. Quart.* 17: 364–371, 1943.) Only 10 cases were studied. Flanders Dunbar has attempted to work out personality profiles for various cardiovascular syndromes in, "The Relationship between Anxiety States and Organic Disease." *Clinics*. Philadelphia, J. B. Lippincott Co., 1: 879–908, 1942.

[9] See John T. King, "Anticipation and Diagnosis of Neurocirculatory Asthenia." *Am. Int. Med.*, 16: 941–949, 1942. Citing Stille's address in *Am. J. Med. Sci.* (New Series) 66: 185, 1863.

came on after a little muscular effort, and at the same time none of the ordinary physical signs of heart disease could be elicited.

In World War I it was frequently observed and came to be known as effort syndrome or disordered action of the heart (D. A. H.).

Weiss has called attention to a very important point of view in accentuating the concept that the condition is a disorder of the personality and not a disease of the heart or of the nervous system. Thus he says that neurocirculatory "asthenia is a psychosomatic disorder with circulatory manifestations, and while it may have a special coloring in military life, it is still primarily a disorder of the personality and should be looked upon and treated as such."[10]

Lewis, who studied the condition in World War I and wrote a book on *The Soldier's Heart*,[11] tells us that if you study carefully a group of patients diagnosed as suffering from soldier's heart or effort syndrome, you will find "the very definite group of cases suffering from chronic infections, obvious or concealed, the chief being pulmonary tuberculosis, local pus infections of nose, ear, throat, or other part, infections of bowel or bladder. Another large group is that comprising patients who are convalescing from acute infectious diseases. . . .In most cases, however, no infection is found and there is none in the recent history."[12]

Weiss in the study mentioned above correctly calls attention to the fact that it is not a question of *either* a functional (psychogenic) or an organic disorder, but in any individual we must expect a mixture of the two factors, and we have to ask ourselves, in the study of the patient, To what extent is this disorder physical and to what extent is it emotional in origin? A psychological study of the personality is always necessary in the treatment of a patient with neurocirculatory asthenia. That this is so is made clearly evident by the work of Wittkower and his associates, who in a study of 50 unselected cases found that everyone of them prior to his neurocirculatory asthenia had a pre-existing disorder of the personality.[13] And Stekel maintains that in neurasthenical disorders of the heart, there is always present a severe mental conflict of which the cardiac symptoms are merely the signs and manifestations.[14]

[10] Edward Weiss, "Neurocirculatory Asthenia." *Psychosomat. Med.*, 5: 96, 1943.

[11] Thomas Lewis, *The Soldier's Heart*. New York, P. B. Hoeber,1919, xi+144. 2nd ed., London, Shaw and Sons, 1940. Pp. 103.

[12] Thomas Lewis, *Diseases of the Heart*. 2nd ed. New York, Macmillan Co., 1937, p. 159.

[13] E. Wittkower, T. F. Rodger, and A. T. M. Wilson, "Effort Syndrome," *Lancet*, 240: 531–535, 1941.

[14] Wilhelm Stekel, *Nervöse Angstzustände*. Berlin, Urban and Schwarzenberg, 1924, p. 93.

George and Harold Wolf[15] point out that the demands of life may cause cardiac disturbances not only in patients with organic heart disease but also in persons whose hearts are apparently normal and without any structural defect.

If we look upon physiological disturbances arising from mental factors as proper to the neuroses, it is evident from this observation that a cardiac neurosis may develop on the basis of a heart with some structural injury as well as in an individual with an organically perfect heart.

The Wolfs studied heart action by means of a ballistocardiograph and respiration by a Benedict-Roth type of spirometer. They were interested in the effects produced by situations of ordinary life involving more or less mental stress.

Their discussion, for instance, of the symptom of fatigue and its effects on cardiac action and respiration could well be brought in line with the neurosis known as neurocirculatory asthenia. Measurement of mechanical work done by sustaining a weight showed that performance was definitely better when one felt "energetic." During a period of fatigue associated with an ordinary cold, or an infectious gastro-enteritis, or after a sleepless night, the vascular and respiratory response to effort were more marked and it took a longer time for the blood pressure and heart action to return to the normal resting level.

Episodes in daily life which result in reactions of anger, frustration, humiliation, and anxiety result in an impairment of cardiovascular function.

"In a setting of adverse life circumstances and associated emotional reactions, performance in terms of respiration and work of the heart is costly,"[16] and the total efficiency of the individual may be reduced.

And Goldstein correctly remarks that in soldiers in time of war the conflict is not deep rooted in their personality, and there is no permanent personality change. The conflict is simply the fear of death and the necessity of playing the part of a soldier. Goldstein would not dignify the condition in time of war with the name of neurosis, which he would give only to conditions in which there is a fixation of symptoms and profound personality change.[17] Treated early after their onset these conditions clear easily, but if not promptly and properly handled fixation may take place and a genuine neurosis develop.

[15] George A. Wolf, Jr., and Harold G. Wolf, "Studies on the Nature of Certain Symptoms Associated with Cardiovascular Disorders." *Psychosomat. Med.*, **8**: 293–319, 1946.

[16] Loc. *cit.*, p. 317.

[17] Kurt Goldstein, "On so-called War Neuroses." *Psychosomat. Med.*, **5**: 376–383, 1943.

Wittkower and his associates recommend treatment by abreaction in cases that originated in the shock of war experiences.[18] In peacetime they regard systematic psychotherapy as of greater importance.

The internist is likely to resort to explanation, reassurance, persuasion, and encouragement to undertake simple activities and go on slowly to major exertion.

"Having carefully determined the absence of significant cardiovascular disease in such a patient, and having gained his confidence, the greatest single therapeutic weapon is reassurance. Ideas which have grown and taken abnormal proportions in the mind of a patient, largely due to fear and misinformation, must be dispelled firmly but without ridicule. The method of citing examples is a useful one in demonstrating that a particular case is not unique or hopeless, and if this is tempered by judicious sympathy and an optimistic attitude toward the future, much can be accomplished in giving hope, encouragement, and a new lease on life to persons who might otherwise be almost totally incapacitated by an ailment which has no organic basis."[19]

Such measures will not always be successful, particularly when there is a genuine neurosis present involving a disorder of the personality.

### 3. Cardiac Neurosis

White and Glendy open their discussion of cardiac neurosis with the statement, "The more heart disease there is, and especially the more widespread the publicity about it, the more important becomes the problem of cardiac neurosis."[20] The statement implies that hearing about deaths from heart disease is a factor in the development of cardiac neurosis. A study of a large number of cases would probably show that, in some patients, one factor in the development of neurotic conditions is hearing or reading about a sudden death or calamity and after being thus sensitized the patient develops psychoneurotic symptoms which bear a resemblance to the accident that attracted the patient's attention. On the other hand a vastly greater number of people hear and read about sudden calamities than the sum total of all persons suffering from psychoneurotic conditions.

[18] For a good example of how this is done under pentothal narcosynthesis, see Roy R. Grinker and John P. Spiegel, "Brief Psychotherapy in War Neuroses." *Psychosomat. Med.*, **6**: 123–131, 1944.

[19] R. Earle Glendy and Paul D. White, "The Recognition and Treatment of Cardiac Neurosis." *Med. Clin. N. A.*, **21**: 451, 1937. George H. Parmenter thus summarizes his technique of treatment: "Hygiene, graduated exercises and the psychotherapy of hope and encouragement." (*The Irritable Heart and its Treatment.* U. S. Vet. Bureau Med. Bull., **2**: 1131, 1926.)

[20] Paul D. White and R. Earle Glendy, "The Growing Importance of Cardiac Neurosis." *Arch. Int. Med.*, **10**: 1624, 1937.

The shock effect of calamities and of the learning about terrible mishaps is neither the sole nor the essential and adequate cause of any neurosis. But it may be a contributing factor and by giving the specific coloring to a psychoneurotic condition it may act as the formal cause of the resulting disorder.

If this is the case, the frequency of various neurotic conditions should be subject to variation more or less in the same way as fashions in hats and clothes. And, as a matter of fact, the incidence of specific hysterical disabilities such as tremors, paralyses, aphasia, blindness, deafness, etc., was not so high in World War II as in World War I, and disorders resembling the major psychoses, but clearing more quickly and easily, have been more common in World War II.

What White and Glendy understand by a cardiac neurosis "consists essentially of fear or apprehension about the heart."[21] They point out that it is always based on some very definite factor, such as hearing about a sudden death from heart disease or being told by one's physician of the presence of a heart murmur.

Unless a cardiac neurosis is treated early, it is likely to become almost incurable and be a severe crippling disorder. Furthermore it may coexist with organic heart disease. In fact, "the most difficult cases of all are those with serious heart disease complicated by a cardiac neurosis."[22]

The common complaints of these patients are palpitation, breathlessness, and cardiac pain, but there is no close relationship between the symptoms and muscular activity. The symptoms may commence with muscular exertion but subside as the exercise is continued.

Lipkin gives an interesting description of the difference between cardiac pain due to organic disease of the heart and that which has no basis in any cardiac lesion.

Lipkin says that in organic disease of the heart "it is probable that anginal pain occurs when there is a disproportion between the work demanded of the heart and the oxygen and blood supply"[23] to the heart through the coronary arteries.

His descriptions of the typical pain in anginal attacks and in cardiac neuroses are very illuminating and will be worth while bearing in mind when studying the patient.

"True anginal pain, that is pain due to inadequate blood supply through the coronary arteries, is preceded by an awareness that there is 'something wrong in the chest.' The pain itself is described as 'squeezing,' 'constrict-

[21] *Loc. cit.*

[22] *Loc. cit. p.* 1625.

[23] Mack Lipkin, "Heart Pain with and without Structural Alteration." *Psychosomat. Med.*, **6**: 257, 1944.

ing,' 'pressing,' or a 'deep gnawing.' It is always a steady pain, the intensity of which mounts increasingly till the patient rests. Almost always the pain begins in the midline, somewhere between the supra-sternal notch and the xiphoid; it may however spread to involve an area slightly to the left and right of the midline. The characteristic radiation is along the inner margin of the left arm, but radiation to the left side of the neck, the jaw, the right arm, and left upper chest is not unusual. The pain is never referred to the apex and rarely described as 'knife-like,' 'like a stitch,' or 'darting.' Usually the pain lasts from one half to three or four minutes; seldom as long as ten or fifteen minutes. When it lasts more than thirty minutes a myocardial infarction is almost certainly taking place."[24] It is precipitated by exertion and may be relieved by cessation of movement and rest.

Cardiac pain of neurotic origin is no more due, says Lipkin, to disease of the heart than hysterical blindness is based on objective changes in the eye.

> The probable origin of pain of this type is anxiety. The patient's attention is focused on the heart by certain circumstances, the commonest of which are: 1) the occurrence of some dramatic case of heart disease among the acquaintances of the patient; 2) the appearance of such symptoms as sudden skipping, a flutter, or an unusual palpitation which causes the patient to become conscious of his heart; 3) a a casual statement by an insurance examiner, or some other physician about a murmur . . . 4) some emotional disturbance—not necessarily one which calls direct attention to the heart.
>
> The pain is usually localized in the outer precordium, especially in the region of the apex, probably because most people believe the heart is located somewhere in the outer part of the left chest. In several instances in which patients were told of the location of the heart and the usual site of pain of cardiac origin, I have observed prompt shifting of the area of the pain. The discomfort is rarely described as constricting or heavy. The neurotic type is always described as "sticking," "burning," "like a stitch." In contrast to the short anginal attacks, the pain usually lasts hours or even days; and it is not steady but comes and goes.[25]

It is not related to exertion and is not immediately relieved by rest or nitrites.

As to the treatment, the medical internist is likely to content himself with reassuring the patient (hoping that the prestige of his reputation will conquer the anxiety of the patient) and prescribing graded exercises, lest the patient exceed his tolerance to suggestion and relapse.

We seldom see the details of a psychotherapeutic attempt to deal with a severe cardiac neurosis. And so to help towards the understanding of the

[24] *Loc. cit.*, *p.* 257.
[25] *Loc. cit.*, pp. 257–258.

mental treatment of these patients the following case is reported in some detail.

## Case History

*Presenting Symptom:* The patient stays in the house nearly all the time because she is afraid to go out and is always taking her pulse.

*Personal History:* Patient was about 26 years old when she first visited the clinic. She maintained that she had been free from illnesses except "a little heart trouble" which came on when she was about 13 to 16. At 16 her tonsils were removed and at 20 she had an appendectomy.

She started high school but was unable to continue on account of her heart condition.

On account of her heart condition she was kept in bed for almost a year One specialist said her heart was normal; another very eminent physician said that the heart was affected by some kind of toxic condition.

*Present Illness:* Her present trouble seems to have started from the time she was put to bed for a year as a therapeutic measure for her heart condition. From that time she has suffered from a general sense of disability which prevented her from going to school or undertaking any kind of employment. And so there developed an anxious, unhappy, useless type of existence in which her only occupation was driving her mother about on business errands and to make various more or less formal visits which she found intensely boring and uninteresting. Finally she developed a fear of going out and stayed in, taking her pulse at frequent intervals and demanding to have someone with her all the time. At times her sadness gave rise to tears and for some months prior to her first visit to the clinic she refused to drive the car and stayed in the house all the time.

At the request of her physician she sought psychological treatment at the Child Center.

About two years previous to her visit to the Child Center the patient went through a period of depression lasting about four months. She was not, however, taken to a mental hospital. In fact, she said, "For the past twelve years I have had at different intervals recurrences of 'nerves' like my present condition." Such spells of depression lasted three to six months.

*Family History:* Except for the record of an aunt on her father's side who had a nervous breakdown and was in a hospital for a while, the family history was negative.

*Treatment:* We attempted with this patient a psychological analysis. In making a psychological analysis we often have recourse to the two techniques developed by Freud, namely, free association and dream

analysis. Briefly, these techniques consist in the following procedures. In free association the patient is urged to allow his mind to wander as it will, and, as it wanders, to express to the therapist everything whatsoever that comes to his mind. By this procedure it is hoped that the patient will eventually unburden dormant experiences that are really the source of his present difficulties. And it is hoped that when the patient understands thoroughly the origin of his troubles he may be enabled to manage them better, or when the hidden is brought to the light of day and repression is released, his difficulties may spontaneously vanish.

In dream analysis the patient writes out a dream that he has recently experienced and the therapist reads to him first one phrase and then the next till the whole dream has been considered. After each phrase the patient tells everything that comes to his mind as he ponders on that phrase. In the process the therapist tries to lead the patient to interpret the meaning of his dream as one might try to understand an obscure allegory. As a matter of fact, our troubles find expression in our dream life and sometimes we sketch in a dream the various possible solutions that might bring about a more or less satisfactory outcome of our present predicament. But this particular type of treatment with this patient was very difficult because the patient did not follow up a train of associations but after a few remarks would say, "That's all." Any dreams reported were expressed in a sentence or two followed by her favorite phrase, "That's all." Nevertheless, in an attempt to analyze the dream further details of the dream itself would sometimes be elicited. These details were probably known to the patient when she first recounted the dream and said, "That's all." The clipping down of the dream account to a brief sentence was probably a part of the patient's "resistance." This resistance seems to me to have had two elements (a) resistance against opening up herself and being understood and (b) resistance against getting well and leaving the shut-in type of life she was leading in her home, where she felt protected and shielded from the necessity of coping with the world and its problems. Once when asked, "What do you get out of staying home?" she answered, "Nothing, but I feel safer."

About six years before she came to the Child Center, she went to a psychoanalyst. He told her after a single visit that it would not be necessary for her to come to him for further treatment but that she should continue with her family physician. He probably thought that her laconic answers rendered psychoanalytic treatment difficult or impossible.

The treatment of this patient at the Child Center falls into two periods. The first period resulted in the patient's going to business school and getting a good position as a secretary, thus getting out of her complete isolation

with her mother, which had lasted for about nine years, during which time she had had few other associations.

In this first period the main treatment was pharmacological (eschatin, 1 cubic centimeter hypodermically, three times a week) and ordinary encouragement, explanation and persuasion. Analytic treatment, though attempted, led to almost no results.

Physical examination by several good practitioners failed to reveal any organic condition in the heart or elsewhere. The reassurance which this afforded plus the toning down of the anxiety by eschatin led to a disappearance of the habit of taking her pulse at frequent intervals. This compulsion had nearly come to an end in about two months. At about the same time she commenced again to go out alone in the automobile.

After about three months she enrolled in a commercial course. She obtained a diploma in about nine months and was able to get a good position. She also resumed going to church on Sundays. We thought that a relative cure had been obtained and considered the case closed.

But a month or so later I received a letter from her mother reporting that our patient was doing well at her position but she had quit going to church, saying that it made her nervous and she refused to go to work or come home on the bus alone.

And so the case was reopened.

*First Interview.* It was felt that in spite of the difficulties of analytic therapy it would have to be attempted if any further improvement was to be obtained in this patient.

In view of the fact that free association would lead nowhere with this patient, it was thought advisable to give her a point of departure for her associations and that we might start with her difficulty about going to church. So I said, "Give me all your associations with

*Church*" "I used to like church." (What, particularly?) "I liked to hear the sermons. Do you know Father X? I like to hear him speak. Then I used to think a lot in church. I liked to pray. I liked to go to church because I thought it helped me. I think of a lot of things. Everyone goes to church to worship God."

Here there was a pause and the patient was urged to go ahead and express anything at all that came to her mind. She continued, however, on the church theme.

"I used to plan things when I was in church, but they never seemed to materialize; things I would like to do, working and going out and enjoying various pleasures. Going to work has now materialized; looking up old friends has not." (Whom particularly?) "A number of girl friends I have not seen for a long while. A number of other friends, not particularly girl

friends,—a man and his wife." I asked about boy friends and she denied thinking of any boy friends in the past and then said, "About a boy friend overseas." (This was followed by a long silence. Then she continued with a marked change in the sequence.) "One time when frightened I started choking." (What frightened you?) "I could not get my breath. I choked on some water. No one could help me."

Then there was another pause and I said, "Give all your associations with the word

*Alone.*" "I might die by myself. I used to like to stay by myself. (Note that now the patient wants to have someone with her all the time. So I asked what caused the change.) "Maybe I don't like my thoughts; I think too much about myself. I want to change things at home; the way my brothers and sisters do things to my mother." And then her associations dried up.

I tried to get further associations and perhaps develop some abreaction by suggesting to the patient to imagine herself as vividly as possible in church, well up towards the front. But there were no associations and no external manifestations of anxiety. The patient, however, remarked, "In church and in the theater I am afraid I will have to get up and come out. I can't get my breath."

She was asked to think of crowds and tell what came to her mind. She said, "I once got into a mob coming from a football game. I was with my brother-in-law and three or four fellows. I was never in such a mob. This was about four years ago. To a certain extent I was frightened but I had a good time. Going through the Holland tunnel the door in the car came open. It was my mother's car. I probably had palpitation and difficulty in breathing but it did not bother me so much."

*Second Interview.* The patient reported no dreams and no improvement. In fact, she thought things had been somewhat worse in the past week. When she was getting injections she sometimes went to church. The injections seemed to make it easier.

During the past week she twice went out to a neighboring store. All the way to the store and while in the store, she was troubled by her heart beating fast, but when she started to return home the palpitation subsided. She was afraid to go to a club meeting where her girl friends were sewing for the Red Cross for fear her heart would beat fast.

(What attraction is there about staying home?) No answer.

(You don't like to leave home.) "No. I don't."

(Think of *staying home* and tell me what comes to your mind.)

"I feel better. I don't like to go out."

(What do you enjoy or have you enjoyed at home?) "I listen to music. I do as I want to, and read, and relax more."

(What do you fear outside?)

"I don't know. I was not frightened. I had to go to a lot of places I did not want to go to. I had to take my mother and her friends. Sometimes I found it very tedious."

(You wanted to get out of it.)

"Yes, I did," the patient replied with great emphasis.

(And you found a way. You developed a disability.)

"Yes, I have."

(We do this subconsciously or perhaps entirely unconsciously. But sometimes we knowingly and consciously pretend. You don't pretend, do you?)

"No, I don't."

She went on to tell me of how she finally felt angry and rebellious when time after time she had to take her mother around on her visits to people in whom the patient had no interest whatsoever. On such occasions her heart used to pound, perhaps due to the intensity of her anger and rebellion. And so it became a great burden to be always going around with her mother. This was in the days before she came to the Child Center, and it led to her refusal to drive the car at all and she gave as an excuse, "It might cause my heart to beat."

I here explained the concept of the conditioned reflex and pointed out that if a situation has been associated with a severe pain a few times one soon becomes apprehensive of the situation even though the pain is no longer inflicted and so one has the immediate sequence: situation—anxiety reaction. "In your case the situation was *going out;* the pain was *your own rebellion and the bondage of being tied to your mother.* The reaction was *palpitation of the heart.* In this way the very idea of *going out* eventually produced *palpitation of the heart* without any rebellion and sense of bondage. It should be possible, therefore, to break up this association by insight into its origin so that going out will not produce palpitation of the heart in the future."

The patient did not appear to be willing to accept without any reserve this explanation of the origin of the palpitation and tachycardia which were now associated with the mere idea of going out. Still she admitted that she did not think it impossible that her present difficulty might be what I termed a defense reaction which delivered her from the bondage to her mother.

(I then remarked, "You don't need this defense reaction as much as you used to.") "No," was the laconic reply.

From this day on the palpitation of the heart on going out has practically ceased. What had once been a constant unavoidable difficulty took place only on rare occasions. The incident is a good example of a physical con-

dition clearing when a patient has been given a clear insight into its mental origin.

*Third Interview.* Since the last interview there had been no special anxieties and the heart had caused no disturbance. She had continued working and felt that it was very convenient to be taken to work in an automobile. I asked her if she had been thinking over last week's analysis of her heart condition. She said yes and that she had been wondering whether or not it was really true.

An attempt was made to further the analysis by the technique of free association, but after a bit the patient said, "I can't think of anything, but something should come up."

A point of departure was sought with the word

*Alone:* "I think of things I don't like to think about when alone."

(What kind of things?) "About dying. I might be losing my mind. Will I ever have anything of my own, a home of my own? I would like to do what I want."

(You won't have that home of your own if you stick in your own house. Do you still have to depend on your mother?)

"Not so much."

(Maybe your mother has made a baby of you.)

"The whole family has."

(Babies are afraid to grow up. Are you?) "No."

(Little babies are afraid to grow up. Do you still want to be a baby?)

"No." (With considerable emphasis.)

(What will you do about it?) "I don't know."

(It's up to you to do something.) "That's what worries me. I'm getting older."

(That means you want to get married.) "Yes, I could have married several times. But I did not like the boys well enough."

(Are you afraid to get married?) "No, I never had any fear put into my mind about marriage except the example of my father and mother who did not get along so well together."

(When can you quit being a baby?) "I don't know."

(Do you really realize that you are playing the baby?) "Yes, I am the youngest. There are nine years difference between my brother and myself."

(What do you get out of being a baby?) "I don't play the baby." (Notice the contradiction.)

(Then can you go out by yourself?) "It could be."

(It would not have done for you to have become unable to go out with your mother. You had to become totally disabled.) "It would seem to be that way." (Laughs.)

*Fourth Interview.* The patient reported going out a few times without

any palpitation of the heart. Once when coming home from work, the heart beat fast for a little while and she had no idea what started it. We went over again the old situation in which she could go no place except to take her mother around. At first she went out with her mother willingly and without any trouble and then she became rebellious and would get so angry on the inside that her heart started pounding. I pointed out again that if that happened often enough the very idea of going out could eventually lead to palpitation and tachycardia. The patient seemed to realize that her present disordered heart action might really be rooted in this rebellion at being tied down to her mother without any hope of eventual freedom.

I asked, "If you got well, would the old situation revive so that you would have to use all your spare time taking your mother around?"

She answered, "I don't know, but maybe I fear it might."

*Fifth and Sixth Interviews.* The patient reported going to a wedding. Her heart beat fast for a little and then subsided and she enjoyed the evening. She did not go to church because if she thought about going her heart commenced to beat fast and she gave up the idea. In one interview she said that she was not exactly satisfied with her present condition. She really wanted to get over it but did not want to make the effort.

*Seventh Interview.* The patient spoke of having had the following dream.

"I dreamt about buying a hat made out of a big bird. That's all." And then added by way of contradiction, "There was a price tag on it: $12.50."

It was very difficult to get any associations; the term "big bird" meant in her mind a rascal, not an important individual. We learned in asking for associations that in the dream she did not conclude the bargain, neither accepting the offer nor refusing it.

"Perhaps," I suggested, "you are on the fence about being a rascal. A child is termed a rascal and your phobia is perpetuated because you want to keep on playing the baby. You want to grow up and you want to stay a baby. You cannot make up your mind either way. How much did the hat cost?"

"Twelve dollars and fifty cents."

"Is that a good deal to pay?"

"It's not so much."

"If this rascal of a phobia could be killed and became a feather in your hat it would look fine. Perhaps your dream is telling you that it won't cost so much to get free from your phobia."

"It would be wonderful to come out."

"The dream tells you, you can't come out without paying something but it is not so much to pay. Had you not better conclude the bargain?"

"I would like to."

It might be well to recall here the patient's former statement that she really wanted to get over her present condition but did not want to make the effort. The dream is evidently the symbolic expression of that state of mind.

*Eighth Interview.* I started this interview by harking back to the dream and asking, "What will it cost to come out of the phobia?"

She thought that if she came out the family would still lean on her and take up her time. "It could be," she said, "that I would have that to pay."

"Does that make the hat cost too much?"

"I should not think so."

Since her last visit she had gone to a club meeting one night and her heart caused her no trouble. Otherwise she had not been out. She said it would have taken some effort. I told her that was part of the price of the cap of liberty, but she thought it was too much to pay.

"The faster you make the payments, the quicker you cover the price. Your debt draws interest. The longer you persist without action the harder it is going to be."

She decided to make a few payments before the next week by going various places. Then there followed a series of some sixteen interviews during which progress was at a standstill. During this time the patient went out on a number of occasions without being troubled by her heart beating fast. At times she spoke of fear on going out which was not accompanied by any palpitation. Once or twice she complained of her heart beating fast. After the tracing of her condition to the original reflex response, the palpitation has almost completely disappeared but a mental fear of going out still persisted.

In one interview the patient spoke of her childhood. Her mother had a tendency to keep all her children home a good deal when they were little. "But because I had been sick my mother and father kept a closer watch on me than they had ever done on any of the other children. When my father died my mother clung close to me more than ever. She scarcely let me out of her sight. She did not realize how selfish she was and I never let her know. As a little child I was not easily frightened. I went anywhere and was just the opposite of what I am now. I was vigorous, active, and fearless. The change started when I was about thirteen and had trouble with my heart. They said I had chorea, but only one side of my face jumped . . . perhaps it was the left side."

The patient maintained that never before her chorea did she have any fear about her heart, but since then she is afraid of her heart stopping and can't forget it.

And so we see that the origin of her condition is to be sought in the "over-protection" she experienced in childhood, which was accentuated beyond

reasonable bounds when she was confined to bed for a year on account of a heart condition which seemed to have been unaccompanied by a valvular lesion and perhaps also by any myocarditis. During this time the child was probably warned again and again that if she did not stay in bed her heart would stop beating and she would die. Then her father died and this might have intensified her own fear of death. And when she got up her mother was continually restricting her play contacts and later kept her tied to herself as her *chauffeuse* until the rebellion which freed her from driving her mother about but tied her down to the house with a conditioned palpitation and tachycardia which came on at the very thought of going out.

Thinking of Janet's concept that every psychoneurosis is associated with an *abaissement du niveau mental* or, as we would say, a loss of the vigor of the personality, I commenced to wonder if there was any way in which I might increase the vigor of the patient's personality.

So, in one interview I explained the possibility that some mental conditions might be due to a loss of vigor of the personality, and I asked her, "If you were a strong and vigorous personality, what would you accomplish?"

She then enumerated the following things: "Fear would not bother me. I would do things I want to do, for example, go out when I felt like it. I would decide things more quickly."

It was then I learned that an officer in the army whom she had known for some years had written to her and asked her to marry him, but, though she wanted to do so, she felt unable to come to a decision and express it.

I suggested that as physical exercise strengthens the muscles, so mental exercise of some kind should strengthen the personality. I asked by what "personality" exercises she might attempt to develop greater vigor and initiative. She replied: "I might mingle more with people." I urged her to do so and we then went on to discuss the possibility of various forms of physical exercise such as walking, dancing, and bowling. Reading and other forms of mental exercise were also discussed.

But in the next interview, several weeks later, she reported that she had been unable to do anything on account of a bad attack of influenza. She also reported that she dreamt she was on top of a telegraph pole. No further details were forthcoming, but later it was found that in the dream she was moderately frightened.

In the next interview she reported dreaming about a snake which was sitting next to her bed. "It did not do anything. I was not afraid of it, but I did not like it."

"What are you unafraid of but do not like?"

"Nothing."

"What have you been contemplating the possibility of?"

"Could that be high places or going out?"

"Marriage?"

"I'm not afraid of marriage. In the dream I did not know whether I would like the snake or not. The snake might have been a symbol of marriage."

The patient had been thinking of the marriage problem a good deal in the two weeks before the dream. She fears that her difficulty about going out renders marriage at present impossible. She said she really wanted to get married but at times would think of the quarrels between her father and mother and wondered if her own marriage would be like that. She said she felt she had to get over the conflict about going out before she could get married.

In another interview she reported a dream in which I was telling her a story pertaining to telling lies. I suspected that the dream expresses the fact that she had from time to time avoided opening up what was in her mind by false denials.

These are the essential elements in the attempt to restore this patient to a normal existence in the world in which she lives but in which she takes little part.

Valuable progress was made when we consider that we started with a patient idle and inactive in her home life and we now have a patient working and contributing to the support of the family. But she was still unable to go to church and unable to make a decision in the important matter of marriage.

Our attempt at developing the vigor of the personality ended in failure but it is well worth considering not only whether or not a loss of strength of personality is a factor in psychoneuroses and psychoses but also how and by what means the former vigor of the personality may be restored.

The case illustrates what is known as resistance and repression and the difficulties of analysis when resistance is extreme. The patient continued to come for a year or more after the interviews above reported. Little progress was made till she dropped the boy spoken of above and became interested in another boy, a non-Catholic. She wanted to bring him into the church, but how could she do this if she could not go to church herself? This condition gave a new motive for conquering her neurosis and she commenced to go to church and so became practically well. She went to church regularly, as well as to other places, where her boy friend wanted to go. He started to take instructions to be received into the Church and they determined to marry as soon as a house could be found in an acceptable part of the city—a difficult problem of another nature in postwar urban life in the United States. Somewhat later they did marry, and let us hope they will live happily forever afterwards.

## Chapter 16

# PSYCHOGENIC BLINDNESS AND ITS TREATMENT

THE CASE we are about to present to you would have been diagnosed some years ago as monosymptomatic hysteria. The concept of hysteria has played such an important part in the history of the psychiatry of emotional disorders that it might be well to stop for a moment and dwell upon the variations of meaning that the word has gone through in the history of medicine.

The word comes from the Greek ὑστέρα which means uterus, and hysteria is therefore etymologically a disease of the uterus; this concept hung on down to the days of aseptic surgery when some surgeons vainly attempted to cure hysteria by removing the pelvic organs of hysterical women.[1]

The idea that hysteria is due to a disease of the uterus received shock after shock when physicians commenced to present men who manifested all the classic symptoms of hysteria. At first, these cases were demonstrated as strange realizations of the impossible, but as time went on the number of cases reported finally forced the medical world to admit the sad fact that men also could suffer from hysteria.

It is curious to find even in recent times that neurologists still cling to the concept by saying, "Though hysteria is not a disease of the female organs it is a product of the feminine character."

Thus Bing says, "The idea that the female genitals play a role here has become obsolete. It is the female psyche which is at fault. By comparison with the male psyche, that of the female displays an obvious preponderence of fantasy and imagination at the expense of logical thinking and critical introspection. Men who become hysteric always possess a feminine nature (the term is used in the psychic, not in the physical sense). The same reasons apply to the development of hysteria in childhood and also the marked predisposition of certain people (i.e., Latin races, Slavs and Jews)."[2]

For the present I should like to leave undetermined the question as to whether or not the character defect that lies at the basis of hysteria can be said to be more proper to women than to men. No one will deny at the present day that it is to be found both in women and in men. It might be more proper to regard it as a human rather than a specifically feminine weakness.

With Charcot (1825–1893) hysteria became a special disease entity which

[1] Cf. Robert Bing, *Textbook of Nervous Diseases*, translated by Welb Haymaker. St. Louis, C. V. Mosby Co., 1939, p. 773.

[2] *Op. cit.*, p. 773.

was supposed to manifest itself in its fully developed form by abiding motor and sensory stigmata and periodic convulsive seizures. The abiding motor stigmata were such things as permanent contractures, paralyses, and tremors; the sensory stigmata were areas of anesthesia and analgesia, deafness and blindness, or areas of hyperesthesia or hyperalgesia, located in spots or extending over one half or even over the whole body.

It is said that Charcot developed patients with these symptoms by lecturing to his class about the symptoms of hysteria in the presence of the patient. Apparently, at all events, only in Charcot's clinic were there to be found a number of patients presenting the full and complete picture of hysteria that he described as characteristic of the disease.

Others saw only fragments of the picture and finally one commenced to talk about monosymptomatic hysteria, that is to say, a single special disability that had no physical cause for coming into being but was of psychogenic origin.

Fashions in diagnosis undergo changes in the course of time. And at present many conditions which would formerly have been diagnosed as hysteria are being termed neuroses or psychoneuroses of one kind or another, so that the use of the word hysteria is avoided.

Perhaps one could subsume all these various diagnoses under the one heading of the advantage-seeking reactions or kerdozetesis (κερδος-ζήτησις). It will in general be found that patients suffering from hysterical conditions do so because they want to get sympathy, shirk obligations, avoid the unpleasant or in some way get an advantage out of their condition. A condition due to emotional shock whose perpetuation involves no advantage to the patient might be spoken of as a reaction to a traumatizing emotional experience or ekplezis (ἐκπλῆξις).

Is there one particular type of personality rather than another that is likely to manifest the symptoms of hysteria?

One might quote here a remark by Homburger: "The experiences of the war have proved beyond any doubt that Hoch's bold sounding statement is true: any man under certain circumstances can become hysterical."[8] And so he goes on to say that any child is capable of hysteria and is even more likely to manifest hysteria than an adult. But the tendency of children to hysteria varies within wide limits, because the emotional drive (affektive Ansprechbarkeit), the dominance of emotion over intellect, the possibility of influencing mental attitudes, the lack of independence, the tendency to accept suggestions, the bodily resonance of emotionally toned ideas, the regulating power of a sense of duty, all these trends exist in various degrees of development in the mental life of children.

Janet, who spoke of adults from a wide experience, said that hysterical

[8] August Homburger, *Vorlesungen über Psychopathologie des Kindesalters*. Berlin, Springer, 1926, p. 387.

individuals manifest two traits in a much more marked manner than weak minds generally. The hysterical "character is *mobile* and *contradictory*. The patient does not remain long in one and the same mental condition. She passes from affection to indifference, from gladness to sadness, from hope to despair. She seems to be in an unstable equilibrium and to fall every moment from one side to another. On the other hand, there is not a single trait of character that is not every instant contradicted by some action apparently wholly different. Hystericals appear unintelligent and mentally alert, apathetic and emotional, hesitating and stubborn. These two characteristics . . . have always, we think, the same meaning. They show the want of mental unity, the diminution of mental synthesis, the conservation of the automatic phenomena which reappear with exaggerated development."[4]

Janet was dealing however with a group of patients whose symptoms were to a large extent created by the interest of the neurologists of the day in the bizarre and extraordinary and who constantly probed for what they expected.

However, his concept of the essential underlying pathology as a "want of mental unity" and a "diminution of mental synthesis" will be found applicable to the hystericals of our day even though their symptoms are much less bizarre than those cultivated by Charcot and his students in the late nineteenth century Sorbonne.

The stimulating effect of an interest in achievement, a drive towards the realization of a goal which makes one willing to suffer in order to attain, will develop a terrain in which hysterical symptoms might possibly appear but could never flourish.

The case that we are about to present to you might be termed a monosymptomatic hysteria. It belongs to the general group of psychogenic disorders of the eye. Not all of these are direct disturbances of vision. Even glaucoma can be the result of an emotional disturbance. There is quite a literature on the subject.[5]

That acute emotional disturbances can cause a rise in retinal arterial pressure has been demonstrated experimentally.

Dumas and his collaborators[6] studied the effects of emotion on retinal

[4] Pierre Janet, *The Mental State of Hystericals.* New York, Putnam, 1901, Pp. 221–2.

[5] G. Ourgaud and J. Sedan, "Le glaucome de la joie et de la peur." *Rev. otoneurol.*, **16**: 548–52, 1938; N. Scalinci, "Il glaucoma emotivo." *Ann. ottalm.*, **54**: 235–61, 1926; P. Angeli, "Glaucome émotif." *Chin. oplet. Par.*, **xiii**: 281–3, 1907; N. Nobbe, "The influence of emotions causing acute glaucoma." *Med. Fortnightly*, St. Louis, **xxv**: 119–122, 1904; L. Sonder, "Du glaucome émotif." *Arch. d'opht.*, **xxvi**: 567–581, 1906.

[6] G. Dumas, A. Lamache, and J. Dubar, "Variations de la tension artérielle rétienne sous l'influence de l'émotion." *Compt. rend. Soc. de Biol.*, **96**: 159–160, 1927.

arterial tension as measured by the opthalmodynamometer of Baillert. He produced emotions by such means as suddenly discharging a revolver or unexpectedly emitting a piercing cry. The result was a rise in retinal arterial pressure, both systolic and diastolic. In one alcoholic, the pressure was almost doubled. The rise in the retinal arterial pressure commences promptly, rises suddenly, and slowly returns to its previous level in the course of about a half-hour. It is accompanied by a general rise in blood pressure and also by an increased tension of the spinal fluid.

It is not necessary that the increased intraocular tension of glaucoma should be caused by an acute emotional experience. It is possible, apparently, for the events of life to arouse an abiding conflict or sense of deep loss, and, without the reason for one's difficulty coming into focal consciousness, the reactivated conflict may give rise to a reaction severe enough to bring on an attack of glaucoma.

"My own experience," writes Inman, "has suggested that even though conscious emotion may not be present, at any rate in a sufficient degree to account for the attack of glaucoma, nevertheless the onset may coincide with the anniversary of events once pregnant with emotion but now apparently indifferent or even long since forgotten."[7] He then gives several cases to substantiate this view.

When we are dealing with a member or an organ which is directly or indirectly subject to voluntary control, it is possible to have a disability which is not a mere reflex action but one which is dependent on an unwillingness to use the organ or member. The eye is just such an organ. The muscles that move the eyeball are directly subject to volitional control. The size of the pupil is indirectly subject to voluntary control. It can be dilated or contracted by focusing the eyes at a far point or a near point. Focusing is under voluntary control by way of the intention to look at a near or a far object.

Patients may be hypnotized and given the posthypnotic suggestion that on awaking they will be unable to see a certain person or a certain object. And when they come to, they see everything except the person or object they have been forbidden to see. The invisible person takes a skeleton apart and then reassembles it. The skeleton is seen to scatter into a group of individual bones and then come together again, to the great surprise of the hypnotized subject.

All this seems very strange; but I once got an insight into how it happened with one subject. The hypnotized person never turned her head toward the person she was told she would be unable to see. When he stood right in front of her there was a sudden dilation of the pupils, showing that the sub-

[7] W. S. Inman, "Emotion and Acute Glaucoma." *Lancet*, 217 (Vol. 2): 1188, 1929.

ject looked off into the distance and so refused to pay attention to what she was told that she would be unable to see. In other words, the suggested blindness affecting only one object is produced by the subject refusing to pay attention to the object and managing to keep the retinal image of the object at the periphery of the retina or blurred by changing the focal point of vision. It is this kind of mechanism which, I suspect, was operating in the present case.

Hysterical blindness is not a very rare condition and in general it is not difficult to cure. I saw a child once in a home for backward children who would cry out at times in church or the classroom, "I'm blind. I'm blind." At these moments she seemed to be genuinely disturbed about her condition, but no organic defect was found in her eyes. These seizures ceased when the sisters paid no further attention to them beyond gentle assurances that she would soon be all right and not to worry. The child came from a rather unhappy home and whatever the nature of her seizures or whether there was any real blindness at all in her attacks, they probably had a psychological motivation that was essentially an appeal for sympathy.

Freud has a peculiar concept of hysterical blindness. Let us stop here to consider it.

Freud starts with a criticism of the French concept of certain hysterical conditions such as blindness. The French authors maintain that persons with an hysterical disposition manifest a tendency to allow certain mental processes to become dissociated from the main body of the stream of consciousness. In hysterical blindness it is visual sensations that become dissociated. As a result they are no longer utilized or evaluated by the patient. He sees but does not react to his visual sensation. He is hysterically blind. Psychoanalysis grants the fact of dissociation but asks: What brings it about? Freud points to the fact that the eye has its normal function in adjusting a human being to the various objects in his environment. It is necessary in order to be able to move about independently in the world in which one lives. But besides this normal necessary function it may be used for another purpose—to seek sexual pleasure. "The eyes perceive not only those modifications in the external world which are of import for the preservation of life, but also attributes of objects by means of which these may be exalted as objects of erotic selection, their 'charms.' "[8] This leads to a conflict. If there has been an excessive seeking of sex pleasure by looking, the ego revolts against this perverted visual drive and "flatly refuses to see anything at all, since the sexual interests in looking have so deeply involved the faculty of vision."[9] According to Freud, the

[8] Sigmund Freud, "Psychogenic Visual Disturbance According to Psychoanalytical Conceptions." *Collected Papers*. London, Hogarth Press, 1924. Vol. II, p. 109

[9] *Loc. cit.*, p. 110.

ego in so acting is motivated dominantly by revenge. And it is just "as if an accusing voice had uplifted itself within the person concerned, saying: 'Because you have chosen to use your organ of sight for evil indulgence of the senses, it serves you quite right if you see nothing at all now.' "[10]

There may be some cases in which hysterical blindness may be rooted in a mechanism such as Freud describes, but my own experience would suggest that the Freudian type of motivation is not common.

A number of soldiers in World War I developed hysterical blindness, and they did not seem at all to be punishing themselves for a lack of custody of the eyes.

I can remember several cases of hysterical blindness in my own psychiatric experience:

A soldier in World War I whose hysterical blindness made it necessary for him to be taken out of the front-line trenches. His condition cleared with suggestive treatment. The motivation of his condition, or its final cause, is clear. It is a defense reaction—it gets him out of danger.

A woman who became totally blind without any organic reason for her condition. A study of the psychogenic factors involved brought out the fact that she thought that her husband had lost interest in her, because he acted towards her in such a different manner than he had during the period of her courtship. Mere encouragement and a suggestion to the husband to manifest a little more personal interest and affection brought about a rapid and complete clearing of the hysterical blindness.

The child spoken of above, who was evidently making a display to get attention, also belongs in this series.

In none of these cases was there any evidence of sexual visual curiosity, nor was it necessary to unearth anything of that nature in order to effect a cure.

Would it be wise to attempt to probe the mind of the little girl whose history we are about to present, having as an objective the discovery of visual sexual curiosity? It would not be wise and it certainly was not necessary. The motivation in this case also, as we shall see, was a craving for attention, the forcing of a mother to give attention to a rejected child.

From what we have just said, hysterical blindness may be motivated in various ways. My own experience is that it is more often, especially in children, a subtle demand for attention and affection.

Let us now turn to the child in whom we are interested. We may well pay particular attention to the case as an example of a disturbance of the normal interpersonal relations in the family. Hysterical blindness was the child's reaction to this disturbed relationship. Incidently, we shall describe

[10] *Loc. cit.* p. 111.

our treatment of this condition, giving an example of the therapeutic interview.

I felt it important not to pay any attention to the eye condition in the examination of the child. Consequently no tests of visual acuity or measurements of the field of vision were attempted.

The little girl was referred to the clinic by a neurologist. She had been sent to the neurologist by an opthalmologist and she had been told to go to the opthalmologist by the school authorities.

It all started because in some school tests she appeared to have defective vision. The opthalmologist found what is termed tubular vision but no error of refraction or any retinal or other abnormality in the eye and so referred the child to the neurologist to determine whether there was an organic central defect or an hysterical condition.

The neurologist in the ordinary rough tests for restriction of the fields of vision found no evidence of limitation of the fields and concluded that he was dealing with a case of hysterical amblyopia and sent the patient to our child center. It was said that she had only 75 per cent vision and the condition could not be helped by glasses.

*Personal History.* The child was 9 years and 9 months old when she came to the Center. The mother reported that she was a full-term child and had a normal delivery. She maintained that she cut her first teeth at 13 months, did not sit up till 7 months of age, but walked and talked at 12 months.

A year earlier she had had acute nephritis. She had had measles and chicken pox and her tonsils had been removed.

She was in the fourth grade and had done well in her school work. She had no difficulty in reading books but seemed to have difficulty in seeing things at a distance.

*Family History.* She has one brother, who is not interested in school, but she herself is very fond of school and likes the teacher.

It is quite possible that the opthalmologist's perimeter was responsible for giving rise to the condition of "tubular vision." The physician must often trust the report of good specialists; on the basis of the reports given us, we assumed that we were dealing with a case of tubular vision without basis in any organic pathology of the eye or central nervous system.

The mother's account of the child's behavior was quite typical of the stories given by mothers who for some reason or other have taken an antagonistic attitude toward one of their own children. "Nancy is nervous, high strung. She is determined to have her own way. As long as things go her way, she is all right, but if they don't, she cries and rattles on at a great rate of speed. She is just like a spoiled child. She cries and cries and cries, at times for almost an hour. When I tell her I am going to

punish her, she cries and worries and worries about what is going to happen."

When Nancy came in I questioned her about her school life. She was in the fourth grade. She liked her teacher and, from her account, difficulties in the school did not seem to enter into the background of her condition. She had no definite plans of what she wanted to do when she grew up, but when asked thought she might want to be a nurse. She said that she did her best work in spelling and arithmetic, and on rainy days liked to read the story of a little girl, *Honey Bunch.* She admitted fussing sometimes with her brother but denied quarrels with anyone else.

I tried to find out from her more about her crying. She admitted crying when she might fall or get punished.

"What do you get punished for?" "I don't want to go to bed and I stew and fret."

"Do you have much fun that way?" "O, no!"

"Would it not be better to go to bed when the time comes and not raise such a fuss?" "O, yes!"

"When do you get whipped?" "If I am reading[10a] and mother tells me to dry the dishes."

"Don't you like to help your mother?" "Sometimes. You know I get an allowance if I don't stew and fret."

"Would you like to come to see me and talk over things now and then?" "I wouldn't mind it."

I thought that bibliotherapy might improve the child-parent relationship and so loaned her a book to read, *Two and Two are Four,* By Carolyn Haywood.[11] It is a beautiful little story of child life with its temptations to lie and disobey and the skillful management of children's difficulties by a sympathetic mother and father. The parent can learn more from the book than the child. Sometimes parents read books loaned to their children, but in this case this seems not to have taken place. It will be noticed that we are treating a child with a supposed hysterical restriction of the field of vision by lending her a book to read.

At the first interview after this the child told me that the book was so interesting "that I just couldn't stop reading it." She recounted in some detail the little incidents of child life in the book. When I asked her what lessons she learned from the book she did not enumerate a single general moral principle but incidents only. However, we must not conclude that there were no generalizations because the child did not formulate any abstract general principles.

Her answers to "What did you learn from the book?" were as follows:

[10a] Notice that the child is supposed to have only tubular vision.

[11] New York, Harcourt, Brace and Co., 1940. pp. 171.

"Never to take off my sock. You shouldn't take off your sock anyway."[11a] "You should never bring a dead animal home. You might get polio or something."[11b] "When your mother tells you not to put on your pretty white hat, you'd better not. You might get it ruined."

We can see that principles tending to establish obedience and a reasonable conformity to the demands of home life are in process of construction. We may say, too, that the child is finding out these principles from her own reading experience. Children find in books and read out of them principles that have to do with their own behavior problems of the hour.

It is well, however, for someone to help towards the crystallization of these principles. Hence I said; "I wonder if you will do what your mother tells you, now?" And the answer came slowly and with a good deal of determination, "I think I will."

With this the interview with the child closed. As she left I loaned her another book, *Jane Addams*, by Jean Brown Wagoner.[12]

I then interviewed the mother hoping, in vain as it turned out, to do something about the rejection. The mother was delighted with the cessation of complaints about vision. "You would not know that she had an eye defect."

"She's a good child," I remarked. The mother drawled out a somewhat hesitating "yes," and then continued, "She has a determination of her own, outside that she's good. She has a mind of her own. I could go on forever telling you about how she has been stubborn on many occasions."

"Tell me about some of them." There was a silence. "Any one at all." "I can't think of any now."

"Do you try to make your children happy?" "I would say so; they may have a different version."

"It takes very little to make a child happy. Could you give me an example of something you have done for them?"

"I went to the navy yard in all that mob, just to let them see the ships."

"Do you kiss the children?" "I am *not* the affectionate kind."

"Pick them up and hug them and play with them." "They love that so much, they simply crave it."

"Did you ever play with dolls?" "I should say so." "Aren't they two nicer dolls than you ever had in all your life? Why not get up a game for the children every now and then?"

When the child came in for the next interview, I asked her what she found

[11a] Here anyone who reads the book will see that she missed the point in an amusing way.

[11b] The "polio" is an addition of her own. There was a good deal of talk going about at the time on account of an epidemic of poliomyelitis.

[12] New York, Bobbs-Merrill Co., 1944, Pp. 192.

nice in *Jane Addams*. It is a wonderful story of a happy childhood and a simple portrayal of the faults of childhood and their wise management told in simple words that a child in the fourth grade could easily read. It, too, is a story that parents might read with more profit than children.

Nancy told me of some trivial but striking incidents in the book, such as the killing of the copperhead and the mystery cave, but had not noticed at all the triumphal attainments of Jane Addams' work at Hull House.

"How was she good?" "She sometimes got in a little mischief."

"In what way was she good?" "In what Polly told her to do."

"Are you good in what your mother tells you to do?" "Sometimes."

"Would you like another book?" "I don't know if I want another book, it depends on what mother says. But I like to read books about somebody and what happened. I like books like you give me."

The mother had always been suspicious of the books. She may have thought that lending books was a subtle technique of proselytizing and the child always had to beg to be allowed to take them home and to promise to do all the carrying herself. I presume that the child's words, "It depends on what mother says," indicate that the mother had already spoken to the child about bringing the interviews to an end. It was the mother's first contact with a Catholic priest and she seemed a little suspicious of the whole process of therapy.

We then talked to the mother.

The mother said she had noticed no difficulty of vision in the child, nor had the child complained of any. I thought I might return to the problem of rejection and asked, "How does it happen that you do not like to hug and kiss the children?" "I don't go to extremes. Nancy is not affectionate. The boy (about 6 years of age) is, but she isn't."

"How old was she when he was born?" "About three."

"Was she jealous of him from the very time he was born?" "O, no. At first she was not a bit jealous."

It seemed evident to me that the mother's preferential rejection of Nancy had aroused Nancy's jealousy, that she craved affection, did not get it, and that the hysterical blindness was unconsciously motivated by a drive to get the mother's attention. And so I asked, "Which one of the children do you like more?"

I was going too fast and should have in some way contrived to allow the mother to awaken of herself to the fact that she loved the little boy and rejected Nancy. She was evidently peeved at the question, but as we have already seen she probably came to this interview with the idea of terminating the therapy.

She answered, "That's a funny question. I don't show partiality. I give each what they deserve."

"There is a possibility that she craves more affection than she lets on." "I don't know," said the mother, "but I do think some one ought to look into the condition of her kidneys and see if that did not have something to do with her eyes."

The interview thus terminated, the mother being definitely provoked with me and saying that she was going to take the child to a doctor who would find out what was the matter with her. But the child continued to see and to do her work in school.

## Chapter 17

# PHYSICAL AND MENTAL CAUSES IN PSYCHONEUROTIC CONDITIONS

We have been discussing the mental causes of various physical symptoms, such as blindness, cardiac and gastrointestinal disorders. Let us now approach the study of psychoneurotic conditions with definitely mental symptoms. We shall merely present two cases—one in which a physical factor seemed to be of considerable importance and another in which the etiology was more dominantly mental—and then go on to a brief discussion of the causes that underlie the emotional disorders commonly termed psychoneuroses.

### 1. Mental Symptoms with a Physiological Background

*Presenting symptoms.* Fits of depression. The patient gets in a panic if she has to go on a train or leaves home.

*Outline of Personal History.* The patient is a 23 year old college graduate who had been in general a healthy strong girl all her life. An attack of pneumonia about two years prior to her first visit to the Child Center seemed to be associated with the origin of her present mental disorder. Her home life, she maintained, had been very happy. She loved her parents and her parents loved her. She enjoyed study and at the time of her first visit to the Child Center she was doing graduate work at a university. She complained of no physical disorders. She slept well. Her dreams, she maintained, had no general pattern but were apparently associated with some incident of the day previous. She is not engaged and maintains that she is not worried about it in the least.

*Present Illness.* Her present disorder started in the summer preceding her first visit by about two years. She worked all day in her father's office and went out about every evening. She found this something of a strain, but was not depressed. The following November she had pneumonia and ever since she was troubled with a kind of nervous feeling and started to have spells of depression. She developed fears about going away from home. If she had to go anywhere on a train she found it very difficult and would get panicky on the train. She thought it had to do with getting away from a place where she felt secure, that is, getting away from home. "I feel unhappy when I am away from home," she said. "At first I used to get nervous when I went out on a 'date,' but I don't now, and have not for nearly a year." She thought that the frequency with which she accepted

dates finally wore out this phobia, but her fear of going on a journey, particularly by train, remained.

Her depressions came at intervals, did not keep up long but were difficult to endure. They lasted as a rule only a few days. The maximum duration was a week. The intervals varied—a month or even two months and then again they might come every week-end. They seemed to be independent of menstruation. On the other hand, they could at times be associated with a mental experience. One came on after learning that a girl whom she knew, a lively, active, lovable creature, had committed suicide. But very often the depressions settle down upon her and she can think of no reason why they come.

She may cry at other times, but never during a depression. She is not like certain melancholic patients who pace the floor during a depression and show other sign of anxious activity; she reads a book or goes to the movies. "If my mind is off my depression I do not think about it," she remarked.

*Differential Diagnosis.* Let us now consider the type of mental disorder from which our patient is suffering.

The phobia about riding a train assimilates her condition to the psychoneuroses, specifically, to the psychasthenias.

The short duration of her depressions make them look different from the depressed types of manic-depressive psychoses.

Furthermore, the depressions, even though she says they cause her a good deal of trouble, are shallow. She can try to get her mind off her mental condition by reading or going to a movie. They are what I have termed *parataxes of depression* rather than a psychotic disorder. On the other hand, parataxes of depression do at times pass into psychoses and it is well that our patient has sought assistance in the early stages of the development of her mental disorder.

*Etiology.* Let us now look for a moment at the etiology of her mental condition. One cannot treat as of no importance the fact that it developed immediately after an attack of pneumonia. There is quite a group of postinfectious toxic mental disorders. The association is frequent enough to suggest that a postinfectious toxic condition may have been a factor in our patient's condition.

Jung has called attention to Janet's concept of the *abaissement du niveau mental* as the essential factor in dementia praecox.

According to Janet there is a certain tension and vigor of the personality which integrates mental life. If this vigor is lessened, elements of the mental life may be split off and then manifest independent activity. The manifestations of this independent activity in such things as unreasonable fears or compulsions give rise to psychoneurotic conditions. There is much to show that this lowering of the mental level or loss of vigor of the per-

sonality is one element in causing various disorders of the mind. Theoretically man is not a body in which a soul resides but one living substance with all manner of inclusions and accretions, but still one organic being, not two. Consequently, either physical illness or violent or prolonged severe emotional strain may leave in its wake an exhausted individual unable to rise above frightening notions that would never tarry in the mind of a normal personality. Various reproductive sensory phenomena which would ordinarily fade into oblivion attract the attention of one who is too weak to maintain a logical train of thought and become hallucinatory experiences. Our patient, fortunately, had no hallucinations, but she did suffer from periodic depression and also anxiety when she thought of leaving home. And it is within the realm of possibility that the condition was to some extent caused by and did not merely follow immediately upon the pneumonia.

There was no superficial mental conflict of any great intensity. The patient was a fairly successful college girl continuing her studies, maintaining wholesome contacts, and doing her best to get her mind off herself in her depressions, taking journeys when she had to, and putting up as best she could with the discomfort caused when on the journey by the fear of getting away from the moorings and the safe harbor of her home.

The mental origin of her condition was not adequately studied, nor is it always necessary to do so in order to effect a cure.

*Treatment.* The essentials of the treatment undertaken at the Center were dream analysis and injections of eschatin and follutein. The eschatin was given three times a week until just after menstruation; this was followed by 250 units of follutein three times a week.

Follutein was not given from the beginning, for it has a tendency to prevent menstruation. And so we started with the eschatin, which seems to relieve various types of depression. The follutein was frankly an experimental treatment. It might act as a sympathetic stimulant and tend to elevate the *niveau mental.*

For about a month the patient came only for the injections. We then started psychotherapy. The reason for the postponement of psychotherapy was not theoretical but a practical necessity. It was impossible to find time to devote to it.

The first psychotherapeutic interview opened by my asking the patient how she was now feeling. I was not surprised at the answer, "Not a bit better." Depressed patients often say this and persist in saying so in spite of evident signs of improvement until they have almost completely recovered. Nevertheless, on being asked whether or not she had cried since her last visit she said that she had not; later on she said that the first type of injection had made her feel less tense. She noticed no effect from the

econd type. I jotted down my own impression, "The patient seems to ook brighter." I then asked her, "What is the main thing for which help s desired?" She answered, "Getting straightened out so that I will not ıave these depressions." She expressed the idea that since her first visit a nonth previously the depressions had not lasted so long as before. But she ıad one a little while before that lasted three days. Such recurring de-ɔressions lasting only a few days are in my experience a rather rare ɔondition.

"Have you any idea what precipitates your depressions?" She an-ɜwered, "I do not know. I may wake in the morning and feel depressed and be unable to find any mental or physical reason for the sadness." I asked about her dreams. She answered, "My dreams are usually connected with something that happened the day before." She could detect however no regularly recurring motif in her dreams.

She then volunteered the information that "from time to time a thought will stick in my mind and I will be unable to get rid of it. For example, I thought about my tongue and could not get it out of my mind." These obsessive thoughts are a source of great annoyance.

She was then asked to write out her dreams.

On the next visit, about ten days later, she brought in the following set of dreams:

*Monday, April 24:* At seashore. Girl died of snakebite. Characters from comic strip—"Mary Worth's Family." Boy murdered his brother.

*Tuesday, April 25:* On streetcar—a little crazy girl named Frenzy. Went to party —ate candy, danced. Went into a chapel; saw Sir Cedric Hardwick; was carrying my violin with me; saw Bob Hope and applied to him for a job.

*Wednesday, April 26:* Went to N. Y. to visit college friend. Saw several other college classmates. My friend's current suitor named Steve. Came back to Washington next day.

*Thursday, April 27:* Young Anglican bishop seems interested in me romantically. Went to a friend's house and ate a sandwich. Saw my sister in lay dress.

*Sunday, April 30:* Classroom scene; very crowded. Crippled woman dressed in white in classroom.

*Monday, May 1:* At a nonsectarian college for women. Inspected the horses. Baseball game; players rode to bases on ponies and big dogs. Snowed.

*Tuesday, May 2:* Mother in fashion show on stage. Woman who liked to hear "Dies Irae." Sheep chased by lions, chased in turn by big black and white buffalo.

*Thursday, May 4:* Went to party at Heigh Ho Club, 1409 Main Street. Drank rum, ate peas. Went to A and W to get some food. Was asked to leave because I was in slacks. My husband tried to write a letter in alcohol instead of ink. He kissed me. Marlene Dietrich was there.

*Friday, May 5:* In a big room; lifted up in air by rope and left on ledge near ceiling. Afraid of falling. Dreamed of two boys I know (one now dead). My brother ran across wet lawn and tore up the turf. Some sort of villainy going on.

She seemed to be somewhat better, for she said, "I don't get depressed without a reason any more." She remarked that her tongue symbolized suicide and she had thought once of committing suicide. She said she still had this phobia of taking trips.

Then we chose a dream and commenced the analysis:

"On streetcar—a little crazy girl named Frenzy. Went to party—ate candy, danced. Went into a chapel; saw Sir Cedric Hardwick; was carrying my violin with me; saw Bob Hope and applied to him for a job."

*On streetcar—little crazy girl named Frenzy.* (Give me all your associations with this phrase, i.e., think of the phrase and tell me everything that comes to your mind.) "When here there was a little girl named Peggy who was telling about the children who had tantrums."

*Little crazy girl:* "At times thought I might be going crazy myself." (Let us try to identify the personality of this little crazy girl). "She was little and about six years old. She was dark rather than blonde. She reminds me of a little girl I know. She is mentally deficient. That was an afterthought."

*Named Frenzy:* "Somebody in a frenzy."

*Went to a party—ate candy; danced:* "I have been to parties lately." (Sometimes in a dream we work out possible solutions to our difficulties. I think it a matter of considerable importance to pick out a dream in which the patient has gone over his own hopes for a solution to his problems. Psychotherapy is to some extent guidance and such dreams give us a hint as to the lines that guidance might take.)

"The idea of a party does have something to do with a solution to my difficulties. I actually gave a party around about that time." (Have you any tendency when sad to stay by yourself?) "No, on the contrary, I try to cheer myself by being with someone else. I might think abnormally alone: sit and worry about myself, looking forward to a life of depression."

*Went into a chapel:* "I must have been in a church to think of that. I went from the party to this chapel. I think they were showing a movie there. I was carrying my violin with me." (In what sense could the chapel be a solution?) "Faith in God would be a sort of solution. That seems logical."

*Saw Sir Cedric Hardwick:* (Who is he?) "A stage actor. I can't imagine why he was there. He is a kind of dignified person. He plays all kinds of people: villains, fathers, statesmen."

(What do you like most in him?) "He is a very good actor. I like his voice. He is an Englishman about fifty years old."

(How can he symbolize anything that would fit into your life?) "I

think of him as being stern, austere." (In a good or bad sense?) "Someone you would be afraid of—the Puritan type."

(Is there anyone of whom you are now afraid or were afraid of in the past?) "No." (Don't you remember anyone like that?) "I never saw him act in person, just in the movies. My father was exactly the opposite, though when I was little I was more afraid of him than of my mother."

*Was carrying my violin with me:* "Do you mean I play to forget?" (I don't mean anything. This is merely a phrase in your dream. What do you want to forget?) "I know a girl who committed suicide. Since then the idea of suicide bothers me. She shot herself, but I think of shooting, drowning, taking poison. But all this came on after the depressions started. She was not a close friend, but it was such a shock to know that a girl like she was could do such a thing. She was so vivacious and lovable. My fear was that I *might* commit suicide, not that I intended to or wanted to."

(What would drive you to commit suicide?) "If I did not get better and life did not seem worth living."

*Saw Bob Hope and applied to him for a job:* "He is a comedian in the movies. He is a funny man."

(At this point the meaning of the dream dawned upon me and so I asked the patient to relate the two actors to herself in her different moods.) "In one mood I am Cedric Hardwick and the other I am Bob Hope. I applied to him for a job with a whole bunch of other people. We had to stand in line. I stand in line a good deal at work."

I then went on to point out the results of this analysis to the patient. She herself had expressed the fundamental motif of her dream as a portrayal of her two moods, perhaps her two selves, symbolically by the two movie actors, Cedric Hardwick and Bob Hope.

I called the patient's attention to the fact that some dreams give expression to the patient's own plans for a solution of the difficulties under which he is laboring. These dreams are particularly valuable.

(What was the first solution to your difficulties that you dreamed about?) "Going to a party and eating candy."

The associations to the phrase, "Went to a party—ate candy" did bring out that the patient has been seeking a solution for her difficulties by the multiplication of social contacts. But in vain. This solution is not enough.

The patient turned from the party and "went into a chapel." The phrase gives us another line in which help is to be sought, namely, by the consolation of religion.

But the patient feels the need of something besides social contacts and

religion and so the next phrase is, "I was carrying my violin with me." The violin meant to her, she said, not only music, but also art and poetry and all that is aesthetic. (And so I said religion lies in between like the meat in a sandwich. Notice that you did not apply to Sir Cedric Hardwick for a job but to Bob Hope. And so you have given up suicide for Bob Hope and have no longer anything to fear and you need not be sad lest the spectre of suicide should some day become a reality.)

When she came for her next interview she brought along much fuller notes on a series of dreams.

She reported that she had been so busy that she had no time to worry about herself. For a few minutes we discussed the dream analysis of the previous visit. She was rather amused at the dream about Bob Hope, to whom she applied for a job, and felt that the analysis in all probability did give expression to the workings of her own mind.

Unfortunately, or perhaps fortunately, I had allowed the patient's hour to be crowded into by a previous appointment and there was no time to analyze any of her more recent dreams. She said she was going away for a two weeks' vacation and would report on her return.

It might be well to note that the patient referred her freedom from anxiety following the dream analysis to the fact that she had been so busy. But preoccupation with many things is not always sufficient to crowd out anxiety. It may well be that in some manner this dream analysis was a distinct help in bringing about the patient's recovery.

She came in after her vacation and her first words were, "I am completely cured." Since her previous visit she had experienced no depression. She was a little worried about starting the trip but this anxiety quickly disappeared. She had had a good deal of physical exercise and was deeply tanned from the sunshine. She is never troubled now by a sense of lack of security. She feels that she can now drop all treatment and be herself again. She thinks her cure due entirely to this good vacation, though later, perhaps out of a desire to show some appreciation for my labor, she expressed the idea that the analysis might have helped.

Let us now examine the relatively scanty data from our interviews to get an insight into the underlying psychopathology of the condition.

Certain forms of mental disorder are due to a lability of the hypothalamic emotional centers. The term *emotional centers* is not meant to imply that emotional experience is localized in and lived out in the hypothalmus. Stimulations of these centers may give rise to a reflex manifestation of various reactions involved in emotional expression; and also at times to actual emotional experience. If the emotional centers in some individuals are more labile than in others, these persons can be upset

emotionally more easily than others. Our patient may perhaps have been originally among the class of individuals who are more easily overtilted in the emotional plane and was specifically inclined by constitution to depressive reactions.

The attack of pneumonia, which was followed immediately by her emotional disorder, can be conceived of as having increased or perhaps produced the patient's emotional lability. This concept has its basis in a rather extensive literature on the toxic psychoses.

Furthermore, it may have produced a general loss of vigor in the patient's personality, or what Janet would have called an *abaissement du niveau mental.* The normal processes of recovery might have restored vigor of mind and body; the patient's depression and anxiety might have faded out completely had it not been for an emotional shock: the news that her vivacious and lovable friend had committed suicide. Then came the realization, What happened to her might happen to me. She was sensitized from that time on to anxious forebodings. The thought of the possibility of committing suicide herself was repressed. In its stead there was constantly in the back of her mind the idea that "something must be wrong with me." I may become the victim of some mental quirk.

The dream analysis led her to face squarely the suicide she feared. At the same time it pointed out that social contacts, religious ideals, and aesthetic enjoyment might well make life so full and happy that suicide would not have to be taken into consideration as a really possible danger. And so she applied for a job to Bob Hope.

When we think of the therapy of this patient we should not leave out of consideration the endocrine injections and the good vacation. Both had a tendency to increase the vigor of the personality so that our patient could rise above the consciousness of possibilities which on a lower mental level would have been seriously disturbing factors.

### 2. An Emotional Disorder Dependent Mainly on Mental Factors

*Presenting Symptoms.* The patient gets weak-kneed and frightened whenever he leaves the house. Fear of crowds. Is forced to push himself to do anything in the presence of others. As soon as a bus gets crowded he feels compelled to get out and walk. Is able to force himself to remain, but breaks out in a heavy perspiration and feels weak. The difficulty is so great that he will stay home from work for a couple of weeks. This happens about three times a year. At a psychiatrist's suggestion he stayed home for four months, but the rest did not bring about a cure.

*Outline of Personal History.* The patient was a man in his middle forties. His education embraced two and a half years of high school.

His chief illnesses had been typhoid at 14, malaria at 18, and "yellow jaundice" at 28. Outside of colds and measles as a child the patient remembers no other sicknesses.

His home life had not been happy. His mother and father separated when he was "quite young." His mother went out to work but was able to earn only the bare necessities. Furthermore, the patient was ashamed of the poverty of his home.

The patient married at 21, and had eight children. The first part of his married life was a struggle with poverty. He often had to beg and borrow and there was great difficulty in tiding over his periods of unemployment. When the banks closed in the depression, he lost everything he had saved; and much to his shame his family had to apply to the charities for relief.

In general he and his wife got along well together; but recently she has become rebellious when he stays home because he is afraid to go on the street. This often means the loss of his wages.

Furthermore, the patient thinks that his wife is not the type of girl he should have married. She went only to the sixth grade. He gets inwardly disgusted at her inability to figure out even the simplest problems of costs and receipts. She cannot calculate how much to cook for the number present and, in order to make sure, buys and cooks far more than is necessary, and so there is a good deal of costly waste. The marriage was forced upon him because of her pregnancy and he has never been fully happy in his home life. When the patient told me about this I remarked that it sometimes happens that unreasonable fears are the mere expression of an unhappy situation that one does not want to face and accept. If one faces this situation and accepts what must be endured anyway, it sometimes happens that the unreasonable fears fade out.

*Present Illness.* The patient thinks that his present mental trouble started about six years ago and was at its worst about three years ago.

The first symptom he noticed was jerky breathing. This never occurred when he was alone but out in a crowd or on the street. He used to drive to work with several others and he was very much afraid that he would make a fool of himself in their presence by his jerky breathing; he usually did. It would occur at lunchtime but never while he was working. He was examined by several doctors who could find nothing wrong with him, and was finally referred to a psychiatrist, who told him that he was unable to control his emotions due to faulty thinking. This assurance led to some improvement. At the psychiatrist's suggestion he stayed home for four months, but on returning he still felt uncomfortable on going out and was unable, he thought, to do his work properly.

On his own initiative he cut out smoking for eighteen months and during

this time his condition was much improved. He returned to smoking and in a month he was back again in his old difficulties. He said, "I noticed a big difference when I leave them alone. I can sit and relax, but when I smoke I have to be on the move." Besides the shock of his wife's premature pregnancy, above mentioned, the patient can think of no major emotional episodes in his life.

*Treatment.* In treating this patient we tried for several interviews to see what could be done by free association and dream analysis. But nothing came of it. He could not recall dreams and was not able to associate. He spoke of hearing words in his mind as if he himself were saying them but was unable to tell me what the words were, or evaded doing so; when I asked him to write them down as soon as he heard them, he forgot to do so. In the meantime, along with the attempt at psychotherapy, he was given eschatin, 1 cc. three times a week.

One day he came in and told me of an incident which happened during the previous week.

He and some workmen were making repairs in an old storage room. A worker going out closed the door and for a time it seemed that they would be unable to open it and there was no way of communicating with anyone outside. He became very much afraid of smothering in the room. Finally, however, they hit the door very hard and were able to open it.

This recalled to his mind the fact that from very early childhood, he had been afraid of someday being caught in a closed space and smothering without being able to get out. This, in turn, recalled to his mind an incident when he was small enough to sit at table in a high chair. He had done something and there was some discussion about punishing him. Finally he was locked up in a dark closet and left there for some time, very much frightened and profoundly agitated.

I pointed out to him that sometimes emotional shocks in childhood color one's later anxieties. These later anxieties derive from some fundamental cause of discontent in one's present life which is not faced and which is referred to something else like crowds, closed spaces, etc. It is to be noted that the fundamental problem that the patient had on coming to the Center was a fear of crowds. I recalled that it is possible for an incident to call up its opposite, especially when the fear itself is a subconscious fear.

I then asked him about his present adjustment in life. What troubles him now is that he is not satisfied with his wife. He feels that he might have picked someone more in harmony with his own personality. The marriage was originally forced because of her pregnancy and he has never been quite satisfied with the marriage. I pointed out to him that the phobia is a way of diverting his attention from a situation which is unsat-

isfactory but which cannot be remedied. I then went on to point out that the defects of human personalities are in general so profound that one can scarcely be completely satisfied over the span of life with anyone's personality. Consequently, he might have married someone else and not have been any more satisfied with her personality than with that of his present wife. He agreed that this was quite possible. I suggested that he face the difficulty, try to lay it aside, and see that it is not at all necessary to have any phobias to avoid it.

It is worthy of note that an accident in life opened the way to this analysis of the patient's difficulty. These accidents often occur in the course of treatment and in one way or another are of great importance in the therapeutic process.

This interview was the turning point in the therapy. When he came again he said there had been a ninety per cent improvement in his difficulty about mixing with crowds. He thought his former fears were foolish and could not understand how they came upon him.

There still remained some depression and his biggest trouble was now "a washed-out feeling." However, this trouble did not last long. He was given a tonic (caffeine with sodium benzoate with nux vomica and thiamine). About two months later he came in feeling fine and looking much different. He told me that his wife and various others had remarked on his excellent healthy appearance. He had no longer any fear of crowds or closed spaces.

*Etiology.* It is always a remarkable thing to see the prompt clearing of an emotional condition when it has been traced back to an episode (with which it has some kind of analogy) that occurred years previously. The therapeutic result seems to indicate that, in some manner, the fear of the present is linked with the fright in the past. Locking the child in the dark closet was a psychic trauma of serious magnitude. It is probable, however, that almost everyone has had some such traumatic experience. But not everyone develops a phobia. When, however, in later life there arises a profound discontent, such as our patient's dissatisfaction with his wife, and there seems to be nothing that can be done about it, one is likely to shove the impossible problem into the background of the mind and the present anxiety is referred to events of the present which have some analogy to the traumatic incident in the past. When the relationship is uncovered, the pathological association is destroyed and the former anxieties seem foolish and inexplicable. This seems to be what happened in our case.

It is to be noted that in our case the traumatic incident in childhood came to mind because of an analogous experience of confinement during the period of psychotherapy. This is only one instance, and various

others could be cited which shows that accidental events during a patient's analysis may have a great deal to do with recovery.

### 3. The Causal Matrix of Emotional Disorders

When now we come to look over a number of psychoneurotic conditions and ask ourselves what cause or causes brought them into being, it is

Table 3

*Etiological Factors in Psychoneurotic Conditions*

| Factor | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Constitutional defect | + | | + | + | + |
| 2. *Abaissement du niveau mental* due to physical causes | | + | + | | + |
| 3. Fatigue and loss of sleep | + | | | | + |
| 4. Emotional complex in childhood | + | + | | + | |
| 5. Unhappiness of home in childhood due to difficulties between father and mother or to parental treatment of child | | + | + | + | |
| 6. Parental rejection | | + | | | |
| 7. Parental overprotection | | | + | | |
| 8. Sense of inferiority | | | | + | |
| 9. Resistance against growing up | | | + | | |
| 10. Repression of one side of the personality | | | | + | |
| 11. Conditioned reflex | | | + | | |
| 12. Lack of religious ideals in childhood | | + | | | |
| 13. Profound emotional shock | | + | | | + |
| 14. Precipitating emotional incident lending coloring to subsequent phobia | + | | | | |
| 15. Fear of future due to the emotional disorder itself | + | | | | + |
| 16. Situational difficulties | + | + | | | |
| 17. Financial difficulties | | + | | | |
| 18. Loss of sense of security | | + | | | |
| 19. Present mental conflict | + | | | | |
| 20. Rebellion against present conditions | + | | | | |
| 21. No apparent hope of marriage | + | | | | |
| 22. Fear about the consequences of masturbation | | | | + | |
| 23. The advantage reaped from the psychoneurosis itself preventing effort to recover | | | + | | |

An analysis of factors in 5 cases. Reading down, the plus signs indicate the factors present in each of the 5 cases.

apparent that no one incident or type of cause is the exclusive, sole, or necessary etiological factor in the production of emotional disorders. A serious attempt to discover what caused a psychoneurotic condition in any

patient will lead one to the conclusion that there are a number of contributing causes in any mental disorder. I have not been able to convince myself that there is any one essential cause that can be found in all who suffer from psychoneurotic conditions.

There is often a hereditary factor, but not always. In the patient whose disorder has just been studied there is some slight evidence of a hereditary factor. His father was alcoholic and a son was rejected by the Army on account of a neurotic condition. In other patients you may find no evidence of a neurotic hereditary taint. In each patient the etiological factors seem to present an individual picture. The accompanying table 3 gives a graphic representation of this individuality of the etiological background in 5 cases. A more complete study would pick out more than the twenty-three factors that appeared in the 5 cases, and perhaps bring out the presence of some factors that the table records as absent. However, the table does not seem to be pointing to one monogenetic factor as the essential cause of all 5 conditions.

And what is true of the factors in the etiology of the condition is true also of the elements that contribute to the patient's recovery: they are multiple rather than single and solitary.

Therefore, in attempting to understand a patient's mental reactions we must be ready to consider a wide range of possibilities and when we undertake to treat the patient we must not confine ourselves to any single therapeutic procedure.

# PART V

# THE DRIVING FORCES OF HUMAN NATURE AND THEIR ADJUSTMENT

## CHAPTER 18

## INSTINCT AND IMPULSE

WHAT IS INSTINCT and what role does it play in the organization of the life of man? Vagueness in the definition of the term has led to considerable clouding in the discussion of this problem.

Let us first clarify the concept.

Instinctive behavior finds its highest form of development in the insect world. Let us turn, therefore, to instinct life in insects to find an example behavior which is unquestionably instinctive in character.

Let us take an example from the mason wasps.[1] The reproductive activity of this insect manifests four stages.

1. She builds a cell.
2. She lays an egg in the cell.
3. She goes off and hunts caterpillars and brings them one by one to the nest till it is stuffed full of them. These caterpillars are to provide food for the larva when it comes out of the egg.
4. She closes the cell with a lid and flies away, and never returns to see what has become of her progeny.

When we examine this behavior we see that it is native and unlearned. The wasp never learns it from a parent wasp. In a similar way the spider weaves a web without ever having seen a web woven by another spider. The parent spider died months before the young spider begins to weave its first web. There is no possibility, in many cases, for an insect to learn a complicated piece of behavior before it commences its own first performance.

Secondly, although this complicated bit of workmanship has a very definite end and purpose and we can see it, there is no way in which the insect could have acquired by experience a knowledge of the end and purpose of its behavior.

Furthermore, it can be sometimes shown that the insect behaves as if it had no idea of the purpose of its activity. Fabre relates an experiment with a wasp that fills its cell with spiders instead of caterpillars. He saw the wasp bring the first spider to the nest, lay an egg on the spider and

[1] See Richard William George Hingston, *Problems of Instinct and Intelligence*. New York, Macmillan Co., 1928, 38 ff.

fly away.[2] While the wasp was away, Fabre removed the spider with its egg, leaving the cell empty. Soon the wasp brought the second spider. If the wasp really knows what she is doing she will lay another egg on the second spider and then go away and collect other spiders for food until the cell is filled. But if the wasp is acting by a blind instinct which manifests four stages and the completion of one stage automatically makes the spider enter on the next stage, it will not return to egg-laying when it is in the collecting stage. And that is precisely what happened. The wasp returned with a spider but layed no egg on it; she flew away to get another spider and so went on to fill the nest with food, even though there was no egg to hatch and bring forth young to feed on the provender provided. Fabre kept on removing spiders until the wasp, apparently having exhausted the collecting drive, closed the cell in a perfunctory manner and flew away.[3]

In the *Oxford English Dictionary* there is a definition of instinct which expresses quite clearly the type of behavior we have just described:

"An innate propensity in organized beings (especially in the lower animals) varying with the species, and manifesting itself in acts which appear to be rational, but are performed without conscious design or intentional adaptation of means to ends."

Instinctive behavior, such as that illustrated in the above example, is a complicated series of acts demanding many major and minor adjustments and persistent effort until a feat is accomplished of crucial importance for the propagation of the species or the maintainance of the life and comfort of individuals.

From instinctive behavior of this kind we must distinguish impulsive and reflex action. Pain stimulates the newborn child to cry and the reflex crying response initiates breathing, without which the child would die. Crying has, therefore, a very valuable purpose for the newborn child. But the child certainly does not know that unless it cries and starts to breathe it will surely die. Muscular ability has a drive to set itself in action and so the child kicks and moves about. But it certainly does not do so in order to develop its muscles and aid digestion. The end is attained without consciousness initiating or directing the activity.

But actions of this kind are activities of a mechanism possessed by an organism. In instinctive action, as illustrated above, the whole individual as a unit is involved and many functions are coordinated to the attainment of an end.

We must also distinguish desires or cravings from instinctive behavior.

[2] The spiders are killed or paralyzed by being stung by the wasp.

[3] See the account given in Claude Albert Claremont, *The Innumerable Instincts of Man*. London, Eyre and Spottiswoode, 1940, 104 ff.

There is a wide region here for the play of psychic or quasi-psychic reflexes. Thus, if a person suffered for some time a lack of any one of the essential constituents of our diet—protein, carbohydrate, or fat—he would experience a specific craving for such things as meat, sugar, or butter. Such cravings have been termed instinctive. But it would be better to restrict the term instinctive to characterize the *behavior of the individual acting as a unit organism*, directing itself to an end of importance but without conscious design or intentional adaptation of means to ends.

Using the term in this sense there is no such thing as instinctive behavior in man. Only by broadening the concept to include native impulses and desires can one speak as Claremont[4] does of the innumerable instincts of man.

Let us specify the important elements in instinctive behavior.

1. The organism acting as a unit being, and using whatever powers it may be able to exert, strives to accomplish by persistent action an end valuable for the preservation of the life of the individual or for the propagation of the species.

2. The individual accomplishes the end without any possibility of having learned by experience to envisage the end or acquire by practice the habits necessary to its accomplishment.

3. In carrying out this instinctive behavior, the individual acts as a unit, capable of coordinating its functions. In this way, the behavior differs from a series of reflex actions, which involve mere mechanisms possessed by the organism.

Let us now look at the problem from the point of view of the analysis of our mental life and locate instincts in the classification of mental functions.

It is evident that there must be in any organism as many forms of sensory activity as are necessary for its proper growth and development. And there are as many faculties as there are groups of irreducible activities. This is really the fundamental principle of factor analysis and was expressed by St. Thomas in the phrase, "As many of these actions as cannot be reduced to one principle demand different faculties."[5]

The living organism must not only *apprehend*, that is, receive impressions of sensory objects, but also *conserve* the impressions received. But *reception* cannot be reduced to *conservation*, for in natural objects the two activities vary independently.

If the animal reacted only to the pleasant and the unpleasant, one would not need to postulate in animal life anything more than the apprehension

[4] *Loc. Cit.*

[5] Et quaecumque harum actionum non possunt reduci in unum principium, requirunt diversas potentias. *Summa theologica*, I,Q. LXXVII, iv, corpus.

of specific qualities. But the organism must not only pick out what is pleasant but also what is useful. Now it is evident that the pleasant and the useful are two concepts, neither one of which can be reduced to the other.

And so we get the following sensory cognitive functions:

1. The apprehension of sensory qualities is a function (a) of the *special senses* which take cognizance of sensory qualities as such; (b) of the *synthetic sense* (sensus communis) which knows the qualities or attributes of a unit object.[6]

2. The apprehension of sensory forms or qualities which transcend pure sensory experience is the function (c) of the *vis aestimativa* or power of sensory evaluation which functions in a marvelous manner in the instinctive behavior of certain lower organisms such as the insects.

As St. Thomas remarks, man differs profoundly from animals in the evaluation of the data of sensory experience.

"One must consider that in regard to sensory qualities there is no difference between men and animals. They are similarly affected by exterior sensory objects. But as to the aforesaid 'intentions' (e.g., perception of the useful) there is a difference; for other animals perceive 'intentions' of this character by a certain natural instinct, man, however, by means of a kind of comparison (*collatio*). And therefore, what in animals is said to be a kind of natural estimation, in man is termed thoughtful (appraisal) which comes about by a kind of comparison of concepts. Hence it is also termed particular reason."[7]

In the light of all we now know about animal instinct one might express this by saying that certain animals are endowed by nature and have from birth certain habits of behavior that are innate and not acquired, whereas man must learn by experience how to adjust himself to the difficulties he encounters in life.

There can be no question that many insects commence life with a tendency to do things of major importance in their own lives and for the propagation of the species and with the skill to make rather complicated structures.

Thus the spider before weaving her first web makes use of an oil secreted by her salivary glands to oil her legs and only those parts of her body that might touch the web. If she did not, like any other insect, she would get tangled in the web she was starting to weave. And then, easily and

[6] That the synthetic sense is a sensory cognitive function different from the special senses is made abundantly evident in T. V. Moore's *Cognitive Psychology*, Philadelphia, J. B. Lippincott Co., 1939, 237 ff.

[7] *Summa Theologica*. I,Q. LXXVIII, iv, corpus. St. Thomas is here describing what he terms the *vis cogitativa* or human power of evaluating individual objects.

without previous practice, she weaves a structure that would tax the ingenuity of man.[8]

Maurice Thomas gives this definition of instinct: "The comprehension of a sensation whose meaning is not revealed by any previous experience and the foreknowledge of the specific means of satisfying the need that it expresses."[9]

It might be better to say "sensory evaluation" instead of "comprehension" and to avoid the use of the word "foreknowledge." Instinctive behavior has no real knowledge of the end it serves. A hungry man eats until he is satisfied, without thinking of the function of food in the sustenance of life. He eats because he experiences a sensory craving for food and in some similar way the insect carries out the various stages of instinctive behavior without any foreknowledge of the end and purpose that behavior is destined to subserve.[10]

Instinct is not a fixed chain of reflex actions but a hereditary gift which the animal by sensory cognitive powers and native skill, hereditary and acquired, is capable of modifying until its instinctive drive is satisfied.[11]

In human psychology we cannot speak of instinct. The closest approach to it is a certain type of drive that is experienced and to which we give the term *impulse.*

In our own consciousness we can distinguish the tendency that we perceive to execute some movement from the movement itself. The term *impulse* applies more properly to this consciousness of a tendency to action. The action itself is not the tendency nor the awareness of this tendency but its result. It may be designated as an *impulsive action.*

Though the term "impulse" has been applied mainly to motor activity, it may have a broader application. For we experience not only tendencies to movement but also other tendencies which, while connected with movements, are mainly directed to sensations. Thus, we have tendencies to make use of our senses as occasion may arise, to look, to listen, to smell, to taste, to touch. Whereas the tendency to strike or to run, which we experience in fear, aims at an action as an end; the movements of the head in listening aim at an action only as a means. For the tendency is not merely to move the head but to listen to some sound that will be perceived. We

[8] See R. W. G. Hingston, *Problems of Instinct and Intelligence.* New York, Macmillan Co., 1928, 12 ff.

[9] *La notion de l'instinct et ses bases scientifiques.* Paris, J. Vrin, 1936, p. 83.

[10] Compare with the suggestive work of Eric Wasmann, S. J. *Instinct and Intelligence in the Animal Kingdom.* St. Louis, Herden, 1903, pp. X-171, and *Comparative Studies in the Psychology of Ants and of Higher Animals.* St. Louis, Herden, 1905, pp. X-200.

[11] For examples, see Hingston, Chap. VIII. *The Variability of Instinct,* New York, Macmillan Co., 1928.

have also tendencies to think, to seek knowledge, and to solve problems, tendencies to enjoy pleasant situations and to avoid unpleasant ones. All of these tendencies may be considered as impulses.

It is to be noted that truly impulsive tendencies are not experienced *except in the presence of an opportunity to exercise a human ability.* At least we are justified in restricting the term "impulse" to the consciousness of a drive to exercise an ability when the opportunity presents itself.

If there is no opportunity to exercise an ability, what we experience is not an impulse, but a craving. These cravings we shall consider in the chapter on desires.

We may, therefore, define an impulse as a *tendency that we experience, in the presence of an actual opportunity, to make use of any one of our human abilities.*

Impulses are the real psychological elements in instincts. Much of the discussion about the number and nature of instincts is rendered superfluous by this concept. There are just as many impulses as there are human abilities. Instincts are merely groups of impulses or desires to which popular parlance has given names. In danger the "instinct of self-preservation" is called into play. This means nothing more than that every human ability that can help to extricate one from the danger is called into action. The parental instinct makes parents employ all their abilities in protecting their children, caring for them, and furthering their welfare, etc.

Valuable as would be the study of those groups of impulses in detail to which popular psychology has given names, we must refer this study to social psychology to which it more properly belongs.

Having criticized the concept of instinct as a chain of reflexes and pointed out the fact that there are in some instincts two kinds of links in the chain—one the reflex and the other the impulse—it will be useful to contrast impulse and reflex action so as to differentiate them more clearly.

1. In a reflex action the movement follows promptly and with mechanical necessity upon the presentation of the stimulus. *Immediate necessity characterizes the relationship between stimulus and response in reflex action.* In an impulse, however, the movement may or may not follow upon the presentation of the stimulus. In the human adult the impulsive act takes place as a rule with voluntary consent and often with voluntary guidance and direction. One of the important tasks of education is the development of the control of impulse. This task is possible because the will has direct control over the execution of the impulse. It has no such control over the movement of the simple reflex. This control is more extensive than the narrowly restricted voluntary sphere of influence in the cortical reflex. Thus, one may, for a time, keep back a cough or a sneeze, but eventually

the explosive movement overcomes all resistance. The longer the delay the more involuntary and forced does the final movement seem. But one may, under insult, keep back indefinitely the impulse to strike and, if it is finally yielded to, it may be more voluntary and less reflex in character than it would have been had the individual acted on the spur of the moment. *Immediate necessity does not characterize the relationship between stimulus and response in impulsive action.*

2. Impulsive actions are elements of behavior in which the organism as an individual is involved. In reflex action, on the contrary, only a piece of mechanism possessed by an organism is set in action.

3. Reflex actions are always responses to simple stimuli; impulsive actions, on the contrary, often involve complicated situations. Thus one may hear a remark from one individual and feel no motor impulse at all. But were a certain other person to make the same remark one would have to hold back a sudden impulse to strike. Not the sound of the voices, nor the meaning of the words alone, but the whole situation of individual relationship calls forth the impulse to strike.

4. No impulsive action takes place without consciousness. Many reflexes—all indeed except the cortical reflexes—may be obtained in the unconscious subject.

5. Volition has no part in the production of a reflex movement. It may at most permit it, as in the cortical reflex. In the impulse, however, it guides and directs the movement of response.

If we define an impulse as a tendency to make use of some of our human abilities, the problem of their classification is relatively easy. They may be classified according to our classification of human abilities. Every ability has its peculiar neurological mechanism. This mechanism involves not only a static structure which may be made use of as a passive instrument, but also a dynamic force which tends spontaneously to action. It is thus that the mind differs from a mere machine. When, now, we come to classify our impulses, it seems reasonable to adopt a scheme of division based upon whatever principles of classification of human abilities we have adopted, rather than to divide them according to purposes that the impulsive acts may serve.

To consider all the impulsive tendencies of human nature in detail would make the present volume extend beyond reasonable limits. We shall, therefore, do little more than illustrate the impulses by a review of some motor and sensory forms. There are also affective and intellectual forms. The affective impulses will find several illustrations in a study of mental readjustments, *e.g.*, the parataxes of depression and anxiety.[12]

[12] See pp. 273 ff.

The original type of the impulse is the tendency to respond to a present situation by some kind of a movement. We should, however, include under the term "motor impulse," not only special coordinations, such as striking, kicking, pushing, hugging, clasping, and jumping, but also uncoordinated random movements. One will seek in vain to find special stimuli for the random movements of the arms and legs of the young infant. They may sometimes be pain responses, but not always. They can best be interpreted as proceeding from the inherent mechanism of motor ability which, like all other living structures, needs no other reason for action than its own existence. Random movements, in other words, are not reflex actions and do not need to be initiated by sensory stimuli. Living muscles and a normal nervous system, and intact connections between the two, are all that are necessary.

The question now arises: Do random movements and random movements alone constitute the original inheritance of the individual's motor equipment; and if so, are coordinate movements learned by selection from random movements? This is certainly not the case. The young of many animals can perform various motor coordinations from their very first entrance into the outside world. This is particularly true of the insects among whom these coordinations are often apparently perfect from the outset. Higher up in the animal scale, inherited motor coordinations are at first imperfect. The young chick pecks from the outset, but experience makes his pecking sure to hit the mark. The young foal capers about soon after birth, but how awkwardly compared to the graceful running of the horse! The young fledgling makes the appropriate movements of flying when first tempted from the nest, but it soon flutters to the ground. The young infant when first clasped to the mother's bosom grasps the breast and commences to suck. When, for the first time, an infant is in apparent danger of falling from the lurching of a wagon, it may clutch the person holding it by an adequately coordinated movement which could not have been learned by experience.[13] We must, therefore, conclude that the mechanism of many coordinate movements is an established element of neurological heredity. Disturbances of equilibrium, for example, act upon the semicircular canals and these transmit the stimulus to Deiters's nucleus, to the cerebellum, and also to the cortex by way, perhaps, of the optic thalamus. Through these connections a mechanism for throwing out the arms and grasping whatever may be in reach is set in action. In the young infant this mechanism may be a pure reflex, and even in the adult it approaches the character of a reflex. It seems, however, to be a motor

[13] Cf. Kathleen Carter Moore, "The Mental Development of a Child," *Mon. Suppl. Psychol. Rev.*, no. 3, 1896.

tendency which, unlike the simple reflex, is not executed in unconscious subjects; and unlike the cortical reflexes involves sensorimotor coordinations, i.e., adjustments to present situations. The whole process is rather complicated. It seems to exist prior to experience. It is a hereditary neuromuscular mechanism which comes into play when equilibration reflexes are inadequate to meet the situation. There are many such mechanisms present in the human nervous system. Situations of one kind or another set them in action. They may be inhibited by the adult whose ideals of conduct exercise a control over the actions of the body musculature. Or they may be the first step in a series of actions continued and directed by conscious voluntary control.

One need not be surprised at the existence of complete neural mechanisms for the execution of fairly complicated motor coordinations. Experiment gives us actual examples. Electrical stimulation of the cortex leads usually to a single movement which, however, is not due to the contractions of only one muscle but to the coordinate action of a group of muscles, *e.g.*, flexion and extension of arm, hand, etc. By the stimulation of the proper area of the cortex in the rabbit one may cause not only such isolated movements but also a whole series of chewing movements. If such a neural mechanism may be set in action by electrical stimulation it need not surprise us that the actual situations of life call forth tendencies to even more complicated motor responses.

The original tendency to make use of these inherited motor mechanisms is the first element in the development of play. Crawling, creeping, walking, and running are actions whose original stimulus lies in the motor mechanism itself, even though this mechanism may also be set in action by interests that are awakened by sensory stimulation. If, in the course of moving about, one individual meets another, shoving, pushing, pulling, tussling, grasping, fondling, etc., are all acts for which there are original motor tendencies with their appropriate neural mechanisms. With animals, play consists mainly in the exercise of these original motor tendencies.

McDougall points out that it is rather peculiar that the dog in play bites but does not hurt and the kitten paws but does not scratch, and yet there is plenty of muscular power at their disposal to inflict injury. He brings out this peculiarity of play to show that it is not, as Groos' theory would lead us to suppose, a mere premature ripening of the instinct of fighting. He suggests that it is due to the impulse of rivalry.

"The impulse of rivalry is to get the better of an opponent in some sort of struggle; but it differs from the combative impulse in that it does not prompt to, and does not find satisfaction in, the destruction of the opponent. Rather, the continued existence of the rival, as such, but as a conquered

rival, seems necessary for its full satisfaction; and a benevolent condescension toward the conquered rival is not incompatible with the activity of the impulse, as it is with that of the combative impulse."[14]

This seems a rather complicated mental mechanism even for the human child, to say nothing of the dog. It might be simpler to suppose that the impulse to an adequate use of the weapons of defense is called out only by a situation from which anger or fear arises. In other situations biting is more akin to tasting, pawing to feeling. If anger is not present, the cat may strike with its paws, but it cannot scratch because the muscles which set the claws in position are not in action. The playful animal is often angered, and, when his ire is aroused, he promptly makes adequate use of his offensive and defensive mechanisms.

The exercise of motor impulses may exhaust the concept of play in animal behavior. But this is not true of the child. For the use of original tendencies is always undergoing a process of modification by influences which arise from the activity of other mental functions. Thus the child reads and hears about the doings of Indians and savages. It is natural to the human mind to desire to live through interesting scenes that are only heard of or read about, in reality if possible but, if not, in imagination. The child, therefore, will at times run away from home to seek the Indian in the Far West, but more commonly he is content to play Indian at home. Thus play becomes modified by imagination. In all probability children's play implies nothing more than the use of motor tendencies under the influence of an attempt to live through in imagination things heard about, read of, or seen, whether in reality or in theaters. The tendency to do all this is an impulse by which we compensate by dreaming for realities that can never be ours. To maintain that the development of the child is the unfolding of the history of the race and that the play of children gives us an epitome of human history from primitive man to civilized institutions is an hypothesis for which there is but little evidence. It is at best an analogy based upon the fact that the embryo goes through stages of development in which it possesses at various periods organs that are characteristic of lower animals. Thus, the first secretory apparatus of the human embryo, the pronephros, resembles in some manner the nephritic tubules of the earthworm. These are replaced by the mesonephros similar in structure to the kidney of the frog. Finally there appears the metanephros, the final form of the human kidney. Other organs go through similar stages of development. From such facts we cannot argue that the mind must not only recapitulate the mental history of the animal kingdom, but also go through all the stages of development through which the human race has passed from primitive man to the present day. Nor do the facts of

[14] *An Introduction to Social Psychology*, London, Methuin, 1908, p. 113.

child psychology render the recapitulation theory of human instincts anything more than a naïve speculation.

Every sense organ carries with it a tendency to action by means of which objects perceived by the sense organ are observed under more favorable conditions. The end of this action is not movement but the exercise of sensory observation. Movement is the means, sensory observation is the end. Thorndike has grouped together the sensory impulses under the one name, "original attentiveness":

> Of the situations to which man is sensitive some originally excite the further responses—of disposing him, especially his sense organs and central nervous system, to be more emphatically impressed thereby—which we call responses of attention to the situations in question. Thus, he moves his head and eyes so that the light rays from a bright colored object moving across the visual field are kept upon or near the spot of clear vision. The features which are so selected for special influence upon man may vary with sex and age, but are substantially covered by the rule that man is originally attentive (1) to *sudden change and sharp contrasts*, and (2) to *all the situations to which he has further tendencies to respond*, as by flight, pursuit, repulsion, play, and the like.[15]

The sensory impulses are characteristic of animals as well as man. To be convinced of this, one need but watch a dog sitting in a window taking apparently keen interest in everything that passes, whining and becoming greatly excited if another dog comes into view, etc. It is peculiar that this impulse gives so much satisfaction also to human beings. As soon as the infant can sit up he becomes at once a keen observer. When he can crawl he wants to feel what he sees, and, if possible, put it in his mouth. The ambition of many an adult seems never to get beyond his infantile interest in watching. Thus idlers hang around railroad stations, lean against lamp-posts, and, *mirabile dictu*, seem to while away many a pleasant hour in this fruitless occupation; and many an old person ends his days in peaceful bliss, sitting at a window and watching the passers-by.

In some of these cases the original attentiveness to mere sensations is associated with sexual or other interests, so that the behavior of the idler may be more complex than one would at first suppose.

The neural mechanism for this impulse consists in the sensory end organ, the sensory nerve and its connection with cerebral ganglia, and the paths which lead from these ganglia to the various motor mechanisms of the central nervous system. Every one of the sensory nerves has a complicated system of connections through reflex centers with various motor tracts. Every one of them has also an ultimate center in the cortex. If Bechterew's results are trustworthy, the cortical centers are also regions, the stimulation of which leads to such movements as are connected with the

[15] *Educational Psychol.*, Vol. I, *The Original Nature of Man*, New York, Teachers College, Columbia Univ., 1913, p4. 6.

functioning of the sense organ, e.g., eye movements and focusing of the lens. Besides such direct connections with the muscular apparatus of the sense organ, each sensory center has manifold connections with other areas of the cortex. In fact, when one views the complicated histological network of the cerebrum with its cortical tangential fibers and the association fibers of the white matter, one must admit the possibility of at least a potential connection between any one spot in the brain and any other by one or more neurons.

The existence of these subcortical and cortical connections would suggest that the sense organ may be focused upon an object of perception, not only by the reflex action of incoming stimuli but also by conditions originating in the cortex itself. As a matter of fact, tendencies to make use of a sense organ are not confined to those which are produced by incoming stimuli. A situation as well as a stimulus may cause one to look, listen, etc. Interests that can be satisfied only by search, memories of past pleasures, various needs and necessities of life are far more frequently the source of the use of our senses than the stimuli which impinge upon the organs of sense. The old man sitting at the window not only looks at what he sees, but is also looking for something to see. One may ramble in the woods and not only listen to the singing of the birds but also listen to catch the sound of their song. Sensation is not only a passive something, but also involves active impulses to sense. Other impulses subordinate this active power to their own service. Thus, in danger of attack, one does not wait until he hears in order to listen but listens long before he hears. Such subordination, however, is not necessary. Sensory impulses, as such, exist in man which do not imply the functioning of any other instinctive type of behavior. The mere possession of an organ of sense creates a tendency to its exercise, that is, a sensory impulse strictly so-called.

## Chapter 19

# DESIRE

If one experiences a lively impulse in a given situation and inhibits its execution so that the situation passes away, the whole affair is not likely to end with the closing of the little incident. Memory images are periodic—they come and go. The memory images of emotionally toned situations are especially subject to periodic recurrence. It seems probable also that affectively toned situations, in which impulses were voluntarily blocked or accidentally thwarted, have a particularly strong tendency to recur, so that the individual may enjoy in imagination what he missed in reality. Sexually toned situations have this tendency to a marked degree.

If the imaginary going over of the situation with its pictured execution of the impulse is inhibited constantly and effectively, the tendency is present in human nature to dream about the situation at night, either clearly and openly or in a symbolic fashion which completely obscures the real meaning of the dream, or to take pleasure in doing things that, consciously or unconsciously, have some kind of association with the frustrated impulse.

It is not the impulse which is active in all these transformations of the original situation, but something to which a frustrated impulse gives rise. The resultant of an impulse that is not or cannot be carried out is "desire." The impulse is a tendency to act in a given situation by the exercise of some of our human abilities. A desire is a craving that we experience to seek or produce a situation in which impulsive tendencies may be satisfied. Desire is the torrent of waters, impulsive satisfactions the channels of outlet. It is this torrent of waters that moves the machinery of human activity. It will find its outlet somewhere—if not in the courses that flow along the surface, then in the deeper subterranean levels of the mind. Where the outlet of desire is going to be is not entirely a problem of mechanics. For there is a power of voluntary direction that opens the locks in one place and closes them in another. The constant resultant of suddenly closing the locks that bar the channel of impulsive action is the rising of the waters of desire. The psychological cause of desire is the temporary or permanent blocking of impulsive channels. It is clear that some outlet must be provided for the forces of our impulsive activity. All the channels cannot be kept closed all the time.

Besides the forms of desire easily recognized as belonging to the native abilities or faculties of the mind, there are also activities that a human being

experiences in his life as an individual and in relation to society, for which definite physiological and psychological mechanisms exist.

The activities connected with eating, drinking, and the propagation of the species, though not usually considered as mental, have nevertheless definite psychological factors, and when the opportunity to exercise them is not offered, they lead to cravings that constitute a group of the strongest driving forces of human nature.

Besides these there are a number of psychological mechanisms that cannot at first sight be definitely grouped with any single faculty but affect the harmonious operation of all our abilities in relation to our fellow men. Thus, all men have a natural craving for the approval of their fellow men, and make use of all their abilities to attain it. All men have a desire to dominate their surroundings and make use of all their abilities to do so. And, strange to say, there seems to be an opposite craving of vastly different intensity in various individuals that is often spoken of as the impulse of subjection. It is probably, however, not a definite psychological entity, but is, in part, the mere inertia of the mind that we term laziness, and, in part, one of the many maskings of the sex drive.

All these cravings, whether physiological or psychological, constitute a fairly well defined group of natural wants of which we are conscious only when unsatisfied and when the opportunity of satisfaction is not given. The craving ceases and passes into enjoyment during the process of satisfaction. All cravings must be rooted ultimately in mental capacities, even those that are physical. For the psychological craving is not, for example, to supply the chemical needs of the organism for water but for the satisfaction that is experienced in drinking.

The craving for the approval of our fellow men and to dominate one's surroundings is rooted in the intellect, in the enhancement of the idea that every man has of himself. Everyone has a tendency to conceive of himself in the highest possible terms and whatever convinces him of his own excellence and importance awakens a satisfaction which once experienced is ever afterwards craved and so constitutes a powerful driving force of human nature. But at bottom the self-idea is but one form of intellectual activity, for the idea of self is not red or blue, a 32-foot tone or a one-foot tone, it is not a taste, a touch, or a smell. It is an intellectual appreciation which leads to exaltation when we judge ourselves favorably and to depression when we cannot help but look upon ourselves in an unfavorable light.

With due reference to the various forms in which desire manifests itself, we may define it as follows:

*A desire is a craving that we experience to seek or produce a situation in which impulsive tendencies may be satisfied or natural wants may be supplied.*

## The Classification of Desires

The natural classification of desires must follow the classification of human abilities. Just as we have as many impulses as there are abilities to be exercised and each ability has associated with it a physiological and psychological mechanism tending to set it in action in the presence of an opportunity, so also every ability has similar mechanisms that produce cravings psychologically recognized as desires when adequate stimuli are not present. These cravings drive the organism, or the individual, to action, so that the ability may be exercised and the craving satisfied. All cravings, furthermore, must be capable of satisfying some human activity. Therefore, the natural classification of desires runs parallel with that of the abilities themselves.

We may, however, consider desires from various points of view and formulate many artificial classifications, each useful for special purposes.

Thus a classification of desires has been suggested into those that have to do with the conservation of the individual and those that concern the conservation and propagation of the race; *conservatio sui et speciei*. Again, desires are classified into those that concern food, clothing, and shelter.

A rather important artificial classification from the point of view of psychology is the division of desires into *conscious* and *unconscious*. Desires meet with the individual's approval or disapproval. Those he approves of, he admits, satisfies, owns up to; those he disapproves of, he tries to repress, forget, and disown. The resultant is a real psychological difference in desires. (a) A group of surface desires often rather shallow and impotent, and (b) a group of suppressed desires very potent in character, causing disturbances in the mental life of the individual of whose origin and nature he remains ignorant.

Another classification is into sensory and intellectual desires, namely, those that have to do with the lower pleasures of sense and those that have to do with the higher delights of intellectual pursuits. There are several distinctive characteristics that differentiate these two forms of desire.

Sensory desires are inborn or native. Intellectual desires are acquired.

Sensory desires are involuntary. They arise no matter what we do. Intellectual desires are subject to voluntary control.

Sensory desires are modified by satisfaction or the gradual wearing down of time. Intellectual desires may be modified by a system of training.

Sensory desires come and go according to the condition of the organism. They are usually independent of each other, more or less isolated, and not coordinated into a system. Intellectual desires on the contrary, though not always conscious, abide continually with us and are readily built up into a system that constitutes the individual's plan of life.

## The Plan of Life

Human desires have a natural tendency to group themselves into some kind of plan. Until we understand this plan an individual whom we may study remains more or less of a mystery. The grouping of desires into a plan of life is, therefore, a real psychological mechanism and to omit its study would be a serious defect in human psychology.

Gazing into the future, which comes sporadically to all normal human beings, leads naturally to the question, What am I to do with the years that are before me? I am inclined to think that in spite of the question forcing itself on the mind again and again, many individuals, probably the majority, give it no definite answer and make no attempt to plan out consciously a rational disposition of the future. Vocational guidance is rare but is now becoming more common. Adequate parental help is frequently lacking. Opportunities present themselves and are grasped without a thought of their present adequacy or their future power to satisfy. All sorts of "accidents" happen: parental neglect, the harshness of teachers, the indifference of the outside world, love affairs, books suggesting opportunities are read by chance, friends are met, etc. Emotional and intellectual reactions to these situations determine resolutions and points of view that d rect the mind to a dimly or perhaps more or less clearly outlined goal of endeavor. Should a conscious goal never appear on the horizon, some desires will eventually dominate, and unconsciously everything in the individual's mind will converge towards their satisfaction.

Individuals without an adequate goal in life are very likely to be doomed to years that please them not when youth commences to fade. I recall to mind a German past the prime of life who came to the clinic for help. He had accomplished nothing in life and had nothing to which he could look forward. He had arteriosclerosis and various accompanying symptoms of a rather premature onset of old age. My attempts to get him to adjust himself to his present situation did not satisfy him at all. He wished to be rejuvenated, as it were, by a miracle. One day he broke out in tears and commenced to cry, "Meine Jugend! Meine Jugend! Meine verlorene Jugend!" ("My youth! My youth! My lost youth!") Had Mephistopheles answered as he did Doctor Faust, he would have found a ready subject in this old German.

The lack of a plan of life leading to the wasting of life's most precious years is one of the most serious defects that can occur in anyone's psychological machinery.

Some err by excess in planning their lives and give themselves up to idle dreams in which character defects become dominant.

One of my patients from the time she was 9 years old used to spend much

idle time in dreaming of her future life. She built in imagination her future home, papered and furnished the rooms, and long before she had any idea of the meaning of marriage, peopled it with her family, idealized her husband, imagined herself cooking, which art she has never yet learned or exercised except in daydreams. Her craving for sympathy created various scenes in which she fainted, caused a commotion in the place where she might be, and was surrounded by spectators that pitied her and nursed her. She often rehearsed her death scene surrounded by sobbing friends, etc.

Such a planning of life determines nothing in reality, runs into sexuality, and forces separation from the world in an unreal imaginary life. This was pointed out to her and some time later I asked her to recast for me her plan of life and I received the following perfectly spontaneous formulation, which may also be regarded as an example of a native tendency to sublimate.[1]

(a) Residence in community, religious, which would be small enough to aid in a certain amount of mutual understanding but not necessarily friendship. (b) Passage of a great part of the time outside school hours in meditation and prayer. (c) Freedom, on my own part, from any trace of feeling of incapability. (d) Growth in my own soul of zeal for gaining other souls for Christ and a consequent killing of all selfishness. (e) True and deep friendship with Christ which would totally supplant all human affections. (f) Great spirit of mortification. (g) Worth as a teacher. (h) Love and understanding for, and power, both mental and spiritual, over pupils. (i) Ability to make everything serve as a steppingstone to my aim in life.

Another girl who came to the clinic complaining of depression and hopelessness in life had at the time the following outlook on life involving the shimmering of an unconsciously formulated but clearly inadequate plan.

Both her father and mother drank and she never experienced from either the affection that she craved. She could never remember that her mother kissed her except formally when she would leave on a trip. She could not bring any friends to her home because she sometimes found her parents drunk on returning to the house.

With this condition of home affairs, she saw nothing but suffering ahead but had made up her mind to endure it. The idea of leading a life of sin came to her repeatedly. She thought of marriage but put it out of her head. If she married she felt that she could not accept any but a superior man. She felt herself inferior and incapable of attracting or holding the affection of a superior man. She felt, therefore, that she would eventually drift into being someone's mistress, felt that if this was to come about she would have to leave home and often contemplated doing so and in some way contriving to let her people think she was dead.

In such a case religion is the only hope. The patient having had a religious education, a positive attempt was made in this case to obtain a

[1] For the meaning of sublimation, see p. 314.

religious sublimation.[2] This attempt led to the following plan of life: Love God first and his people afterward. Work for Christ by going some place where she could nurse or care for little children.

One must not think that in order to have a successful plan of life it must be highly idealistic. Such plans are often too unreal to be successful and so lead to failure and disappointment. The simple pleasures of ordinary family life keep the vast majority of the world in a peaceful adjustment to the world and its troubles. Some have no further aim than this. One patient expressed herself to me thus, "I want to be nothing more than the ordinary woman who takes care of the house, visits and occasionally drives with her friends." One girl settled down to a fair state of contentment by starting out to take care of her brother and the chickens.

True nobility after all is not to be found in deeds of extraordinary heroism but in the ordinary affairs of everyday life. Little things and ordinary occupations are truly worth while. This fact brings happiness within the grasp of any man, for anyone can formulate a plan of life leading to the accomplishment of something of value and so attain happiness.

When, in a clinic, we attempt to get others to formulate a plan of life it is well to remember that what could satisfy ourselves is not necessary or suited to them. I have often been surprised to see how little it takes to awaken new interest, give true satisfaction, redirect, and guide a human being who had been hopelessly at sea like a bark that had been cut loose from its moorings.

## The Management of Desires

Dynamic psychology treats not only of the theoretical nature of the driving forces of human nature but also attempts to give practical directions for the rational manipulation of these forces in ourselves and others. It should, therefore, attempt to deal specifically with the problem of the management of desires and, on the basis of a psychological analysis, give principles that will be of real value in the control of human conduct.

The following principles are the results of a psychological analysis of desires and are offered as practical guides to conduct.

1. *Human life is so complicated, our abilities are so manifold, and opportunities are so numerous that it is a physical impossibility for anyone to realize all his desires.* Simple as this principle may seem, its neglect is often the cause of considerable discontent. It may be neglected in two ways.

*a*) By forgetting the multiplicity of the objects of possible satisfaction. If a person is disappointed in one thing or one person, it sometimes happens that he closes his eyes to everything else or to everybody else. He keeps driving ahead at the impossible, much as the *Paramecium* does when it

[2] Cf. p. 317.

gets into a blind alley. This microscopic organism backs up in its blind alley, drives ahead again, bumps its "nose," and does this repeatedly until, perhaps by chance, it backs up too far, turns off at a slightly different angle, and so escapes from its predicament. Many human beings act precisely in the same way, wasting precious years in a blind drive after the impossible.

*b*) Sometimes, on the other hand, the very multiplicity of the opportunities that life holds out causes a conflict. People forget that they do not have to enjoy everything, that in fact it is impossible for them to make use of all their opportunities. Forgetting all this they give way to idle regrets because they must give up some of the many things that are open to them.

2. *All desires are not equally worth while satisfying and the criterion of worth in evaluating them is not pleasure but accomplishment.* There are some desires which when satisfied give pleasure indeed in the act of satisfaction, but when the satisfaction is over there is nothing to show for its enjoyment. This is true of all sensory desires, except perhaps muscular exercises which result in the strengthening of the body. The intellectual desires associated with education when enjoyed leave traces in the mind which are the foundation of habits of permanent value. These habits are not only the means of future enjoyment but also of a livelihood. Those desires should reasonably be considered of greater worth that not only give pleasure but also provide the means of future accomplishment.

3. *It is, therefore, necessary for us to establish a hierarchy of desires in which there shall be one supreme end of life to which everything else must conform.* The establishment of this hierarchy of desires is what we have termed the formulation of a plan of life. From the natural point of view, perfection in one's calling or profession in life should be the supreme end towards which everything else should converge. One should pick out some walk in life in which occupation will not only give one a livelihood but also pleasure and happiness. The normal thing is that one should enjoy one's life. If you cannot enjoy your profession you should not choose it.

4. *It is clear that in the hierarchy of our desires the lower and sensual should be subordinated to the higher and intellectual; for though the craving for the sensual may be stronger, the satisfaction that comes from the intellectual is vastly more extensive, more lasting, more productive of good to the individual and society and fraught with no evil consequences.* Only by such a subordination as this will great success in any career become possible. Pleasure should never be an end in itself but merely the oil that makes the machinery of life move more smoothly.

5. *With a clear conception of the means and end in life, we must order our labors in accordance with opportunity.* It is sometimes impossible for us to have what we desire because the opportunity is lacking. We should not, therefore, sit down and do nothing until the opportunity presents itself.

Careful inspection of our surroundings will always reveal opportunities that are worth while. The plan of life, therefore, should be sufficiently elastic to yield to the necessity imposed by the presence or the absence of opportunity.

6. *It is reasonable to exercise self-denial:*
   a) *In order that our end may be attained.*
   b) *In order that our efficiency may not be impaired.*

Much is said in psychological literature about the evils of repression. Some repression, however, is necessary. Existence in modern life is impossible without the inhibition of many forms of inopportune conduct, to say nothing of behavior that is not lawful. Inhibition is also necessary if a plan of life is to be carried out successfully to its final conclusion. This means retrenching the pleasures of the present for the enjoyment of the success of the future. Unless one is schooled in inhibition and repression this is not possible. We must, furthermore, as we have said, exercise self-denial in order that our efficiency may not be impaired. Barring the accidents of special misfortunes, the main impairment of human efficiency is arteriosclerosis—the hardening of the arteries. According to Osler there are four causes of arteriosclerosis: Venus, Bacchus, tobacco, and hard work, either mental or physical. Wisdom dictates self-denial in all of these things in order that efficiency may not be impaired. If, however, self-denial is exercised chiefly where it is most often lacking, that is in regard to Venus, Bacchus, and tobacco, the amount of hard work would probably take care of itself or perhaps would be limited automatically by fatigue long before it resulted in any impairment of efficiency.

## Chapter 20

# THE CONFLICT

### The Development of the Conflict

We have just passed in review the main driving forces of human nature. These driving forces are the impulses and desires. The impulses, and incidentally the desires, are tendencies to exercise the mental and physical abilities with which we are endowed. From the dawn of life to the twilight of senescence these forces are in constant action but not always directed toward one unvarying end and not always working together in the same associations and groupings.

### The Conflict in Infancy

At first the sensory impulses to see, to hear, to touch, to smell, to taste are in themselves sufficient to delight and interest the child. Before he can crawl they keep his eyes and ears in ceaseless activity during the waking hours of the day. Soon they become motive forces that send the baby crawling on his first tour of investigation. The motor and sensory impulses are the only kinetic mechanisms in the infant mind and they exist in it in their pristine purity. Thus the infant wants to hear, see, touch, taste, smell from pure sensory curiosity—to see for the sake of seeing, to hear for the sake of hearing and not for ulterior ends or for purposes which may in some manner be associated with the act of sensing. Older people often wonder at the ceaseless activity of the child. It is an activity which is produced by the drive of sensory impulses—a drive which is limited only by the physical impossibility of attainment and which is as yet unhampered by the inhibitions of the moral ideal or altruistic considerations of any kind whatsoever.

The whole energy of the infant is directed towards the satisfaction of sensory curiosity. If his enjoyment of the pleasures of sense is thwarted or cut short, he reacts by crying. The usual result of the infant's cry is that someone listens. The mother or the nurse finds out what is wanted and, if possible, supplies it. Very soon the infant learns that he gets what he wants by crying and commences all unconsciously to strive to dominate the world by appealing to the sympathy of others. He appeals first to their sympathy to supply his unsatisfied desire. Who would not take pity on a crying infant and give it what it wants if he only could? If this desire cannot be satisfied the mother pets and rocks and kisses and hugs to her breast the crying infant, thus sympathizing with him in his sorrow and

teaching him his first lesson in compensation, the compensation of sympathy which makes good the want that cannot be filled. The compensation often more than makes up for the broken toy or whatever the trivial mishap that may cause the infant's sorrow. The compensation is a delight in itself and becomes in itself an object of desire. In every little sorrow it is readily sought and as readily granted.

But there comes a time when no one is near to heed the cry or when those who are near do not heed and the child is left to mourn his little sorrow without any comfort or coddling. He has experienced for the first time the full bitterness of a conflict that he must henceforth wage as long as he lives. The puny strength of his desires is in battle with the inexorable laws of nature or the scarcely less uncompromising wills of uninterested men. The child then puts forth all his energy in the type of reaction that has hitherto met with success. He cries and screams louder and then louder again; he kicks and squirms violently until, wearied with his exertions, he ceases and falls asleep, having lost his first battle in the conflict with reality.

It is good, it is wholesome, it is necessary that many such battles should be lost. We cannot all of us have all that we want all the time. No child is born to be lord and master of the universe and never suffer denials, sorrows, and disappointments. But absolute and supreme dominion is the unconscious aim of every infant until the dawn of reason. In some individuals this ideal seems to last, in spite of the sad lessons of experience, till death puts an end to their conflict.

The uncompromising selfishness of the adult is repugnant to us because we feel that it could and should have been corrected long ago. The unconscious cruelty of the infant is excused because it is unconscious, and we think that it will be corrected later. But many a family fails to realize the fact that the selfishness of the child passes into that of the man unless the child suffers numerous defeats in its warfare for the dominion of the universe. Gradually and insidiously the infant conquers, not the world, indeed, but the household. His whims must be granted, for his crying must be stilled. No tyrant ever exercised a more pitiless and uncompromising sway than that of the infant who has triumphed over the family.

### The Conflict in Childhood

Not many years elapse before the child ceases to be a mere sensorimotor organism. When merely an infant one could teach him his lesson, "Things are not to be obtained by crying," only by letting him cry in vain, without the compensation of petting and coddling for the things he should not have. Little by little he learns to understand what others say to him and to reply with his childish prattling. Now he can learn by simple explanations and examples. What he does not perceive, he can be told. He learns that his

mother is tired, that she cannot carry him, that she feels badly when he misbehaves, etc. There has been introduced into his behavior a new factor, one that did not function at all when he was a pure sensorimotor organism. Simple *ideals of conduct* commence to limit and restrain the driving force of the instincts as well as the sheer impossibility of their satisfaction.

From now on there is a double conflict—one without, with nature and its inexorable laws and man and his unbending will; the other within, with his own ideals of conduct. Sensory curiosity drives on as it did in infancy, but now there is a check, a restraining influence. This check is not from without but from within—from the child's own mind, from his ideals of conduct. In most children these ideals when implanted arise from the love they bear to their mother. "Don't do that." "Why?" "Because I don't want you to," is with some children a sufficient reason—a reason which derives its cogency from the love that a child bears its mother. With others it must be reinforced by a whipping. But there are children in whom the real motive is traceable back to the persuasion of a mother who has promised not to whip and who they know will keep her word. Those who think that the fear of the whip is the only factor in moral development have too simple a concept of the child mind. Those, on the other hand, who think the fear of the whip is a factor which should be excluded from the moral discipline of youth have too profound a trust in the essential goodness of human nature. It is a factor that should be given its place with all due judgment and discretion in the array of forces which attempt to restrain and direct the blind rush of the sensory impulses to be satisfied at all costs and without regard to the peace and pleasure of others.

The sources of the development of moral ideas in children are far more numerous than some might suppose. We have as yet very little exact empirical information on the matter and are left very largely to judgments based upon our own more or less unanalyzed experience. Judging by the appeal we so often hear mothers make to their children (that the child hurts the mother in its rough play, "Mother wants you to do this," "Don't do this because mother does not want it," etc.), one of the earliest and most well drilled of juvenile moral principles must be, "It is wrong to do what your parents do not like." When the child grows a little older this principle is reinforced by the religious one, "It is wrong to do what God forbids," and children are told that God forbids them to disobey their parents. Both principles have their sanctions—the rod and the fear of eternal punishment. But the fear of punishment is not the sole spring of action in the child's mind. He is neither so base as to do what he is told purely from the fear of the rod, nor so noble that the love of his parents and respect for divine law is always sufficient to keep him from doing wrong.

Children differ in the relative degree in which they are influenced by law

and its sanctions. There are some who may be described as morally dull. As a rule, this moral dullness is associated with a pronounced degree of intellectual defect. Rare cases will be found in which the usual tests for intelligence will give normal values in children who nevertheless seem unresponsive to ordinary moral instruction. In these cases I suspect a defect of emotional resonance which deprives them of the assistance that others have from sympathetic feelings. Some children on the other hand are so responsive to the nobler springs of action that at a very early age they experience conflicts, the bitterness of which is usually tasted only by those who have passed the age of puberty.

Children who live in good homes and have their own little treasures of trifles very soon acquire the concept of the right of ownership, a concept which is very necessary for them to act up to in the present state of human society. In his little work on honesty Healy attributes some few cases of stealing in children to the lack of formation of this idea in their minds, brought about by the fact that the children of the family owned their toys in common. Whatever parents may think of the ideal state of human society it might be well for them to bring their children up to meet conditions as they are.

Kline[1] found that a deeply rooted principle of juvenile ethics is the law that a gift cannot be taken back. I think that the experience of most will corroborate his findings. This principle of juvenile ethics may have its roots in a wish fulfillment, for the child receives much more often than it gives.

He also found that children from 8 to 18 are more likely to be altruistic than selfish. The principles of altruism are very early instilled into their minds in most good homes and this philosophy appeals to their sympathetic natures. In fact, sympathy for the unhappiness of others clouds their moral judgment. Kline found that emotionalism rather than reason was often the dominating factor in their moral judgments.

A consideration of such facts as these will show us that, with the advent of the power of understanding the spoken word and of assimilating knowledge that may be communicated by language, the kinetic mechanism of behavior in the child becomes very different from what it was in infancy. In infancy behavior was directed by the unpleasant consequences of satisfaction sought in certain channels and by the sheer impossibility of attainment. In childhood (and by this period I mean that which elapses from the acquisition of spoken language up to puberty), the limitation of conduct

[1] "A Study in Juvenile Ethics," *Ped. Sem.*, X: 229–266, 1903. For an extensive study of the development of the moral principles of children, see Marie C. McGrath, "Catholic University of America Studies in Psychology," *Psychol. Monographs*, vol. 32, no. 144, p. 190.

is not only brought about by unpleasantness and impossibility but also by a more or less complex, but still relatively simple, system of ideals of conduct.

This makes a conflict of an altogether different nature from that which exists in infancy. The infant wants his own way and cries when he cannot have it. But he soon learns that some things are out of the question and after crying for the impossible resigns himself to his fate. Or, if he catches a bee and is stung, he does not grasp for the next big bug that flies and buzzes about him. The child, on the other hand, besides knowing that he cannot and fearing lest he should, feels that he ought not to. A neglect of the sense of obligation in the psychology of childhood makes it impossible for us to duly appreciate its conflict. This is true, no matter what one may think of the validity of the sense of obligation that the child experiences. Valid or invalid it is a positive psychological factor in the child's life.

It is necessary to distinguish the inhibitory power of moral concepts from the impulses themselves. All impulses are native tendencies to make use of native abilities. All moral concepts are acquired and hence cannot be impulses. Because native, and therefore a part of man's inherited constitution, impulses cannot be eradicated. Moral concepts unfortunately are often supplanted by a philosophy which is more in harmony with the instinctive cravings of nature. Moral concepts instead, therefore, of being impulses are acquisitions of experience designed to render possible the control of impulsive action.

Moral concepts do not themselves control actions but simply inhibit impulses from flowing over into actions without the guidance and direction of reason. The tendency of impulsive action is to assume the spontaneity and promptness of a reflex. This would often be injurious to the individual in his relation to other members of society or to his own full, rounded and perfect development. The moral idea inhibits an act which would otherwise take place spontaneously and makes it possible for the individual to refrain from acting or to act with deliberation and conscious choice. This implies another kinetic power which prolongs the deliberation by maintaining the moral principle before the mind, and finally acts, it may be, against the driving force of the impulses. The maintaining of the moral principles before the mind requires a distinct effort. This effort is certainly not that of impulsive activity, for impulsive activity is driving to action irrespective of moral ideals. It is not the mere tendency of ideas to recur by association. This tendency may have called up the moral concepts in the first place. When ideas come up in this fashion they do so apparently spontaneously and of their own accord. But in the moral conflict, principles are sometimes maintained before the mind with a distinct effort. This effort is one of the forms of voluntary action.

When the individual acts contrary to the drive of the impulses this often requires a tremendous expenditure of effort. This effort certainly is not the effort of the impulses. It is something which is in conflict with them and is now triumphing over them. It is certainly not a purely intellectual something. It cannot, therefore, be the moral concepts. Here again we recognize voluntary effort in one of its many manifestations.

The characteristic, then, which distinguishes the conflict of the child from that of the infant is the appearance of an internal conflict. The infant has no conflict with himself. He is unable to question his own impulses. He follows where they lead, stopping only when one impulse inhibits another, as, for instance, when fear restrains curiosity. The child has also an internal conflict. He does question his own impulses. Moral concepts have been instilled into his mind that have given him ideals of conduct and a sense of obligation that he must conform to them. His impulses often drive him to courses of action that conflict with his ideals of conduct and hence arises a conflict which was unknown in infancy.

The rise of the moral conflict does not mean that the conflict with reality ceases. Far from it. The child still drives on in his attempt to dominate, just as the infant did. When, for example, the time comes to go to school he sometimes resents giving up forever those happy days in which he had nothing to do but follow without restraint the impulses of sensory curiosity in his play. At this time we are likely to meet with the first elements of the psychosis. When the child learns that ailments form an honorable excuse for the nonperformance of unpleasant duties, he may strive against doing what he does not want to do by magnifying his petty ills. He imagines, too, some complaint he does not have, and so, safeguarding his conscience, tries to escape from what he finds distasteful. I shall cite several instances of this in discussing the parataxes of defense. In such conflicts with reality, rather than in purely internal mental warfare, the child has his bitterest battles.

When we compare the conflicts of childhood that are waged on moral grounds between impulse and will with those that take place after puberty, they seem to be very trivial affairs. From the child's point of view they have called forth enormous effort, but in reality there was no great expenditure of voluntary energy. For the child's will is weak, just as his muscles are puny and his memory feeble and all his abilities far inferior to those of an adult. We have as yet no means of measuring strength of will in adult or child. We have measured some of the child's abilities, such as memory. Whereas the popular notion is that the child's memory is much better than the adult's, experiment shows that it is much weaker. All experiments made so far lead us to believe that children's mental abilities as well as their

muscular strength are inferior to those of the adult. It is likely, therefore, that voluntary control in the child, like all other abilities in children, is weaker than it is in the adult. Some direct evidence that a child's will is weak may be found in the fact that when sexual development takes place prematurely it is very likely to be indulged without restraint. The voluntary control of a child of eleven or twelve is wholly unequal to the difficulties and temptations of a mature man or woman.

As to the nature of the moral conflicts of children, they usually concern such things as lying, stealing, fighting, disobedience, and using bad language. Sexual difficulties, in the strict sense, do not exist in childhood, except in a few exceptional cases of mistreatment. Few children make a bitter fight to maintain their moral ideals against the insidiousness of these temptations. At most they make a few sporadic efforts at the instigation of others who happen to take a special interest in their moral welfare.

### The Conflict After Puberty

The advent of puberty does not do away with the desire to keep the senses active and the body moving any more than did the acquisition of speech. The keen delight that the young find in games is in part essentially the same pleasure that they found in infancy in kicking and squirming and rolling and crawling. The exercise of any function or ability is in itself pleasurable and, under certain circumstances, keenly so. The enjoyment of a trip to the country by a city boy is due to a large extent to the pleasure that is experienced in the healthy satisfaction of the curiosity of the senses. And, contrariwise, the lure of the town to the country boy or girl is at first based upon the curiosity of the senses—to hear and see things they have read about but never taken in with their own ears and eyes.

The interest in moving pictures is in part identical with that of the infant just old enough to sit up, who keeps his wide eyes in constant motion looking here and there and uttering, at times, his cooings of delight.

With the development of mental faculties comes a deeper appreciation of the difference between the world of fiction and the world of reality. The child is impatient to become a man, to quit reading about things and see them for himself. Here again we often have at first nothing but pure sensory curiosity, the desire actually to experience the things that have been read about or seen, as yet, only in the moving pictures. This desire is at the root of much truancy and running away from home.

Though, later on, sensory curiosity becomes associated with complex instinctive activities, one will be mistaken if he presumes that some of the early escapades of children are sexually motivated in the strict sense of the word. By the strict sense is here understood the craving for the specific

pleasure that arises from all forms of *rapprochement* between the sexes. This pleasure is distinctly the acquisition of puberty and does not exist long before its onset.

The following escapade looks at first sight as if it had its roots in sexuality.

A young girl had become at 13 a "movie addict." She stayed out late at night to see the motion pictures and no persuasion nor punishment could break her of the habit. She had a good home so that the root of her difficulty did not lie, as it so often does, in the lack of a suitable place to spend the evenings. She went to see a series of films, the main motif in which was the adventures of a girl running away from home. She became possessed with a desire to imitate this girl and to experience for herself some of the adventures of life. Her first attempt was to go to the house of another little girl under the pretence that she had permission to pay her a visit.

When her deceit was discovered she was sent home. She next met with a young man and one morning they went off together. During the day he proposed marriage. Lying about her age, they obtained a license and were married in a neighboring town. The next morning she was found by a detective whom her mother had sent after her; she and the young man were arrested.

Mental examination showed a girl of borderline intelligence closely approaching the moron level. At the time of her marriage she knew nothing whatsoever about childbirth and had no conception of marital functions. She was very much shocked and frightened by her experience and welcomed her arrest as an escape from a painful situation that had not been anticipated.

One cannot be sure, in a case studied as superficially as this, that there was not present an unconscious sexual drive. It is always possible to imagine the presence of unconscious factors that further analysis would reveal. Nor will any depth of analysis be sufficient to satisfy one who is inclined to postulate their presence. Students of human nature are inclined just now to magnify the extent of unconscious influences as much as psychiatrists tended to minimize them or neglect them altogether a little while ago.

One need postulate no more in this case than the drive of sensory curiosity to experience adventures that had been seen in pictures. The escapade with the young man meant little more in this child's imagination when she started out with him on the morning of their marriage than the incident that had just been ended at the house of her girl friend.

### Association of Sensory Curiosity with Other Interests

When the age of puberty arrives, sensory curiosity does not long exert an isolated influence. Prior to this period sexual matters may have awakened a peculiarly lively curiosity, mainly because they were shrouded in so much

mystery and encased in all manner of prohibitions. With puberty, a distinctly new coloring manifests its first blush, and sensory curiosity becomes more or less rapidly complicated by sexual curiosity. Motor activity and the mere exercise of the senses for their own sake become relatively tame and tiresome. Tops, marbles, jumping ropes, and roller skates lose much of their former zest. Talks, walks, and dances have an attraction never before experienced. A new interest is manifested in personal appearance. Novels are much more highly appreciated.

At the same time, other instincts arise and old ones change their form. The herd instinct of the child is more likely to find its outlet in marauding gangs that are recruited from boys who have not yet attained the full development of puberty. Sheldon's study[2] of predatory gangs of boys showed a maximum at 11 years of age. Their diminution after that age is due to absorption by athletic societies. Gangs that persist and are made up of young men that have passed puberty bear an altogether different character from those of children. They are maintained by contact with professional criminals and what used to be play has become a profession. The herd instinct after puberty manifests itself normally only when ulterior purposes hold together societies and organizations. Athletics, literature, art, music, and politics become the bonds of interest.

Some few gangs are held together by a kind of loose organization for the purpose of frequenting dance halls. In those, the factor complicating the herd instinct is sexual. But, as a rule, the herd instinct of childhood becomes modified in puberty not by sexual but by other types of interest. These interests usually have to do with some form of intellectual pursuit after athletics has held its temporary sway.

The tendency to heap up and acquire greater and greater possessions is a fairly well defined human craving. In children it manifests itself in a passion for collecting. As measured by the number of things collected, it reaches its maximum at 10. In adolescence it remains as a mere vestige of its former self. The probable reason for this is that increase in years gives a deeper insight into the problems of life and the craving is directed to practical channels. For, whereas the tendency to collect articles of no practical value decreases with puberty, the tendency to save money increases.[3]

This association of interests must of necessity intensify the appeal which life makes to the mind of the child. He becomes much more difficult to manage. A whipping may be an effectual and permanent setback to mere

[2] *Am. J. Psychol.*, 1898, IX: 425–448. See Hall, *Adolescence.*

[3] Caroline F. Burke, "The Collecting Instinct." *Ped. Sem.*, VII: 179–207, 1900. See Hall, *Adolescence*, p. 484. Will. S. Monroe, "Money Sense of Children," *Ped. Sem.*, VI: 152, 1890. See Hall, *Adolescence*, p. 393.

sensory curiosity. But in the more complex drives after puberty it may be wholly without effect. Habitual truants, for example, when the motive is homosexuality or mere fellowship in the gang, may be whipped most unmercifully without its effecting the least change in their conduct.

### Opposing Forces in the Conflict

So far we have been speaking of the sensory drive and its complication by instinctive activities that mature at puberty. This is one side of the conflict. Its intensity usually lies concealed completely from our view. Occasionally when a boy or girl has been checked in his or her unsocial career and taken to a college or an institution, the violence of the reaction, the hysterical tantrums, the negativistic spells with refusal of food, the days of pouting and sullenness reveal to us the intensity with which he has desired to have his own way.

To want to have one's own way is not a pathological sign. It belongs to us by natural tendency. At the same time, it is necessary that our inherent egoism be brought under control. Existence in the social order in multifarious relations to other human beings makes this necessary. From the social order arises the first opposition to the egoism of the individual and a conflict which is the psychogenic source of many psychoneuroses.

The first element of the social order with which the individual's egoism comes in contact is the family. It is the function of the family to prescribe limits to personal selfishness. It very often fails in this task because of the selfishness and unreasonableness of the members that compose it. It is seldom that a father has an insight into the mind of a child and its difficulties. It is all too often that he is cruel in his unreasonableness. I remember a child of 8 who was brought to the clinic for truancy. His back was all striped with broad, livid lashes left by a recent beating his father had given him with a razor strop. When asked what was the matter with his back he tried to cover up the real cause by saying that he had been leaning up against some chestnut burrs. In addition to the lash many a mother knows only one other means of dealing with the delinquency of a child and that is her angry tongue.

By the time of adolescence, school companions, by fighting and making fun, have usually contributed their full share to the training of the child. Many a boy and girl has paid up bitterly on entering school for the freedom from restraint enjoyed in the lap of a short-sighted and indulgent mother. High school and college continue to do battle with selfishness and arrogance and overweening pride.

And then there is the court with the police and its institutions of confinement. Only in recent times has a glimmer of psychological insight penetrated into the custodians of the law.

With these forces, the selfishness of youth comes into conflict in the perseveration of its infantile drive to dominate without regard to the rights of others or its own best interests. This conflict is made all the more bitter and unfruitful because, as a rule, restraint by whipping or scolding or imprisonment exhausts the methods of authority. The mind of man is like flowing water. If one outlet is dammed up, another must be opened or there will be an overflow somewhere. You cannot restrain human activity by damming. You must provide an outlet. If you are not satisfied with what a young person is doing you must look out for something else for him to do. The adolescent must not be made to contend merely with parental temper and pious advice. Whether in the family or in the institution every outlet possible must be given for his energies. Athletics must be systematically encouraged. An attempt must be made to find out what interests he has along normal vocational lines and a psychological study made of his abilities, that these interests may be rationally guided. In addition to this, we can, by instruction, awaken interest by visits to factories and business establishments and by directing a systematic investigation of the careers that are feasible.

Reasonable direction and not conflict should characterize the relation between the adolescent and society.

Besides these external forces, determining an outer conflict with society, there develops little by little an inner conflict with the problems of the mind, a conflict which centers in human egoism and the self-ideal.

### Concept of the Self-Ideal

By the self-ideal is understood here a concept that has two elements. It is one's own private, personal opinion of one's self, of (a) one's present abilities and (b) what one hopes to attain. It varies enormously with the intelligence of the individual. It has no existence in the idiot, little or none in the imbecile, but is definitely present in the moron, who often overestimates himself and what he can do.

In those overschooled in the doctrine of a humble estimation of one's self, a large part of the self-ideal gets into the subconscious. It is wrong to be proud, is the central doctrine of humility. Humility, however, is perfectly compatible with a just estimate of what one can and what one cannot do. But many make the mistake of never allowing themselves to think of their own abilities and crowd out of mind everything that resembles self-complacency. The result of this is that they store up a great deal of subconscious pride. Their professions of inability are simply defense reactions against the discovery of their pride. They are easily angered though if anyone makes a slighting remark about their ability. This is a "complex indicator." One who is humbly conscious of his disability may be grieved,

but he is not angered if others make remarks about it. The deaf man gets angry if others tell him he cannot hear, because he does not want to realize how deaf he is.

So extensive is the system of defense reactions against the realization of our own defects that it would take quite a great deal of analysis for most people to find out what they really think of themselves.

There are two estimates that every man makes of his own abilities. One expresses what he would like to be; the other, what he fears that he really is. It is interesting to watch them fluctuate in moody souls and still more interesting to try to find out the reasons for the fluctuations in ourselves. A transitory success, often in something of a trivial nature, sends us soaring in our own personal estimation. But a momentary display of weakness or ignorance, which perhaps is made light of or passes unnoticed by others, brings on a tremendous bear movement in our stock market—a veritable panic as we are brought face to face with the fact that we are not all we want to be and still pretend that we are.

There are tremendous individual differences in the ease with which these bear and bull movements are brought on in the stock market of self-estimation. With some, their personal self-esteem is so hedged in with a system of defense reactions that nothing seems capable of disturbing it. Their ignorant blunders, imperfections, sins are promptly excused and all blame shifted on to the shoulders of others. Murmurings of a self-accusation are promptly suppressed and securely confined in the dungeons of the subconscious. With others, the least shadow of failure or disappointment brings on a depression, deprives them of all self-confidence, robs them of energy, and takes away their desire and hope to do and accomplish.

The reason for these individual differences is worthy of careful investigation. But, whatever the cause, we must realize that everyone both overestimates and underestimates himself. The overestimation tends to stay at the conscious level, the underestimation, because of its unfavorable character, is readily repressed to the depths of the unconscious.

### Significance of the Self-Ideal

One cannot separate one's estimate of one's self from what one wants to be, for the idea that we have of ourselves is an ideomotor concept. We conceive an ideal of ourselves and this conception carries with it a tendency towards its own realization. The actual living out of the personal ideal is often a very difficult matter. We cannot be what we want to be because external factors are often necessary for the realization of the self-ideal. But external reality is not the only hindrance to our self-development. We cannot be what we want to be because the self-ideal contains incompatibilities, because we want two or more things that are mutually exclusive. These

internal incompatibilities, as well as desire and its external hindrances, are the sources of life's severest conflict, a conflict which lies at the root of the mental breakdown.

The self-ideal itself is modified by the conflict. For defeat shows us that there are lines of development that for us at least are impracticable or impossible. It closes channels of instinctive outlet which our opportunities and abilities do not give us the power to keep open. Some, instead of accepting the situation as it is, blind themselves to reality and dream that they are what they only wish to be. These are proud and vain pretenders whom the world recognizes as such but who have no insight into their own disability. Others, unable to accept the situation as it is, unable to compensate by dreams, unable to find an outlet in any other channel, react to an intolerable situation by some one of the many types of mental breakdown. At the root of many a mental breakdown—many a parataxis, psychoneurosis, or psychosis—is the conflict over the realization of the self-ideal. The understanding of this ideal is, therefore, one of the most important of psychological problems.

## Factors That Determine the Self-Ideal

1. *Accidents of the environment.* Among the accidents of the environment, one of the first that influences the individual is parental example. A child's idea of himself and his future life is often built upon parental example. From parental example children turn to their teacher, and to a greater or less degree they are influenced by everyone with whom they come in personal contact. It should be noted that the external ideal of what one aims at has a psychological tendency to be transformed into the more or less subconscious idea of what one is by the alchemy of wish fulfillment. There are common factors, therefore, in the production of self-esteem and the self-ideal. The ideals of history also have their influence, an influence more marked at puberty and more evident in girls than in boys.[4]

Personal persuasion by word, when reinforced by the ties of friendship, has a powerful influence in determining just what the boy or girl wants to be in moral, economic, social, and political life. The influence of sermons, lectures, and books is also a factor, but secondary to the personal influence of example and verbal appeal. It would be hard for one to estimate the influence of his reading on the character of his career—harder still to pick out what he owes to sermons and lectures. Individually these factors usually count for but little; collectively, they form a powerful force in the development of the self-ideal.

From reading, lectures, and sermons the adolescent acquires to a large

[4] Barnes, "Children's Ideals." *Ped. Sem.*, VII: 3–12, 1900. See Hall, *Adolescence*, II, p. 387.

extent his religious, moral, aesthetic, and social ideals. These open the way to sublimations that enable him to bear with peace and resignation the burdens and sorrows of life. At the same time, they are the source of his bitterest conflicts. Religion, morality, aesthetics, and the social order not only point out a path but insist that it be followed. God and eternity, the natural principles of right, the beauty of virtue and truth, the demands of the social order are systems of thought and conduct, which, once known and appreciated, do not allow themselves to be forsaken without a protest. One must abide by their counsels continually, and every departure is, to him who has once understood, a source of keenest sorrow. In better natures the struggle between one's lower and higher self is sometimes of far greater moment and fraught with far wider possiblities of keen suffering than the conflict which might result between any desire and the merely physical forces that delay or block its fulfillment.

2. *Hereditary abilities.* Given general mental ability, a number of careers are equally possible. Some, however, require special abilities or a peculiar combination of traits if they are to be pursued with success. Thus, for instance, a man who cannot distinguish any difference in pitch between two tones in the region of middle C that are thirty vibrations apart cannot become a great violinist no matter how much he may try, nor the leader of an orchestra, nor a great composer. A man who *cannot overcome* his timidity and shyness may make a successful lawyer if he confines himself to the preparation of cases, but if he wants to be a great criminal lawyer and stand and plead before a jury, no matter how much he may desire it, his attempt along this line will probably be a dismal failure.

Along with the accidents of environment, hereditary abilities are factors in determining not only what we are and what we want to be but also what we think we are. Success pleases and satisfies; failure causes chagrin and discontent. A man feels out a place for himself in the world. He will not fit in every pocket. If he is in a bad hole, he wants to get out. He builds up other ideals for himself. If he is succeeding he attributes it to his own ability; he magnifies his self-importance; he desires a greater and ever greater success and exerts himself to the utmost to achieve it.

3. *Organ inferiority.* Alfred Adler[5] has developed the idea that the choice of a career depends not upon one's native abilities but upon some hereditary disability. This disability is due to some inferior organ whose inferiority is transmitted by heredity. When an organ is inferior, more work is thrown upon it and it compensates for its disability either by hypertrophy or hyperfunction or both. An individual who has an inferior organ realizes more or less painfully his disability. This realization, according

[5] See his two works, *Studie über Minderwertigkeit von Organen*, Berlin and Wien, 1907, p. 92; *Über den nervösen Charakter*, Wiesbaden, 1912, p. 195.

to Adler, gives rise to a feeling of inferiority which lowers his personal self-esteem. This conflicts with a tendency present in everyone to elevate his own personal self-estimation (Erhöhung des Persönlichkeitsgefühls). From this conflict arises an attempt to make good the inherited inferiority by overexertion. The individual creates for himself an ideal end in which he excels in the very ability in which he is deficient, and his whole life becomes thenceforth an attempt to dominate in the very field of his disability. This reaction is termed by Alder the male protest (männlichen Protest).

Historical examples are pointed out by Adler in confirmation of this view, *e.g.*, the deafness of Beethoven, the stammering of Demosthenes.

There can be little doubt that organ inferiority is sometimes a factor in the development of the self-ideal as well as inherited abilities. One attempts to make good his deficiency either because one is ashamed of it before others or because length of life depends upon it. The childish reaction to anyone who says you cannot is to show him that you can. The very fact that others doubt your ability lends zest to the task of demonstrating it before them. If there is a natural defect that stands in anyone's way, all the more credit to him if he should succeed. A credit which in that case he will not fail to take to himself. If he fails, his organ inferiority will be his consolation, for he will say to himself, "If I had only had the ability of others I would have succeeded as well and better than they."

One who has begun to make good a defect by overexertion to cover up what he is ashamed of, or to take measures to see that his life will not be shortened any more than necessary, may become interested in some line of work and then pursue it not only because of its compensatory value to him but also because it is attractive in itself. In such a case the choice of a career is determined by organ inferiority, just as in other cases chance or friendly advice perform the same function.

Can we go further and say that the only determinant of the self-ideal is organ inferiority, that our disabilities and not our abilities make us what we are? White seriously proposes this question in his *Mechanisms of Character Formation*.[6]

"What shall we say of this organ inferiority as the basis of the conflict? Can it be true that all growth, all development comes from the expenditure of effort in trying to overcome some defect? In this sense has all strength its origin in weakness? And if so, should we not rather welcome suffering because only through trials that tax us to our limit can the full of our powers come to function."

Sweeping generalizations are usually found on careful examination to admit of many exceptions. Any attempt to make organ inferiority the

[6] New York, Macmillan, 1916, p. 278.

sole factor in the development of the self-ideal is bound to be shipwrecked on the cold, hard facts of experience. It is one factor but by no means the only one. When it acts it supposes two conditions at least:

*a*) The organ inferiority must not be such that hyperfunction is impossible.

*b*) Organ inferiority must coexist with general and special ability or there can be no adequate compensatory overactivity.

Thus, for instance, Beethoven with his deafness is pointed out as an example of one who by musical development made up for his deficiency of hearing. But could Beethoven have made himself a great musician simply because he suffered from a slowly increasing deafness? There are many deaf people but very few Beethovens. Beethoven's development was due to native ability rather than organ inferiority. It is probable his deafness had little to do with his choice of his career as a musician. This was forced upon him by his father when he was as yet very young, and in all probability before he had experienced his organ inferiority.

Organ inferiority is a factor but only a secondary one in the development of the self-ideal. It is like the catalyzer in a chemical reaction that accelerates it and makes the transformation take place in an appreciable amount. But, what good is a catalyzer without its reacting chemicals, and what is the value of the manly protest in one who lacks the ability to back it up?

## Conquest and Defeat

Happiness and contentment are the result of working out a harmonious solution to the problems that arise from the conflicting elements of human impulse and desire. Success in an undertaking that one has set one's heart upon accomplishing does not necessarily mean that a harmonious solution to the problems of life will be found. A man might amass millions and be further from happiness and contentment than when he started out on his career. We have many impulses and many desires. Only when they are subordinated to some one thing that makes life really worth while can we stand the trials and necessary repressions that our ideals and the accidents of life impose upon us.

Religion is the only sublimation that enables man to view time and eternity with *perfect* peace and content. Art, music, literature, philosophy, science, and social work have, as a matter of fact, often made life endurable to those who for one reason or another have failed to attain the peace and content that is the natural blessing of a happy home. Any of these things serve to make life relatively worth while, if, as Aristotle postulates, one is blessed with a certain amount of the goods of this world.

Purely natural happiness in this life may be obtained by directing one's efforts consistently and successfully to the establishment of a happy home

life and safeguarding one's self against calamity by the development of a normal power of satisfaction in working for the welfare of others or in zeal for at least the enjoyment if not the advancement of art, music, literature, philosophy, or science.

The man who is truly successful in the conflicts of life has many wholesome interests, all of which he subordinates to some one worthy end. If this end is religious, his happiness has a stability that neither death nor calamity has the power to shake.

The man who is overcome in the conflict fails because he does not find anything that makes life worth while. There are various results which arise from this defeat. One is the attempt to forget by the active pursuit of pleasures. Another is plain discontent, sorrow, moodiness. A common type of failure is the cynic. There are two elements in the popular concept of cynicism. One is a sneering disbelief in the virtue and honesty of others. This may mean that the cynic is bad himself and dislikes to think that anyone is better than he. The other is a contemptuous feeling of superiority. He is compensating for his consciousness of guilt. This feeling of superiority often takes the form of a sense of enlightenment. He knows more than the common rabble and his superior knowledge enables him to shake off the fetters of moral superstition by which the ignorant are bound.

Extending beyond the limits of the normal reactions are the parataxes, psychoneuroses, and psychoses. Since Adolph Meyer wrote his *Dynamic Interpretation of Dementia Praecox*, the tendency has grown ever stronger and stronger to regard that psychosis in particular as a mental reaction to the difficulties of life. The individual acknowledges his defeat and retires into the cell of his own personality. Life no longer has any possibilities for him and so he shrinks into his dream life with himself. He has lost the battle and retreats from the scene of conflict.

The important lesson that the study of the conflict teaches us is that the undesirable human reactions are dependent on its outcome. The discontented grouch, the sarcastic, the cynical, the psychoneurotic, and sometimes the demented are what they are because they have failed. They need not have become what they are. They have mismanaged their lives. They belong to those whom Dante refers to in his description of Hell as *le genti dolorose ch'hanno perduto il ben dell' intelletto* (*Inferno*, Canto III, 17–18). They must have guidance now and direction from one who knows better than they. If this is so, the psychologist who would come to their aid should not only understand their type of reaction but should also be one who has not mismanaged his own life and has not muddled his own affairs. That he may understand how to help them it is also necessary to know the various mechanisms of human readjustment. Let us, therefore, turn now to the study of mental adjustments.

## Chapter 21

# PSYCHOTAXES AND PARATAXES

When a new name is proposed for scientific facts it should always be with great reluctance and after long deliberation. Some authors have made their works difficult reading by yielding too readily to the impulse to create a new terminology. It is, consequently, with great hesitancy that the name *psychotaxis* is proposed for the phenomena we are about to consider. It is hoped, however, that it will serve to unify a variety of facts which have much in common, and which, so far, have not yet been subsumed in any general schema of mental abilities. Many of these phenomena—the defense reactions, compensation, sublimation—were unknown to the older psychologists, or at least were not subjected to scientific psychological analysis. They are terms which came with psychoanalysis, a movement which arose independently of scientific psychology, and which still remains a separate trend of thought. Yet the two must be brought together and must supplement each other by surveying a common field of interest from different points of view.

In choosing the term "psychotaxis," the attempt was made to make use of roots that are not wholly unfamiliar. It should be pointed out that Verworn made use of the Greek τάξις instead of τρόπος to designate adjustments of animals to simple physical stimuli. Thus he speaks of phototaxis, thermotaxis, galvanotaxis, etc. But the term "tropism" was already in use, and there is no good reason for discarding it. In the present instance we wish a root to designate *the tendency of the mind to adjust itself to pleasant and unpleasant situations.* Though "taxis" suggests a passive arrangement rather than an active adjustment, those of us who have become familiar with its use to designate the movements of the Protozoa will feel that no great violence is done if it is used to signify the mental adjustments of individuals to pleasant and unpleasant situations—especially since such reactions often consist in a rearrangement of one's ideas in which some drop below consciousness and others appear on the surface.

We have just considered motor impulses and sensory impulses. Are there no impulses connected with our emotional life other than the emotions themselves? Yes. For we have very strong innate tendencies to enjoy to the fullest all pleasant situations and to get out of or avoid to the uttermost all unpleasant ones. The tendency to enjoy pleasant states of mind or to make use of pleasant emotions and feelings can without any great violence be subsumed under our definition of an impulse—the tendency to make use of a mental function. This tendency by analogy with the tropism

or taxis could be termed a positive psychotaxis. The opposite tendency to avoid unpleasant situations is a negative psychotaxis. The great variety and richness of the psychotaxes is to be found in the negative class. To enjoy, one needs to do little more than let things take their course or drive on in the pursuit of the pleasure that is in sight. But to avoid is a difficult and complex process and leads the mind into ways that are dark and devious.

To tend to avoid an unpleasant situation, to sink back into the ease and delight of a pleasant one, needs no conscious and voluntary effort. One may reinforce the tendency by conscious voluntary action, but it is not necessary. The tendencies are almost reflex in character. So true is this that individuals are frequently unaware themselves of tendencies that are at work in their own minds. This tendency of the psychotaxes to unconscious levels is helped out by the fact that they are often unmanly makeshifts, which, if seen in their true light, would make the individual appear contemptible in his own eyes and in those of others. Thus, for instance, in the psychotaxis of avoidance by disabling mechanisms: A man's duty is unpleasant. He exaggerates a physical difficulty and so becomes unable to perform his duty and thus gets out of an unpleasant situation. These cases are very common. A careful study of them will seldom give the impression of pure malingering. The physical disabilities are sometimes such as can be produced by hypnosis, but are beyond voluntary control. The man is not conscious that he is pretending. He wants to think, and have others think, that he would come up to the mark if he could. Consequently, the very thought that he is trying to avoid his duty is repulsive to him. He does not allow himself to dwell on it for a moment. He mechanically puts it out of his mind, and the whole disabling mechanism becomes unconscious. Some individuals have a kind of dark suspicion of what is going on in their own minds, especially those given to self-analysis; but others are so taken up with the idea of the purity of their motives and the innocence of their character that they do not see what is perfectly apparent to the disinterested observer. In such cases our enemies often judge us better than our friends.

Again, it may happen, as in the compensations, that one is conscious of the satisfaction and happiness he gets out of certain pursuits, but does not know the precise reason why this particular activity is so pleasing to him. Thus, as we shall see, novel reading is a compensatory psychotaxis. Many people take indescribable pleasure in a certain story, because in reading it they live through pleasures that have never been theirs. But, if asked why they like it, they would never give this as the reason, though they might or might not realize it were it pointed out to them.

In the psychotaxes, therefore, we have mechanisms that are partly

conscious, partly unconscious, with all shades of transition between the two.

We may, as we have indicated, distinguish positive and negative psychotaxes, just as we do the tropisms. The tendencies that we have to enjoy pleasant situations we may group under the name of "the persistent drive." They do not vary very much, though eventually they may become associated with very complex mental operations. The negative psychotaxes, on the other hand, are at first sight many and various. Most of them may, however, be brought under a few headings. The first class are psychotaxes that present no solution—not even an inadequate one—for the unpleasant situation. These are depression and anxiety. There is a natural and innate tendency to be depressed, to worry and fret over unpleasant situations. But this does not get the difficulty out of the way. The second class embraces psychotaxes which involve some kind of solution for the difficulty, however inadequate. There are three possibilities here. The unhappy eventuality may in some manner be avoided. Tendencies which merely aim at avoiding unpleasant situations have been aptly termed *defense reactions*. Here we have a large group of reactions. One may put the unpleasant situation out of mind if it is a mental affair. One may *shut out* the world from contact with one's mind, if surroundings are harsh and unpleasant, and become surly, cynical, sour, silent, secretive, negativistic. One may *become incapacitated* by general weakness or special disability, if one's duties become very unpleasant and there is any way of throwing the burden of self-support or family sustenance on relatives, friends, or the associated charities. One may *avoid* the *realization* of *personal blame* by an exalted sense of one's own righteousness and transfer it to others by suspicions and accusations. One may *keep others from realizing* one's own real desires by a solemn face, or a violent, old-maid shock reaction at the recountal of the sins of others. All these examples are instances of native human tendencies which appear spontaneously in anyone, given the proper circumstances, but not all appear with equal facility in all types of individuals.

Besides getting out of an unpleasant situation, one may seek to make up for its unpleasantness by some new form of enjoyment. If this is attempted along more or less the same level of satisfaction as the lost pleasure which creates the unpleasant situation, then the reaction is termed *compensation*. Thus, one may imagine the fulfillment of unsatisfied desire. One may compensate for an unhappy life by becoming a wit. One may go to a vaudeville show to drown one's discontent. One may *transfer one's affections* from one person to another. One may *appeal for sympathy*—sometimes by making one's self appear sicker than one is, or by convulsive

seizures, etc. Some throw themselves against their enemy hoping for unjust severity that others may see how badly they are treated.

If, however, satisfaction is sought in pleasures of a higher nature, we speak of the reaction as *sublimation*. Thus a woman disappointed in love may become a social worker, or give of her millions to build an orphan asylum, or become devoted to music, art or literature. Music offers to certain natures channels of outlet when the ordinary interests and affections of life are denied them. So, also, literature, art, and science. Religion is the natural sublimation of human desires, always possible and always effective, no matter how great the calamities that confront us.

Along with these natural tendencies to avoid unpleasant situations, to compensate for disappointments, to sublimate life's energies into higher channels, there is often an attempt to meet the situation squarely, ask one's self what can be done, and then actively repress certain tendencies and give scope and place to others. This rational readjustment and active repression is something quite different from an impulse. It is a directive power that is exercised over impulse. It is not a psychotaxis but a voluntary effort that is made under the influence of intellectual insight and ideals of conduct.

The impulses to adjust oneself to difficulties that we have just classified are, in their general outlines, common to all human beings. All of us have a tendency to be depressed and anxious, to avoid unpleasant situations, to compensate for disappointments and sublimate our desires. Any of them, if carried to excess, may become abnormal and distinctly pathological. Thus, if depression deepens into absolute inactivity, if anxiety incapacitates one for ordinary duties, if the tendency to shrink into oneself passes into mutism and refusal of food, the adjustment is clearly abnormal. Some adjustments are essentially pathological—for example, to protest against a situation by a series of convulsive seizures or to incapacitate oneself from duty by a paralyzed arm or leg. It should be noted that none of the reactions here referred to is a purely voluntary sham or malingering. To make up one's mind to escape a difficulty by pretending some kind of a disability is not a psychotaxis but a rational voluntary adjustment. There are, however, a number of *functional* disabilities, that is, conditions that have no organic lesion or disease as a pathological foundation. These had best be conceived of as due to an unconscious pretence. They are often looked upon as hysterical symptoms. Just as there are all stages of transition between the conscious and the unconscious, so also there are between malingering and hysteria.

These abnormal adjustments are very common. They often exist as the sole or the main evidence of a pathological state. Thus hysterical con-

vulsive seizures may occur in a patient without any of the so-called permanent stigmata of hysteria, or an hysterical contraction without any other stigmata and without the convulsive seizures of the classical hysteria. This monosymptomatic hysteria is common in children and was a frequent form taken by the war neuroses. Many of these conditions seem far too simple and clear up far too quickly and easily to be classified among the major psychoses, or even with the psychoneuroses. One might speak of them as abnormal psychotaxes. It seems best, however, to use a single word which will designate their abnormal character without the use of an adjective. The Greek preposition παρά may signify in composition something that is wrong or amiss. We are already familiar with it in "paraphrenia," one of the synonyms for dementia praecox. The term "parataxis," since its roots are not wholly unfamiliar, may serve as a fairly expressive designation of these abnormal reactions, even though it is already in use with a different signification (the opposite of syntaxis).

Reflex action, impulse, desire, and emotions are at times elements of complexes that we term instinctive reactions. Thus, in defending oneself against danger, there will be an emotion of fear, a desire to flee, impulses to strike, vasomotor reflexes along with the reflex secretion of adrenalin and its effects on the mobilization of sugar, the fuel for muscular action, on muscular tonus, etc. The whole operation of the instinct of self-preservation in this case is a very complex affair, some of the elements of which we have just been considering. Among these elements are the psychotaxes. Now the parataxes may be considered as bearing a similar relation to the psychoneuroses and the major psychoses. A soldier comes back from the front with the diagnosis, "shell shock." There is nothing the matter with him except that his right arm is trembling in a gross, disorderly fashion, so that it cannot be used. With a few relaxation exercises the tremor disappears in a couple of minutes. He is sent to the ward and allowed a few days' rest. In a few conversations he is given a little insight into hysterical disabilities, and in a short time he is sent back to the front; and, *mirabile dictu*, makes good, stays, and does his duty. Has a case of hysteria been cured by such a simple procedure? Probably not, but only a condition which might develop into hysteria, becoming more and more complex in its ramifications in the individual's life, had it not been taken at its onset. What one was dealing with here was only one element in the hysterical group of reactions—a simple parataxis and not a psychoneurosis.

Thus the parataxes are elements of the psychoses and the psychoneuroses as the psychotaxes are elements of the instinctive reactions.

## Chapter 22

# THE PARATAXIS OF DEPRESSION

Depression is a form of sadness and, as such, a typical emotion and not an impulse. Emotions, however, in a perfectly normal mental life, are transient conditions. Calamities happen, but the unfortunate sufferer, after a period of sadness and loss of interest in everything, finds occupation and renewed zest in his work. The ability to recover from misfortune, to shake off sorrow, to arouse oneself from depression, varies in different individuals. In those who lack this ability we find not only its negation but also a positive tendency to remain sad and nurse their sorrow. If one whom they love very much dies, a certain sense of fidelity to the departed seems to demand that new interests be shut out and that they remain faithful to his memory by their continued sorrowing. Or, if they lose their money, or their position and station in life, or fail in some enterprise, they are not only sad but seem to want to remain sad. Sadness procures a sympathy which is not bestowed upon the gay pretender who shakes off his sorrow and does not allow others to perceive that he suffers. Many have a keen craving for sympathy. Thus a little girl once remarked to me, "Don't you think it's nice to be sick and have everybody be so sorry for you?" So also with sorrow—many think it nice to look sad and have their friends pet and comfort them, so they stay sad, and their friends help to keep them sad in the vain attempt to console them and to remove their sorrow by lavishly bestowing their tender caresses. The faint-hearted crave these manifestations of sympathy so much that they nurse their sorrow to obtain them. Thus, while sadness and depression are emotions, they are, nevertheless, associated at times with an impulse in virtue of which the individual tends to persevere in his sorrow.

It cannot be doubted that in some cases we find special mental factors, we might say extraneous conditions, such as a sense of fidelity, or a craving for sympathy, that stimulate the tendency to be sad. We must not forget, however, that sadness itself, apart from extraneous mental considerations, has a kind of mechanism of self-preservation. It slows down the flow of thought. In pathological cases this slowing may be so great that conversation with the patient is a slow, tedious process, because of the time it takes him to answer simple questions. Reaction-time experiments show that the time of association of these patients is much lengthened. It is thus difficult for them to consider the various possibilities that lie open to them and to work out a rational solution for their difficulties. When someone else proposes such a solution, his words reach the auditory center but there

their influence ends. Propose a trip, or a new occupation, or a course of study to a normal youth and it at once awakens in his mind a whole panorama of imagery and vast vistas of possible achievement. But in the time of sorrow, associations flow so slowly that these possibilities do not occur, and even if one points them out, the sufferer cannot weld them into his scheme of interests. For that scheme of interests has been shattered by his sorrow. His center of ambition is gone and his mind works too slowly to build a new one and to plan for the future. Thus sorrow, by its natural effects on the mind, produces a tendency to remain sad. This tendency is usually reinforced by extraneous factors, such as a sense of obligation to remain sad in order to show one's fidelity to a soul departed or to a lost cause, or from an innate craving for sympathy. This impulse tending to perpetuate the emotion of sorrow must be distinguished from the depression which it fosters. It is a common type of reaction to the difficulties of life, presenting, however, no solution for them whatsoever and, therefore, demanding modification and control.

It would be wrong to look upon every tendency to maintain a state of sorrow as pathological. Sadness procures sympathy, and sympathy, perhaps has a valuable function to perform. It results in mutual help and is one of the stimuli to altruism which is a very useful acquisition of the human race. Few would be willing to banish all sorrow and all sympathy from a world such as ours in which misfortune is a daily occurrence. And perhaps it is a good thing after all to slow down for a time the torrent of human thought which so often rushes headlong and heedlessly through channels and courses over which reason exercises no control. To stop and think and make a rational plan of one's life is a consummation that is often obtained only as the result of misfortune and the time it gives to pause and consider. Because of this useful and purposive character we may look upon many tendencies to remain sad as normal impulses. These normal tendencies are the psychotaxes of depression. Between them and the depressive form of the manic-depressive psychosis there are a number of conditions which block the individual's activities and are injurious to his normal mental development. They are, therefore, to be considered as distinctly pathological. On the other hand, they clear up so readily under simple mental treatment that they should be distinguished from the psychosis of depression which runs its course wholly unaffected by any psychotherapy whatsoever.

In my experience with depressed conditions, psychotaxis, parataxis, and psychosis shade into each other without any clear line of demarcation. If this be the case, the psychosis of depression is only an outgrowth of a normal human impulse.

Let us consider now some of these transitional conditions:

## The Parataxis of Depression: Examples

A situation rather than an incident is at times the apparent cause of a depression. Thus, a woman of 46 became depressed when her husband was put on night work. The depression, however, did not arise from sympathy with him over the hardship he had to put up with. The result of his night work was that he was around the house a great deal during the day. He was nagging, irritable, subject to explosive outbursts of anger, was harsh and cruel to their boy, and made life unhappy for the little fellow. She had had two previous periods of depression. In the first she spent four months in an asylum. The second lasted for six months, but she was not sent to an institution. This, her third depression, did not come to full development. It cleared up in the course of about two weeks. The factors in the treatment were so simple and the cure so rapid that we can be sure that we were not dealing in this case with a major psychosis but only the innate trend to be sad and depressed and perhaps nurse her sorrow in an unpleasant situation in which she felt that she was unkindly and unjustly treated. A reaction type such as this raises the question: Is the parataxis of depression the root of the manic-depressive psychosis? In this case, where the woman had two previous attacks, in one of which she had to be sent to an asylum, it seems very likely that the incipient symptoms of the third attack might easily have developed into a major psychosis.

The elements of treatment in this case were:

(*a*) Reasoning her into a more rational attitude towards her husband's outbursts of temper. This, by the way, resulted not only in helping her but also in quieting her husband.

(*b*) Allowing her to follow her impulse of adopting a small child from an infant asylum.

(*c*) Stimulating her propensity to find consolation in religious exercises.

Except for minor spells of sadness, there was no relapse in over twenty years during which the case has been followed.

When one human being centers his affection on another and anything occurs to disturb the relationship between them, the inevitable result is a depression. How deep the depression is going to be depends on the ability of the depressed patient to find other centers of interest and affection. A woman of 31 came to the clinic complaining that for about eight months past she had been suffering with abnormal sadness. At times it was so heavy that it seemed that something was smothering her, that the outlook for the future was absolutely hopeless, etc. Her mind was a blank. Her sadness seemed unreasonable to her. She had the typical sad and anxious expression of the depressed patient. With treatment, the whole condition cleared up completely in about a month. She was seen some months later,

very happy and cheerful, an altogether different type of woman from the sad, worried patient who came to the clinic. The treatment consisted in the following elements:

(*a*) Seeking the cause of her depression. This was found from its history. It commenced about the time the man to whom she was engaged became indifferent and ceased calling upon her.

(*b*) Dream analysis: This showed that her ideal was not the man to whom she was engaged but another. Thus it was possible to argue that the outlook was not so black because the man to whom she was engaged had left her. It was really a fortunate incident. She must seek her ideal elsewhere, and it should be possible to find it.

(*c*) Since she was an educated woman, it was possible to offer her some outlet in reading and study.

(*d*) The outlet of religion was in her case readily utilized and of no little assistance.

A past delinquency sometimes acts as a mental boomerang and intensifies, or perhaps produces, by association, a parataxic depression.

A woman of 40 came to the clinic complaining of sadness that had lasted without interruption for about seven months. Her behavior and talk were normal, her face sad, but not so much so as to exclude occasional smiles. About five months previous to what she regarded as the onset of her depression, her six year old child died of pneumonia. This made her sad, but she did not commence to lose interest in things for about five months. Then she became inefficient in her household work and unable to care for the children. She felt that the family must move back into the neighborhood they had left when her child died. This was done at no little sacrifice and expense. After only a few days in the old environment, she broke down completely and was unable to do anything.

An attempt to discover mental factors by the Freudian method of free association led finally to the following complex: She expressed a fear that she was being punished. When asked why, she told us that when she was about twenty she broke up the happiness of a young couple who were about to be married by getting the man to court her. She cared very little for him, but her vanity was touched by his attentions, and she took delight in triumphing over her rival. Their marriage did not take place and she soon dropped her foolish admirer. Now she feels an irresistible impulse to break up her own home and go elsewhere. "My children's affections are turned away from me. They love their father rather than myself. They love other children, but they don't love me. I have lost the affection of those I love. I want to take my children away from their father and away from all other children that they may turn to me."

After this outburst, she expressed great regret for having told me her

history, wanted to destroy the record, left the clinic, and did not return again.

In the cases just mentioned we have conditions that approach the psychoses; the last one was perhaps a real psychosis in which there was an active etiological mental factor. Had it not been for the memory of her past delinquency, and the idea that her affliction was its punishment, she might have borne the loss of her child without becoming so depressed as to be unfit for work and without the natural tendency of a mother to be jealous of the love between father and child becoming pathologically accentuated. In all these cases the constitutional factor that slows down the flow of thought in sorrow and produces a tendency to brood over one's misfortunes was perhaps more active than the sense of fidelity or appeal for sympathy above mentioned. These factors are especially prominent in depressions following the death of near relatives. The content of the patient's thought will at times reveal their presence. Thus a woman who for months after her husband's death was very much depressed frequently expressed the opinion that the marriage legislation of the Catholic church should be reformed so as to forbid the crime of second marriages. The feeling that she must be faithful to her husband's memory was active in her mind and was, in part, responsible for her depression. The depression was an outward sign of her fidelity. Lest some psychoanalyst should attribute her horror of remarriage to a subconscious desire to marry someone else, it may be stated that nothing in this patient's history suggested any real foundation for this hypothesis, and she lived in widowhood for over fifteen years without remarrying.

Whereas any unpleasant event may produce a feeling of sadness, not every incident can call forth the tendency to remain sad. The incident must be one that profoundly affects the individual's hierarchy of desires. It renders him for the time being hopeless, so that he feels sorry for himself, feels that others should pity him, has no longer anything on which to build, for the keystone in the arch of his desires has been knocked to the ground. Thus the situation in which he finds himself is impossible. If he does not change and he does not find new interests, the psychotaxis takes on abnormal features leading to unreasonable persistence in the signs of grief, becomes a parataxis, or may even deepen into the psychosis with its accompanying utter incapacitation for the round of daily routines.

That an abnormal reaction occurs in some men and not in others depends to a large extent upon their inherited constitution. Patients suffering from the manic-depressive psychosis have more insane relatives than normal individuals, and these insane relatives are frequently of the manic-depressive type. It is interesting to note also that the manic-depressive cases are, to a large extent, recruited from those who take to the Bohemian

type of society, for example, artists, musicians, and poets. There is, therefore, in every depression a hereditary organic factor that makes the patient physically disposed to this type of reaction. We have no knowledge of the more intimate nature of this psychophysical disposition. We have a right to assume some kind of physical factor, because it is hereditary and must, therefore, be transmitted by the germ cells, and, in all probability, by some one chromosome of these germ cells. We know, too, that a tendency to emotional reaction may come and go with a physical condition. Shakespeare speaks of "Sleep, that knits up the raveled sleave of care." Most of us have experienced the truth of his insight into human nature. When tired and worn out, all outlook on life seems possible only through glasses that are as blue as indigo. But after rest and sleep, one rises with a new view of the world. Sadness and depression have vanished. If this is the case, it would seem that fatigue products are capable of influencing our mood, and, if so, why should there not be a physical factor in our tendency to sadness and depression?

In every depression there are, then, two factors. One is the native disposition, an hereditary, physical, organic condition; the other is the psychical factor consisting of the incident and the patient's hierarchy of desires. There are cases in which one or the other of these factors dominates almost to the exclusion of the other. The hereditary factor is at times so pronounced that some patients spend the greater part of their lives in a profound depression for which no adequate psychological cause can be found. In some, every spell of sadness has its mental motivation. When no mental factor is found we have no right to argue that it is absent. Depressed patients are peculiarly reticent. Nor can we argue from the suddenness of the onset or cessation of a depression that it must be without any mental factor. Depressions are said to come at times like a stroke of lightning without any apparent cause. I have had few opportunities of examining such cases, but it is within the realm of possibility that repressed trends of discontent suddenly manifest their power in virtue of associations with apparently trivial incidents or perceptions that seem indifferent. Such unnoticed perceptions are at times the starting point of apparently unmotivated trends of thought.[1]

That any individual falls into a depression depends upon his inherited constitution and the strain to which it is subjected. Most of our soldiers, for example, went through the war with no more than the ordinary periods of blues to which all men are subject. One poor private fell into a profound depression with suicidal tendencies when, separated from his organization, he got among complete strangers in the mud and rain of sunny France.

[1] Cf. Kiesow's work on "*Freisteigende Vorstellungen*" in *Arch. f. d. ges. Psychol.*, 1906.

The prophylactic treatment of depression should strike first at the hereditary factor. Persons belonging to a family in which a manic-depressive psychosis has made its appearance should not marry into a similar family. To forbid their marrying at all would, I think, carry practice beyond the authorization of well established theory. It is not certain that this hereditary defect cannot be weeded out by continuous intermarriage with stable mental stock. The defect is recessive and not dominant, and as long as such families marry into stable ones the children will have ordinarily stable constitutions. The next prophylactic measure is to provide the individual by education with a foundation for multiple interests in life. The pursuit of knowledge for its own sake, of literature, science, music, and art, can give a great deal of satisfaction and happiness. The uneducated who suffer from some calamity after passing the prime of life have little to compensate them for their loss and look forward to nothing but a colorless and lonely future. Once a depression has occurred, the earlier it is studied by a competent psychiatrist, the better. In the cases cited, some suggestions for treatment have been given. One must try first of all to find the true cause of the depression and then open compensatory lines of activity and assist the patient to adopt a more reasonable attitude toward his difficulties, by analysis, reason, and persuasion.

## Chapter 23

# THE PARATAXIS OF ANXIETY

Anxiety, like depression, is a word which is usually regarded as referring to an emotion. As an emotion it is something very much akin to fear. Popular usage seems to speak of fear when one anticipates bodily harm in the actual presence of danger, but when one is uneasy about some mental ill or a physical ill which may sometime happen but does not now impend, the term "anxiety" is often used. Again, the word "anxiety" is used interchangeably with fear, or at least with fear of moderate intensity.

With the feeling of apprehension there is associated a definite tendency which serves to perpetuate the emotion. This is *the tendency to bring up again and again to the mind the anticipated evil.* A state of anxiety consists in the ever-recurring activity of this tendency and its inevitable result, an emotion of fear. Along with this tendency to picture the anticipated evil there are motor tendencies, often unreasonable and wholly inadequate to bring about a solution of the difficulty. This fretful activity is the characteristic associate of anxiety.

When, therefore, we speak of a psychotaxis of anxiety we are referring not to an emotion but to a fairly common impulsive type of reaction to an unpleasant situation. This consists mainly in an impulse to consider over and over again unpleasant possibilities.

To be worried about a situation likely to be fraught with dangerous or unpleasant results, to have a tendency to consider this possibility repeatedly is, within limits, a normal and useful reaction, a healthy psychotaxis. It makes for a wise and careful management of one's life. If we did not consider again and again the possibility of mistakes, errors, misfortunes, we would rush heedlessly into danger and fail to shield our lives from harm. It is an ability that must be exercised prior to the solution of the problems that confront us, and there is a strong innate tendency to do so. When, however, no entirely satisfactory solution appears, certain types of individuals keep on going over and over again the possibility that the worst will some day come true—or perhaps that it is even now happening without their knowledge. Thus when a man is guilty of some habitual delinquency, he fears that he will be discovered. He does not want to give up the delinquency, but on the other hand, he does not want anyone to suspect him. The rational solution would be to give up the bad habit, but he is caught in its meshes and feels powerless. The possibility of the misfortune of being discovered keeps recurring and demands a solution.

The conceivable remote possibilities keep multiplying until, perhaps, in almost every action he feels that he is betraying himself. And so a normal and healthy reaction passes into an abnormal and injurious one—the psychotaxis becomes a parataxis. The further growth of this type of reaction depends upon the constitutional make-up. It seems most readily, however, to pass into or become associated with the anxious depressions, dementia praecox, the compulsion neuroses, or the phobias.

The first example that we give came under observation when the patient had already, perhaps, passed into the stage of a psychosis.

The patient was a nurse of about 35 who had been worried to the point of incapacitation by anxiety that others would think that she was not doing her work properly. At the same time, she felt that her mind was getting dull, and she feared that others would perceive this and also divine the cause. She asked for a leave of absence, but this was not granted. She clung on to her work with the aid of an assistant. She was then worried lest she be held responsible for her assistant's work, and felt she should assume entire charge, but this she felt unable to do. About the same time, she commenced to think that others were making remarks about her. They knew she was incapacitated and why. Finally, the whole situation became intolerable, and she resigned her position with manifestations of abnormal excited anxiety. She was sent to a hospital for nervous disorders where her suspicions continued, changing only their form with the new environment. Associated with the anxiety reaction was a very marked reaction of "shifting responsibility." She was in no way to blame for the whole situation. In the first place, she would have been entirely herself had they given her a short rest when it was imperatively needed. Furthermore, people were drugging her and changing her moods from hour to hour in the day. If they would only let her alone she would get well. It soon became apparent to her that in the institution also people were suspecting her. They had noticed her attractiveness. (Her attractiveness, by the way, was of very moderate degree.) They wondered why she was not married. If she did not get away they would soon know all. Furthermore, she felt sure that they suspected why her mind was dull.

She felt that she must, at all hazards, get out of the institution. It was her old difficulty all over again. She had been living once with her brother's family as happy as she could be anywhere on earth. Suspicion commenced to disturb her mind. People seemed to be watching her. Finally, one day someone said, "A nice girl like you ought to be married." This upset her completely. She felt more and more that someone had told her secret. Life in her brother's house became unbearable—though everyone there was kindness itself, she felt that she must leave. So she went many miles away, where no one would know and none would care.

But, when away, she had no longer the stay of sympathy. No one really did care whether she was efficient or not. She became suspicious of others and so her final breakdown ensued.

One day she sent for me—she wanted to tell me all her story. (Exhibitionism?) When I came, she said I had come too late. If they had only sent for me sooner, everything would have gone on well. But now she felt a force hindering the expression of herself. (Negativism?) She had been drugged. Her mood had been changed. Why would not people let her alone? Then suddenly she commenced her story, after being urged to let the matter drop for the present.

From the story, the underlying mechanism of her delusions became apparent. When 19, she suffered an illegitimate pregnancy. The event was kept a secret as far as possible. Some members of the family never heard of it. From that day on she lived a life of fear and trembling. She was in constant dread of the secret leaking out into new channels. When her suspicions became aroused she felt impelled to change her residence, which from time to time she actually did, and finally left home altogether, going very far away. Her difficulties were increased by sexual temptations. She thought that people would know that she was guilty when they noticed her becoming dull and inefficient. Her sexual excitement was attributed to outside influences. People were experimenting on her. A patient brought into the next room was a hypnotist who excited her by his art. Drugs were put into her food for the same reason. She was in no way responsible for her temptations. She was a good girl and had always been good. Why could not people let her alone?

An immediate amelioration and clearing up of the delusion was effected by analysis and helping her to understand that her false attributions were due to an unwillingness to look at herself as she really was. She, therefore, by an unconscious mechanism transferred responsibility to various influences in the outside world. She was also urged to face the past, but to make no account of her fears that an event of sixteen years ago was causing discussion about her at the present. She should shoulder the responsibility of the past and face all the possibilities of the present, hiding nothing from her own mind.

The amelioration, however, was only temporary and was followed a few days later by an attempt at suicide. This consisted in merely taking a few grains of veronal; and we could not determine whether or not the attempt was one with real suicidal intent or a dramatic appeal for sympathy. The patient was transferred to another hospital and has remained for some years without further deterioration but harbors the fixed idea that a man is exerting a malign influence over her life.

In this case, we are dealing, in the stage first depicted, with a parataxis

that approached the stage of a psychosis. It developed later into what would probably be diagnosed correctly as dementia praecox. The fundamental note was the condition of anxiety, the mechanism of which was apparent after a little analysis. Without this analysis the anxiety seems utterly unmotived. Why should people suspect her? Why should they think she was inefficient? When we are simply told that they do, the condition seems very strange, but when we get an insight into the patient's inner life, the type of reaction is perfectly comprehensible to us, for we see the mental roots of her delusions.

Scrupulosity is a form that the anxiety type of reaction sometimes takes. By this term, I refer particularly to the condition in which the patient worries a great deal about whether or not trivial things are grievous sins and is especially perturbed about the possibility of having committed grievous sexual offences, when, as a matter of fact, these patients have usually been quite free from such delinquency. They feel impelled to go over their sins in great detail in confession, and if they have committed more or less serious sexual offences in the past, they have an irresistible impulse to tell the whole affair all over again for fear that they may not have told it just right before.

The mechanism of this condition is probably not uniform.

The most common mechanism at the root of the scrupulosity, which produces a constant drive to confess and confess again, is probably a modification of the more or less crude impulse of exhibitionism. In one case of scrupulosity, the dream content of the individual had frequently to do with being seen more or less undressed and also of confessing her sins before various individuals and at social gatherings. The crude impulse of exhibitionism had been repressed and sought outlet in the attempt to rehash sexual offences over and over again. This was contrary, however, to ordinary modesty and reserve, and from the conflict between the two sets of impulses arose the anxiety, as it *so often does when the war between opposing trends becomes acute.*

In other cases of scrupulosity, I have found a history of actual crude exhibitionism in childhood.

It is to be noted that the scrupulous are mostly women. I have known it to exist in one man of pronounced homosexual trend. It appeared here to have another factor. He felt impelled to go over and over his confession and felt, at the same time, an obligation to enter the religious life. On being told that he probably had no vocation to the religious life, his scrupulosity cleared up at once and did not return. It was, in large measure, a defense reaction against doing what he felt obliged to do for purely logical reasons, while all the instincts of animal nature rebelled against it. That precisely this defense reaction was chosen rather than another was

probably due to a pronounced tendency to exhibitionism in a man with homosexual trends.

When, from analysis of a scrupulous individual, one finds evidence of a sublimated exhibitionism and presents that finally to the patient, there is at first an acute exacerbation, followed by a distinct amelioration. The intensity of the exacerbation is variable.

In the war neuroses, a condition of anxiety was sometimes noticed. One must not confound it with mere timorousness in action. Fear and anxiety are two very different emotions. The man who breaks down at the front from pure fear and candidly owns up to it is not the type of mind that develops what has been termed the anxiety neurosis. But between the two types there are all degrees of transition. At one end we have the state of pure downright fear. The man falls out of line in an advance or, if he is in a trench, gets pale and shaky and altogether unfit for duty and has to be sent to the rear. When questioned at the triage or the evacuation hospital, he says, "I simply cannot stand up when I hear those shells." And if you ask him point-blank: "Do you mean to say that you were afraid?" He says, "Yes." The candid admission of fear at the first questioning is rather rare. Patients usually attribute their condition to being tired out. But if one suggests that a patient be given a rest and sent back, some acquiesce, go back to the front, and are returned at once as unfit for duty. Others at once enter a demurrer, say they cannot stand it, are afraid of the sound of the guns. It is rather curious that so many say they are afraid of the *sound* of the guns and fail to mention that they are afraid that they might be *hit* by a shell.

The ease with which soldiers own up to being afraid of death is, as I have said, variable. Some seem to know that they were cowards at the front but are unwilling to admit it in the rear. It is a shameful thing for a soldier to admit, and it is, after all, a sign of a certain amount of wholesome self-respect when a man does not blurt right out, and say, "I am afraid, I can't stand up under fire." There are others who have started out with good intentions, have been through a number of engagements, and finally break down; and when they do they not only will not admit that they were afraid of death, but seem to be really unconscious of the fact that the fear of personal danger had anything to do with their breakdown.

Before this breakdown they often go through a period of what may be termed "sensitization to danger." I have examined a number of men who volunteered and went to their first engagement with the greatest enthusiasm and carried on under severe shell fire, doing the full duty of a soldier. But in their second or third or *n*th engagement, they break down and are

fit for nothing ever afterwards. An actual concussion experience at the front is one that seems to defy all previous attempts to imagine it. The schoolboy's idealistic dream of battle is one thing. The battlefield itself is something very different. After long marches in the rain, sleeping in pup tents on wet ground, after sneaking into positions in the dark and tumbling over the dead bodies of those who went before, after a harrowing experience of waiting under shell fire, the schoolboy finally goes over the top. A shell bursts near him, kills some of his companions, blows him up into the air, and lands him in the mud, bruised, trembling, and dazed. Then he gets up, and mindful of his duty as a soldier, goes on for several days, perhaps without food, wet, with no place to sleep, and unable to build a fire at night to dry his rain-soaked clothes and to warm his chilled body, and cold-blue hands and feet, for fear of attracting the shells of the enemy. At night there is, perhaps, quiet and time to think of the home he left behind, of the prospects he had for the future, of the dangers that lie before him, of the friends that he has seen killed before his eyes. Perhaps his face has been spattered with their very flesh and blood. And so he passes the several days of the advance, but with credit to himself and to his country. His regiment is finally relieved. He goes back to a so-called "rest area." He refuses to think that he was so unsoldierly as to waver at any time, and buoys himself up with a sense of duty done. He may go through several such advances, but there comes a time when in the "rest area" he is more fatigued than usual. He gets no letters from home. He becomes anxious. There must be something the matter with someone at home or they would write. If he starts to think about the next advance he puts it out of his mind. But he allows full play to his imagination in picturing home conditions. "For after all," he says, "it's a man's duty to think about his dear ones." His worry and anxiety become almost constant. He cannot sleep. The relative quiet of the "rest area" has not relieved but increased the feeling of tension. His regiment gets orders to relieve another one in the front lines. He arrives again in a region where a few shells are falling. He notices that he jumps when the shells explode much more than he did before. He becomes afraid that others will detect it. As a matter of fact, others do see that something is the matter. He tries his best to stand up and do his duty, but he cannot. He has been "sensitized" to shell fire and is good for nothing at the front. He is sent back with tremors that in typical cases soon disappear. But he remains more or less fatigued, worried, and anxious. Although he receives good news from home he is surprised to find that it does not relieve his mind. Perhaps something has happened in the meantime. His anxiety, though, appears even to himself as somewhat unreasonable.

He is thoroughly ashamed of himself; however, he feels utterly incapacitated and frankly admits that he is now no longer in a condition to be of service at the front.

Some are inclined to attribute the process of sensitization to actual organic lesions in the central nervous or vascular systems, or both, due to the effect of high explosives. If, however, we are to credit the accounts given by the soldiers themselves, purely psychological causes may be present. Thus patients are sensitized who never had an actual concussion experience. Mere sight of the carnage has been enough to unfit an enthusiastic volunteer for further duty. Others have been blown up by shells at various times without being bothered in the least. But after intimate chums were shot down right before their eyes they found themselves unable to carry on in the next engagement. It is probable that sensitization consists in having it brought home to one very vividly and forcibly that "these bursting shells may do to me what I have seen them do to others, perhaps to someone for whom I entertain a special affection." It is strange that some break down so soon when others are capable of going through so much, and for such a long period before they finally become sensitive to the experiences of war. Thus MacCurdy[1] gives a very interesting case of a man who went through over two years of war, rising from a private to a lieutenant, and finally broke down with an anxiety neurosis after a definite prelude of sensitization. In such cases it would be interesting to look for extraneous psychological factors so as to see whether or not the final breakdown was due to long-continued physical and mental strain or to the complication of new mental problems changing the patient's general attitude.

What seemed characteristic of the anxiety neuroses at the front was the repression of the idea of being afraid, so that in typical cases the patient was wholly unconscious of the fact that he was incapacitated because of his fear of death or personal injury. The fear was then displaced in consciousness to some fictitious object. The most common object was home conditions. "I have received no news from home, something must have happened, someone may be sick or dead." A little reflection, however, would show one that letters from home were not to be expected. In the first place, the postal service was bad, and long delays were common; in the second place, the soldier had been with a regiment always moving and perhaps long out of touch with postal communication. Reference of the anxiety to a laudable solicitude for those at home excused the patient and defended him from the shameful admission that he, a soldier, was afraid of death. The conflict between his fear of death and his desire for

[1] *War Neuroses*, Utica State Hospital Press, 1918, pp. 4–6.

military glory and the honor and respect of his comrades, and perhaps also his sense of duty, was the fundamental cause of his anxiety.

Even in these cases we see the tendency of the cause of anxiety to be forgotten. When this takes place and the parataxis develops into a full-blown hysteria, instances are known where the physical symptoms of fear are called forth by some incident that has an unrecognized association with the cause of the condition, and the patient suffers from palpitation of the heart, nausea, dizziness, etc. The reaction appears to be wholly without cause and its real significance is revealed only after analysis.

The normal psychotaxis of anxiety is nothing but an impulse to use the ability to think over a situation and its dangers. It may be called forth by the apprehension of the possibility of any painful event whatsoever. Individuals differ markedly in their tendency to persevere in the impulse. This marked difference is probably due to hereditary factors, so that anxiety is not a wholly psychogenic mechanism. There is, however, a psychogenic factor that enters into pathological states of anxiety, and that is an apparently irreconcilable conflict between incompatible desires. The soldier, for instance, cannot be sure of saving his life if he risks it. If he tries to save it he runs into the danger of being called a coward. It was this conflict that lay at the basis of the anxiety neuroses of the war. These neuroses differed from the other war neuroses in that the patients from one point of view desired and from another point of view did not desire both horns of their dilemma. They wanted to make good, but they did not want to be killed. They wanted to escape danger, but they did not want to be called cowards. Other patients, who had no very strong desire to make good and were bent mainly on shrinking from danger, responded to the same situation by some kind of defense reaction that disabled them and withdrew them from the zone of operations.

A similar conflict exists in those whose conflict proceeds from difficulties of the moral life. They want to keep the moral law and maintain an appearance of respectability in the eyes of others and also in the forum of their own conscience, and at the same time they feel a craving for pleasures that are prohibited by the moral law. This craving is suppressed with more or less success. If unsuccessful, so that the craving is at times indulged, the anxiety remains associated with the desire that causes it. If successfully, so that the craving is never indulged, and the patient does not even admit to himself that he has it, the anxiety is likely to attach itself to other things in which the patient does not scruple to admit his interest. Thus, in the war neuroses, the men worried about what might have happened at home. An officer in the engineering corps became obsessed with the fear that he might have left his instruments behind. Others worried lest they might have made some mistake.

The fears and anxieties resulting from such conditions are sometimes termed "phobias" and are often the symbolic expression of the suppressed desire. This is conditioned by the fact that one and the same thing from different points of view is both desired and not desired. A school teacher came to me with a phobia that was gradually becoming more and more extensive. The basis of it was an infantile sexual curiosity. It commenced with the fear of a certain street through which she could not pass and, therefore, she had to take a long, circuitous route to school. Free association revealed not only the fact of early curiosity, but also that on this street the school children were in the habit of writing obscene words and drawing obscene pictures on the walls. The anxiety about this street arose from the fact that she wanted to look at the walls but felt that she had to keep her eyes on the ground. Each time she went through it, it renewed the whole conflict that was going on in her mind, so that it became a painful, fatiguing journey. If she looked up she was afraid that people would think that she was curious about the walls and then they would know all about her conflict. The necessity of restraining her eyes then extended to all sorts of public gatherings, to all streets that were crowded, to the classroom itself, so that teaching became an intolerable burden. The phobia became associated with a "compulsion neurosis," a tendency to look, which had to be continually suppressed when in public.[2]

The conflict of incompatible desires, neither one of which will be downed, is the main factor in producing a state of anxiety. Exceptions will be found to the narrow Freudian concept that anxiety neuroses arise only in cases in which sexual gratification is desired but not possible. The tension arising from the impossibility is a factor but not the real cause. The anxiety arises from the natural tendency to consider possibilities in all sorts of difficult situations. When one is in a dilemma and wants each side at the same time and likewise fears lest he be impaled on either horn, the condition of worry is perpetuated. Repression leads to all sorts of symbolic expression and apparently unmotivated outbreaks of the physical symptoms of anxiety and fear.

As a rule, the anxious person should be made to understand fully the cause of his anxiety. Realizing the true reason for his condition is frequently sufficient to bring it to an end in cases that are not of long standing. The treatment of the anxiety neuroses at the front consisted in nothing more than this—plus, of course, the short period of rest during which it was accomplished. The reason why mere knowledge of the subconscious

[2] Analysis helped this case, I think, but did not cure. It made work possible. It did not do away with the conflict. I was not successful in opening channels of compensation or sublimation that afforded adequate satisfaction. The opening of these channels and not analysis alone is the secret of success in curing such cases.

motivation of behavior brings about its modification may be shown by the following analogy. A man can play upon your mind, arouse your sympathies, and excite your resentment by presenting to you a number of plausible arguments, which he, by a knowledge of your character, knows will appeal to you. It is necessary for you to think all along that he is honestly striving for the ends he proposes to you. But if once you discover that he has been playing upon your emotivity for sinister ends of his own, about which he told you nothing, his power of influence dwindles into nothing. Our "lower self" is very fertile with these specious reasons. Attempt to do anything good but costing unpleasant exertion or repression, and at once the mind is ready with all manner of excuses. When the anxious person tends to the side of his dilemma that involves the exclusion of natural cravings, he meets with a storm of internal opposition. To understand fully the source of this opposition helps him, for it enables him more easily to enter into paths of compensation or sublimation.

The fundamental cure consists, however, in the solution of the dilemma. One side must be taken and the other really and genuinely given up, or satisfied in a manner that does not conflict with the demands of the other side. Thus, in a case reported by Frink,[3] a girl was cured by analysis of an anxiety about going out alone. The analysis made it possible for her to resume her friendship with a man she loved and to marry him. The opening up of this happy solution to her difficulties and its actual accomplishment was the real reason for her cure. If no solution to the problem of her future life had been offered, it would have helped her but little merely to understand herself.

Some doctors do not scruple at an attempt to bring the conflict to an end by sacrificing the moral law. Even Freud has entered a demurrer against such attempts by describing them as *wilde Psychoanalyse*. Whatever one may think about the moral law, one should regard it as embodying the sanctions of experience. It cannot be infringed upon with impunity. The Gordian knot of the psychosis is not to be cut but unraveled. The patient needs not the skill of the physician for any such solution. Some patients with false consciences may be very much helped by finding out from a trustworthy moral guide that what troubles them so much is not a delinquency. But duty and moral obligations cannot be sacrificed in order to overcome anxiety, however great. The task of psychology is the finding of a real solution which will do away with the anxiety and, at the same time, not deprive the patient of the safeguards of the moral law.

[3] *Morbid Fears and Compulsions*, New York, Moffat, Yard & Co., 1918, pp. 444–495.

## Chapter 24

# PARATAXES OF DEFENSE

Whenever it is possible for us to avoid or escape an unpleasant situation, we experience a strong tendency to do so. Whether the difficulty be little or great, there is a natural tendency to avoid it. In some, this tendency may be obscured by ideals of conduct, but from birth it exists in all and no one entirely overcomes it. The difficulty may come to us from without—from our relations to the external world—or it may come to us from within—from painful memories or unpleasant considerations. In the former case, we avoid persons or things or shrink from situations that are unbearable. In the latter, we put disturbing memories or concepts out of our mind and turn to other things. In both cases we may be said to defend ourselves against the experience of some unpleasantness.

This reaction has many modes, so that the psychotaxis of defense is a unit, not because of the means used in avoiding unpleasant conditions but because of the unity of the cause that calls it forth—the unpleasantness of a disagreeable situation.

The defense reaction does not wait for mental considerations and voluntary initiation, though it may be intensified and sustained by the will. It is a prompt, natural, involuntary response to any unpleasant event whatsoever. There is an instinctive tendency, for example, to keep others from talking about anything in our lives that we look upon as shameful or disgraceful. And, furthermore, we do not like to think about such incidents ourselves. Some may be inclined to deny this, but, if they examine themselves well enough, they will find not only events of their past life about which they do not desire any general conversation, but some events—especially those involving wounded pride—which they do not think about very often, and if they do, the events are at once glossed over with excuses.

### The Defense Reactions in Everyday Life

There are a number of little ruses in everyday life whose true nature is seldom penetrated by the nonpsychological observer. Go to a man and lay a plan before him. He praises it highly, and says, it's a "bully" scheme. Then he gets serious, says it's a very important matter and suggests that you and he have a meeting with X and talk the thing over. If you are a psychologist, you are at once suspicious that there is some reason why your friend does not want to take part in your "bully" scheme. When

the meeting takes place and difficulties commence to multiply, you know that the consultation is a defense reaction to keep your friend from saying "yes" when he has not the heart to say "no"

Try to help an old man to put on his coat, or get out of a carriage, or into a car, and he impatiently pushes you aside. To accept your polite offer would mean an acknowledgment of its usefulness. This would bring home to him the fact that he is growing old—an unpleasant fact to face—and so, immediately, the mechanism of his defense reaction is set going and he tells you, somewhat testily, that he is perfectly able to get along by himself.

Enter into the inner life of many a wit and you will find elements of sadness and trends of discontent. Wittiness is often a defense reaction against one's own unhappiness.

Let a toper resolve to quit drinking and he will very soon think it necessary to take a little wine for his stomach's sake—in fact, he will realize that his whole physical constitution was, still is, and always will be such that a little alcohol is essential to his metabolic needs. Such ideas are defense reactions against the carrying out of his good resolutions.

Suppose a man makes up his mind to do an unjust act—one that involves some injury or hardship to his neighbor. He will soon commence to think that Jones, after all, deserves to be punished and corrected, and he is only meting out to Jones his just deserts. For every wrong that one may conceive of doing, there is always an excuse, which, though it does not exonerate, will at least diminish guilt. Excuses are defense reactions that ward off the unpleasant sense of personal guilt.

Men not only want to think well of themselves but also to have all the world esteem them highly. If, therefore, they have motives or desires that the crowd condemns, they defend themselves against common opprobrium by disguising the inner working of their minds. A common way of doing this is to manifest horror or disgust at the recital of the delinquencies of others by what might be termed an *old-maid shock reaction.* A certain amount of regret at the unfortunate actions of others is natural, and its manifestation has no especial significance. When, however, anyone betrays extraordinary disgust and expresses himself in very strong terms about the matter, his shock reaction is a "complex indicator." He himself has had a great deal of trouble with the very matter he condemns. His manifest disturbance and horror about the affair is a defense reaction which keeps anyone from suspecting that one who is so violently shocked would ever have dreamed of such delinquencies, and tends, in fact, to lead others to think that they are peculiarly foreign to his nature.

These examples are illustrations of minor defense reactions in everyday life. Let us now consider the various types of this psychotaxis. In

so doing we shall treat also the parataxic forms—the order of treatment being that of psychological similarity rather than pathological intensity.

## Typical Defense Reactions

### A. Those proceeding from internal difficulties

1. *Forgetting.* Forgetting is said to be a defense reaction. Freud propounded this theory in his psychopathology of everyday life, maintaining that if we forget a proper name there must be someone among our acquaintances, bearing this name or one similar to it, whom we dislike very much. So our inability to remember proper names in general, according to Freud, is due to their association with things that we do not like to remember.

There have been a number of experimental investigations of this important psychological theory.

Peters published in Kraepelin's *Psychologische Arbeiten*,[1] in 1911, a study entitled, "Gefühl und Erinnerung. Beiträge zur Erinnerungsanalyse." In his experiments a word was spoken to a subject, such as "yesterday," "blame," "might," "silk," "give," "ugly," or "soldier." The subject's task was to think as quickly as possible, without choice, upon some event of his past life, and as soon as he had done so, to say "yes." The interval between giving the word and the subject's response was measured by a stop watch. He was then asked: (1) Had the event when experienced a tone of feeling? If so, of what kind? (2) At the moment of its reminiscence, had it a feeling tone? If so, of what kind? (3) How long ago did it happen? (4) How often was the same event experienced? (5) How often has this event been remembered? In 879 events thus remembered, 80 per cent, when experienced, had a tone of feeling; 16 per cent were indifferent; 4 per cent questionable. Of the events with feeling tones, 65 per cent were pleasant, 30 per cent unpleasant, and 5 per cent mixed.

E. N. Henderson, in 1911, took up the same problem.[2] Ten subjects were asked to give incidents remembered from his or her daily life—the earliest that could be recalled just as they arose, without selection. One hundred such memories were obtained from each subject. The memories were then classified, and it was found that 55.1 per cent were agreeable, 11.8 per cent indifferent, 33.1 per cent disagreeable. The author argued that because pleasant experiences are much more numerous than unpleasant, therefore, we "remember a larger proportion of our disagreeable experiences than we do of our agreeable ones."[3]

[1] Vol. VI, pp. 197–260.

[2] "Do We Forget the Disagreeable?" *J. Phil., Psychol. & Scient. Methods*, VIII; 432–437, 1911.

[3] *Loc. cit.*, p. 436.

In 1912, Karl Birnbaum published his study, *Über den Einfluss von Gefühlsfaktoren auf die Assoziationen.*[4] He chose what he regarded as (1) words which have a tone of feeling, such as death, health, riches; (2) indifferent words, such as hand, hat, house; (3) words which he supposed would have a personal feeling for the subject. Orderlies, supposed to be normal, showed no difference in their reaction time to pleasantly and indifferently toned words. Hysterical subjects showed no pronounced difference, but whatever difference there was indicated that unpleasantly toned words had a longer reaction time. Depressed patients also showed no pronounced difference in their reaction time.

In 1913, William D. Tait found[5] that words referring to pleasant things are remembered better than those referring to unpleasant things, but that indifferent words are not so well remembered as either pleasant or unpleasant words. His results, however, are clouded by the fact that he neglected to take into consideration the effects of retroactive inhibition.

None of these experiments really decides the question of whether or not the association of a word with an event we do not wish to think about makes the word more difficult to recall.[6] For not all unpleasantness tends to make us want to forget. Hardships are remembered with pride. Again, no one can, by inspection alone, pick out indifferent words from those that are emotionally toned. What is indifferent to one subject leads to the liveliest associations with another.

In the light of more recent experimental work, it would seem that there is a certain amount of probability that there is in our psyche not only a natural tendency to put out of our minds certain occurrences that we think about with reluctance but also words that are associated with such unpleasant events. Certainly all forgetting is not of this type. The mere fading of sense impressions goes on at a definite rate. It is a logarithmic function of time. This fading is independent of emotionally toned association. Is there over and above this another law of memory, in virtue of which we tend to forget all the associations of anything we hate or despise? This question cannot, as yet, be given a positive answer.

Besides the forgetting of words, amnesia for incidents and periods has been attributed to the desire to forget them. Long-forgotten incidents in childhood are brought out by association and looked upon as the cause of neurotic symptoms which disappear when their relation to the repressed memory is demonstrated. It happens very often that the demonstration of the connection between the symptoms and some repressed incident does

[4] *Monatschr. f. Psychiat. u. Neurol.*, XXXII: 95–123, 194–220, 1912.

[5] "The Effect of Psychophysical Attitudes on Memory," *J. Abnorm. Psychol.*, VIII: 10–37, 1913–14.

[6] A work in my own laboratory, as yet unfinished, tends so far to confirm the Freudian theory.

not cure a psychosis. In such cases, psychoanalysts maintain that the analysis has not been pushed far enough to get at the deepest roots of the patient's difficulty. Writing from my own experience alone, I can only say that I have not as yet unearthed an event in any patient which was so completely buried that it was clearly impossible for the patient to recall it, under any circumstances whatsoever, without the aid of analysis. This is not in any sense a denial that such cases may exist. I have, however, several times seen cases in which it seemed to me that neurotic symptoms were due to their association with unpleasant memories, while the patient himself saw no such connection.

It is said that a patient may forget a whole period as a defense reaction against his responsibility for acts committed during that period. Thus, a young man got married against his mother's will, ran away from home, got into trouble with his wife, and developed a twilight hysterical state from which he recovered with complete amnesia for everything that happened from the time he left home to his recovery. He developed, moreover, a complete loss of recognition of the woman he married. The teleological value of such an amnesia is evident. It defended him against the admission of responsibility for what he did and enabled him to go home and to be petted and nursed as a poor, unfortunate, sick boy.

The *petit mal* attacks of epilepsy often resemble such cases when their twilight state is sufficiently prolonged. Again, the forgetting is simply an element, one symptom in a complex which aims not directly at forgetting, but rather at disabling. The amnesia following concussion experiences in the war was often psychogenic. The reason for thinking so is the frequency with which many amnesias cleared up by suggestive treatment, such as faradic stimulation.

Patients who for days had had no recollection of any event in their past lives, but went about in a dazed condition, would in a few minutes have their memories completely restored by the suggestive effect of an electric battery. The motivation back of these amnesias was not a desire to forget but to produce a condition that would necessitate the patient's return to the rear.

2. *Excitement.* The constant, ceaseless activity of many individuals is a defense reaction against sorrows that have deprived them of the zest of living. Heroes and heroines in novels often plunge into seas of excitement. In thus picturing their characters, novelists have but given expression to tendencies which they have observed in themselves or in others. Is it possible to conceive of the excited phase of manic-depressive insanity in this light? Does the depressed patient, after long nursing his sorrow, finally attempt to drown it by ceaseless and unending activity? I know of no evidence to show that this is the case other than the fact that the

excitement of some normal individuals has its roots in a desire to forget. It may, therefore, be possible that some abnormal manic conditions have in them an element of accentuation of the psychotaxis of defense.

3. *Transfer of Blame.* We are familiar with this psychotaxis in everyday life. Whenever two or more individuals are engaged in a task that fails or falls short of expectations, it is very rare that one of the individuals steps forward and shoulders the responsibility. If the undertaking succeeds, all are usually ready to claim a lion's share in its accomplishment, but if it fails who is there to say, "It's my fault, blame me"? What is true of single tasks is true also of the failures of a lifetime. Men look back upon their life and attribute their downfall to the malign influence of enemies, to their unfortunate lack of opportunity, to their unhappy home conditions, to downright bad luck at critical moments, to everything that they can think of except their mismanagement of their own personal affairs If the saddest of all sad words of tongue or pen are these sad words, "It might have been," doubly sad are these words, "It might have been, if I had only acted as I could and should have done." If a man has enemies who attempt to bring about his downfall, it is often his own fault that he has made them. If a man fails through lack of opportunity, it is often due to the fact that he has not made himself the type of man in his trade or profession to be sought out that opportunities may be offered him. If a man has bad luck at a critical moment, he is often responsible for bringing about the crisis, and his "bad luck" is sometimes a euphemism for his own poor judgment. If an unhappy home has been a drain upon his energies, he himself has often been the dominant factor in making his home unhappy. To realize all this fully would be a deep affliction to any human being. Hence the mind tends to defend itself against any such painful experience and spontaneously transfers the blame to someone else.

So natural is this tendency that even in little and trifling matters we blame, with delicious spontaneity, inanimate things for our own negligence. Thus we kick the stone on which we stumble, whereas we ourselves should have looked out to see where we were walking. We curse the fountain pen that dries up, whereas we ourselves should have taken care to have it filled. We blame the razor that pulls, whereas it is our own business to keep it honed and stropped. We damn the fire that will not burn, when we ourselves laid it so it cannot burn, etc. There is no impulse among the psychotaxes that seems so natural to the human mind as this spontaneous transfer of blame.

Closely associated with it are suspicions and ideas of persecution. It is seldom that a successful man takes an attitude of suspicion towards others. It frequently happens, however, that when misfortune impends, or is already present, one commences to search for reasons—looking always without and

never within—and so his attention is attracted to the peculiar actions of others. At first he suspects, finally he blames, and commences to think that he is persecuted.

Even minds that have suffered no organic toxic deterioration are capable not merely of vague and groundless mistaken judgments about the actions and intentions of others but also intricate suspicions and delusions of persecution. When, however, the critique of his own opinions suffers some impairment from toxic cerebral conditions when the patient is painfully aware of the ruin of his life, he reacts to that unhappy situation by transferring the blame to others in the most bizarre and impossible fashion. Hence, when patients have sensory hallucinations, they do not attribute it to the disordered action of their own mind. To admit that their minds might possibly be deranged would be to court the very specter that they fear. Therefore, another explanation is sought, and when the critique of judgment is gone, no interpretation is too impossible to be grasped at as an escape from the awful realization of actually present insanity. Consequently, if they feel a tingling in the skin, someone is giving them electric shocks. This someone is often an individual whom they dislike or of whom they were jealous before their mental derangement. If they have auditory hallucinations they feel that the vile words could not possibly come from their pure minds, and so attribute them to beings that are persecuting them, men or devils as the case may be. So, also, hallucinatory flashes of light are attributed to the malign influence of enemies who are throwing searchlights on the wall and into the room where they sleep, etc.

### B. DEFENSE REACTIONS RESULTING FROM EXTERNAL CIRCUMSTANCES

1. *Negativism.* Negativism is a term introduced by the German psychiatrist, Kahlbaum, to designate a common psychopathic condition in which the patients shut themselves out from the influence of all external impressions, become wholly unapproachable towards personal communications, resist any order, persuasion, or suggestion, and often do precisely the opposite of what is requested. Such patients will often maintain peculiar attitudes all day long, apparently oblivious to everything that is going on about them. Questioning them after they have come out of the condition shows that they have all along taken in most of what was happening. They have learned the names of doctors and patients whom they never met before they came to the ward and have picked up a great deal of information from the gossip of the patients. If a negativistic person is standing and you ask him to sit, he holds himself as stiff as a poker. If he is sitting and you ask him to stand, he clutches the chair in apparent defiance. Frequently they remain silent for days (mutism). Often they refuse food. Sometimes they will not eat their own dinner but will steal that of a fellow patient.

### *Roots of Negativism in Normal Life*

It would be a mistake to regard this reaction as the product entirely of psychopathic conditions. Careful observation of normal individuals, especially children, will reveal its embryonic stages. Children are negativistic toward one whom they dislike; when they are angry, towards everybody. If a man whom a child dislikes tells him to sit down the youngster is very likely to respond by standing erect and saying, "I won't." In fact, children dislike being ordered about by anyone and, purely from this distaste, have a tendency to do just the opposite of what is commanded. Nor do adults entirely grow out of this childish impulse. Nobody likes to be ordered about. It lowers self-esteem to be under anyone's thumb; but to show our ndependence, letting the would-be tyrant see that he has no authority, going against his orders and doing just the opposite, gives one a satisfying sense of self-sufficiency and perhaps even a feeling of superiority.

### *The Shut-in Type of Reaction*

Negativism as a normal psychotaxis never extends its ban beyond certain individuals, except for periods of anger and pouting, which pass away in a few hours or a few days at the most. Whenever the individual is negativistic towards the whole world for long periods, the condition has passed from the psychotaxis to the parataxis and is no longer normal. We may speak of a character manifesting this kind of parataxis as a shut-in reaction type. It is a common reaction in boys when they leave home and go to school. From an environment where they had pretty much everything their own way, some boys pass to the boarding school, where very little goes according to their liking. Instead of yielding to their whims, the new companions fight. Bigger boys bully them, small boys tease them, so that the youngster, who has been fondly coddled and cockered at home by unwisely indulgent parents, has to learn his first lessons in self-restraint from those who administer it without mercy. Some shrink back from these harsh surroundings and become the quiet, lonely, friendless, much-teased, and little-respected boys that are familiar sights in most large institutions.

Francis Thompson attributed this reaction type to Shelley. In his description of Shelley, he merely expressed his own experience and defined for us perfectly the praecox reaction of the child.

> So beset, the child fled into the tower of his own soul, and raised the drawbridge. He threw out a reserve encysted in which he grew to maturity unaffected by intercourses that modify the maturity of others into the thing we call a man.[7]

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[7] *Essay on Shelley*, London, 1909, pp. 33–34.

*Case History*

Some cases of this parataxis of recoil very closely resemble dementia praecox, but they clear up too quickly for us to think that we have really been dealing with the deterioration implied by a dementia. The following case, except for its prompt recovery, would probably have been diagnosed as dementia praecox.

The patient was a soldier, a private in A.E.F., white, aged 26. In 1910 he had a mental breakdown in which he fell into a kind of dreamy shut-in state, much more profound than the present. This he attributed to a wild life with prostitutes and private sexual excesses. His personal history was otherwise negative.

He was drafted, arrived in France in August, and got to the front in September. He saw service in a signal service platoon. He was at first frightened at the sound of the big guns but soon got used to them. He went to the Toul sector and was in the drive of the last three days of the war, helping to string wires. He did his duty during the period of the activities. His trouble did not commence until his regiment started to withdraw after the armistice. The first thing he noticed was that he worried about his friends among the boys who were at the front. He wondered how they came out. Then he was troubled with insomnia. He then noticed he was getting run down. He was slow about putting his pack together. He was slow to think. He felt sad about the war—about the friends he had lost among the boys whom he knew who had been badly wounded—and the many more whom he did not know. Finally, on his way to Chaumont he broke down entirely. He simply could not get his pack together. He was not conscious of wanting to evade his duty, but he was thinking about home and his present unhappy lot. He was sent to a base hospital where he was reported to have many trends suggesting a praecox personality, such as reticence, lack of frankness, and seclusiveness.

When I saw him in another hospital, the praecox symptoms were more pronounced. He did not speak unless someone addressed him. He often soiled the bed. He kept his eyes closed a great deal of the time though he was not sleeping. When his eyes were not closed, they were wide open, staring into space. Sometimes he stood for a long while in peculiar catatonic attitudes, apparently asleep. If you tapped him on the shoulder, he started like one awakening from sleep, and on attempting to engage him in conversation, he stared at you in a peculiar manner, smiled in a sickly fashion, started a sentence and without finishing it lapsed into a dreamy silence.

Repeated efforts to get him to talk were more and more successful. Finally, he told something of the content of his mind while dreaming in his awkward position. He rambled on about how there is a duplicate of every

man and that there is to be a wonderful new world. Everything is cheerful. There is a great Christian army. They will help everyone. God leads it. Then he complained of the swearing that he had to listen to all around him. Again he talked about the navy, then of his girl, and of her wonderful part in the army, and how all the nurses and all the telephone operators had a great work to do in running the switchboards.

I then merely suggested to him that he was like a man asleep and had mixed up the United States Army with the work he hoped to do for social betterment after he returned to America. His eyes stared a little and he seemed to have an inkling that what I said might be true. On the theory that I was dealing with a parataxis of recoil, a shrinking into dream life to get away from unpleasant surroundings, I tried to bring him into contact with reality by taking him to the shop and getting him interested in a little carpentry. Every few days I had a talk with him about the army and tried to disentagle the A.E.F. from his schemes for social betterment. There was a marked improvement in a short while. It was interesting to watch the gradual but steady clearing up of the peculiar staring expression. I asked him one day what he meant by the duplicate of every man. "Well," said he, "you know that when a person has a battle with himself there are two sides—apparently two different persons." I had not time to analyze his condition, nor was it necessary. In less than two weeks he had entirely cleared up, with complete insight and rational plans for the future.

I regarded the case as a parataxis of recoil and not a depression (his attitude, manner, mood, conversation differed from that of manic-depressive patients) and not a dementia. I then argued that an attempt to draw him back to the real world should be successful. The therapeutic test lent confirmation to the theory. Whether the theory was correct or not, the case shows us a young man, no longer buoyed up by the excitement of war, worn out with marches, painfully conscious of his uncouth surroundings—the mud and the rain and the cursing of his companions—suffering also from a moral conflict within, finally breaking down, shutting the world out and entering into a dream life by himself. Whatever deeper factors may have been present, the case illustrates fairly well the parataxis of recoil and shows that such conditions may be cured without deep analysis, by merely attempting to draw the patient out of his dream life with himself back once more to the world of things.

2. *Voluntary and involuntary incapacitation.* The simplest form of defense against an unpleasant situation is withdrawal by incapacitation. Incapacitation may be consciously or unconsciously caused. There are two extreme forms of conscious and voluntary incapacitation. The first form is pure, downright malingering, that is, conscious pretense and imitation of disabilities that the patient knows he does not possess. The other is to

inflict a wound on one's self voluntarily, in order to escape from duty at the front. In my experiences in World War I, cases of the latter were more frequently detected than those of the former. The reason for this is that malingering seldom fabricates a condition that has no semblance of reality. It takes minor disabilities and pretends that they are greater than they really are. The exaggeration of symptoms is sometimes, but not always, a voluntary and conscious act, because our own fears picture to us possibilities that have only a shadowy foundation. In many minds, the transition from fear that they may have a disabling symptom to belief that they do have it is an easy one, especially if some advantage is to be reaped from the loss of function. It would seem, too, independent of any advantage to be reaped, that the suggestion, "I am disabled," is planted by organic injuries and outlasts the anatomical and physiological disability. Thus, with all organic injuries, there is also a mental or functional accretion which makes the injury seem worse than it really is. What leads us to this conclusion is the fact that the disabilities that have their origin in organic injury can often be suddenly improved so much that they are practically cured, there being left behind only traces of the original condition. Were we studying disabilities from the medical rather than the psychological point of view, it might be well to introduce a few examples here from the rich material that the psychotherapy, developed at the front, has placed at our disposal. Here, however, we are interested in the psychotaxes and parataxes as elements in our mental life and not in their medical aspects. The field of their manifestation is in the interesting group of cases that shade off from malingering over into neurasthenia and hysteria, and it is here that we may study them to the best advantage. There is no sharp dividing line between voluntary deception or malingering and the unconscious manufacture of hysterical disabilities, any more than there is between the conscious and unconscious.

### *The Reaction of Incapacitation in Childhood*

Children are so often incapacitated by the exaggeration of their minor ailments that we may regard most forms of this impulsive tendency in childhood as psychotaxic rather than parataxic in nature. Children quickly recover from hysterical ailments when they are made to realize that the disability is a far greater burden to them than an advantage, or, at least, that it does not obtain for them the calculated immunity or much-desired indulgence. Parents who do not understand this frequently have their children dominating the household. One of the more common forms of disability in childhood is a functional chorea, or rather choreiform movements.[8] Functional choreas sometimes clear up promptly on asafetida, a drug that has no

[8] This statement must not be taken as signifying that all chorea is functional.

physiological action, but which to most children is so unpleasant to take that it is far more advantageous to get well than to continue the treatment. I have seen cases, in which arsenic had no effect, clear up promptly on asafetida. Now arsenic is not unpleasant to take and is supposed to have an obscure, as yet unexplained, physiological action in curing chorea. It would look as if the unpleasantness, rather than the physiological action of the drug, was effective in certain cases.

Another form of disablement in children is the convulsive seizure. One boy that I examined had a convulsive seizure the second day he had to go to school, just as he was going out of the front gate. His mother ran out to him, picked him up, nursed him, fondled and petted him, and fed him daintily for several days thereafter. The consequence was that every time he was sent to school thereafter he had another convulsive seizure with a repetition of the coddling treatment. In this way he managed to avoid school altogether, and at 17 could neither read nor write.

Another form is the tantrum—crying, shrieking, falling on the floor, kicking, biting, and carrying on generally in such a disreputable manner that the parents are put to shame, and the neighbors often think that the child is being very badly treated. Thus, the child gets and enjoys a great deal of undeserved sympathy, the craving for which is so keen with most children.

There is no doubt that these reactions occur more easily in some children than in others, so that there is a constitutional factor always present. As a rule, it is insufficient to produce the condition. One child, who had the wildest tantrums I have every seen, followed by foaming at the mouth and exhaustion, so as to make one consider the possibility of an epileptic seizure, when taken away from home and administered one good whipping, changed his character completely, and became a gentle, well mannered, and lovable child. Mismanagement at home, consisting in unwillingness to administer correction when it is indicated and a false tenderness which delights in satisfying the child's every desire, is usually the prime factor in developing these parataxes of defense by which the child attempts to escape the unpleasant situations that arise in the course of its education and training.

It is from such children as these, in my opinion, that are recruited the ranks of the adult pretenders, whether they are downright malingerers, or are shirking their duties and responsibilities by the more circuitous route of a psychoneurosis.

There are two general forms which this defense reaction takes in the adult: (a) that of general disability or (b) that of one or more special disabilities, or hysteria.

### A. The Parataxis of General Disability

When a man's work is humdrum and uninteresting, when there are elements of fundamental discontent in his life, so that he has nothing to make it seem worth while, it is very likely to become so burdensome to him that he feels himself incapacitated and so breaks down and gives up. When in this condition, a little exertion fatigues him; he is angered on the slightest provocation; he feels himself unjustly treated if his will is crossed in anything; he complains, grumbles, criticizes, becomes sour, cynical, discontented. At the front this condition was at times a disabling mechanism that kept men from doing their duty. It was the war neurosis which caused the most concern to the conscientious physician. It is so difficult to exclude obscure, organic conditions as a cause of weakness and disability that one hesitates to label a case neurasthenia.

One of my cases, a lieutenant in the army, presented symptoms of fatigue that might easily have been due to overwork. He professed a desire to get back to work, which proved, however, not to be genuine. Physical examination was negative. He had at first only two subjective complaints—one that he was tired, the other that the little finger of his left hand became numb after people commenced to tell him that he looked tired. Rest only made him worse and more discontented. He constantly suggested that he should be sent to the Riviera, so constantly that I strongly suspected that his neurasthenia was only a disabling mechanism to get out of hard work and have a pleasant vacation at Nice.

It was interesting to watch the rapid restoration to health of this lieutenant and a number of grumbling, discontented, neurasthenic officers when the armistice was signed. Before this happy event, they felt that they were fit only for a base hospital; afterwards they manifested the most surprising zeal to be discharged from the hospital and get back to their organizations.

### B. The Parataxis of Special Disablement

We may classify the special disablements by which neurotic individuals escape their duty as sensory and motor. Thus we have a deafness and blindness of psychogenic origin acting as a defense reaction against an unpleasant situation. The utility of such sensory anesthesias is clearly apparent. Not so evident is the utility of cutaneous areas of anesthesia in hysterical patients. Here they seem to have no direct function in the disabling mechanism. They may be interpreted as mere elements in a symptom complex, elements which, according to popular imagination, show the gravity of the situation. They may be easily produced in hysterical patients merely by attempting a sensory examination. Some maintain that they are always so produced and never attempt to look for them. It is

probable, however, that they antedate, in some cases, the physician's examination, for although one sometimes gets the impression that he is producing an area of anesthesia by his tests and questions, in other cases the area is found so fully developed that it seems as if it must have existed previously. This must be so when the patient comes to a physician for the first time complaining of an area of numbness.

Motor disablements consist mainly in the functional paralyses and contractures, the aphonias (loss of speech), and the convulsive seizures.

*Case History*

The following war neurosis shows us several of these disabling mechanisms in the same patient.

The patient was a first lieutenant who was a telegraph operator before enlisting in the regular army some years ago. Before coming to France he had seen service in Nicaragua, Vera Cruz, the Mexican border, and the Philippines, but had not been in any fighting. He came to France in April, 1918, and got to the front in May. He was under heavy shell fire in Alsace, but it did not bother him. The first time he went over the top was west of the Meuse on September 25. He had not advanced far when he was knocked down by a shell. He got up, but felt as if he had been all "churned up." Just as he was getting on his feet another shell slammed him down flat. He went forward about two hundred yards, and then he does not know what happened. When he came to, about twenty-four hours later, he was in a hospital—not badly wounded, but only scratched a little. After a couple of weeks in hospitals he was sent back to his regiment. He marched with them to a reserve position near Verdun. He remained only about three days, and was sent back to the hospital for "blind spells" which kept him from doing his work. These spells came on after slight exertion. "Everything would all haze up." He would then get weak and be unable to stand. When he came to from his "shell shock," his right ear felt dead, and the scalp all over the right side of his head was numb. In the hospital he had no spells, the only symptom which remained to be treated was the deafness. This naturally might have been due to a ruptured ear drum, caused by the explosion. He could not hear a loud voice at a few feet when the left ear was covered. The fact that there was also no bone conduction of sound on the right side suggested[9] that the whole condition might be functional. Suggestive treatment with the aid of a tuning fork and an electric battery was tried, and in about a quarter of an hour the deafness and numbness of the scalp had entirely cleared up.

The spell of unconsciousness for which this officer was brought to the

[9] Bone conduction would have been intensified had the condition been due to a ruptured ear drum or any form of middle ear trouble due to concussion.

hospital was probably an hysterical seizure in action, which defended him against the necessity of any longer risking his life. His "blind spells," which came on after he got back to his regiment, saved hin from the danger of again going to the front, and the hysterical deafness which he manifested in the hospital when I saw him was one element in his complex of symptoms that would demonstrate the severity of the concussion experience which had brought on his disability.

Anyone inclined to regard these so-called "shell-shock disabilities" as due to some organic disturbance from the concussion would do well to consider the following facts:

1. Prisoners of war rarely develop war neuroses. They no longer have need of a defense reaction to get them out of danger.

2. The wounded who have been subjected to the same concussion experiences and have been disabled by the flying shrapnel of exploding shells are immune from the symptoms of "shell shock." They are already disabled and need not develop a parataxis of disablement.

3. The gunners, working at the big guns and continually being subjected to concussion experiences, do not develop functional disabilities.

4. War neuroses clear up too quickly by suggestive therapy for us to look upon them as having an organic pathology.

Convulsive seizures are frequently the cause of withdrawing an individual from his post of duty. They were very common at the front. In civil life they are often not to be interpreted directly as a means of withdrawal but rather as a protest against a situation which is looked upon as unjust but from which the patient feels powerless to escape. Thus, in one instance, a woman was having periodic convulsive seizures of a hysterical character for which the best specialists that she had consulted could find no cause. The mental history of the patient revealed the fact that she had made an agreement with her husband before marriage that all the boys would be brought up Protestant and the girls Catholic. This arrangement had been made subsequent to a prior one before the priest in which the usual promise had been made that the children would be brought up Catholic. After that her marriage was postponed, but she was later married, ostensibly on the basis of the first agreement, the second one not being mentioned to the priest. The first child was a boy. She comforted herself with the thought that later on everything would come out right. But when her husband let her understand that he would insist on the agreement, her trouble started, and a little later she had her first seizure. With a subsequent pregnancy she commenced to worry acutely about the religious problem, and the number of her seizures increased. Persuasion to adopt a more reasonable type of reaction, to attempt to dominate the situation by the example of her life, pointing out the futility of the spells, etc., led to a distinct improvement.

This did not last long, for I learned afterwards that she suffered a relapse into her old condition. That her spells were psychogenic and not epileptiform was the decision of several eminent specialists who saw her and witnessed one of the seizures which lasted for several hours. That they were motivated by a protest which expressed the thought, "See what you have done to me by your harsh and uncompromising attitude," is the interpretation which is warranted by the history of the case.

### The Defense Reactions as Specific Impulses or Psychotaxes

However varied their form, the defense reactions are spontaneous tendencies to get out of an unpleasant situation merely by avoiding it. The mode of avoidance is indeed mental, but it is no less impulsive than the motor impulses that one experiences to get out of a cold bath, or to get in out of the rain, or to go from the sun to the shade on a hot day, etc. Just as these tendencies may be experienced for some time without being acted upon, so, also, may the psychotaxes of defense. Thus the tendency to protest by a convulsive seizure may be experienced for days and weeks but only be carried into action when an opportune moment arrives. Defense reactions are natural to all mankind. We all dislike to remember certain unpleasant situations of the past and to consider various disagreeable eventualities of the future. Thus, to realize really the absolute certainty of our own death, and that it may not be very far distant, is naturally unpleasant and very distinctly so, except to those who have schooled themselves in its thought. Most men have a spontaneous tendency to put this eventuality out of mind, and they just as spontaneously avoid everything that brings it up. Natural and spontaneous tendencies to make use of any ability in our minds to avoid an unpleasant thing or a disagreeable situation have every right to be considered impulses; and, because they are impulses which have to do with the problems which arise in unpleasant situations, they belong to that group of mental reactions that we have termed the psychotaxes and parataxes.

### Etiology of Defense Reactions

The fundamental condition which calls forth a defense reaction is an unpleasant situation. The most natural thing to do with an unpleasant situation is to get out of it if you are in it, or to ward it off if it only impends. Children, before the age of reason, have no other way of dealing with pain and unhappiness. Later on, many considerations besides the pleasure of the moment enter into our deliberations. The rights of others, future consequences, moral problems, etc., are beyond the ken of the little child. The problem of training and education is to bring them within his ken and enable him to settle things on other grounds than present whims and

fancies. The true goal of education may be expressed as the attainment of the ability to shoulder the problems of life. Our horror of the unpleasant tends to make us throw that responsibility on the shoulders of others—to get out of it in any way, but at all events to avoid it. Thus our defense reactions are constantly stimulated by our contact with the world. Many a fond mother tries to spare her child the bitterness which comes from unsatisfied desires and so makes the vain attempt to raise him in an Eden of delight. Often this attempt to coddle the child commences at birth. The child is rocked and fed almost as often as he cries. There is no regime of life established, and the child soon learns that he gets what he wants by crying and tantrums. When he reaches the age of reason, there is no inculcation of principles of duty and self-sacrifice, and so he grows into boyhood and manhood and has no idea of dealing with an unpleasant situation other than to avoid it. The child never learned the lesson of shouldering responsibility, and the man cannot do so.

The analogy between the spoiled child and the parataxis of defense is so striking that it strongly suggests that improper schooling for life has been one factor in bringing about the psychoneuroses in which these reactions are dominating elements. A study which would investigate the home training of patients manifesting these psychotaxes would probably reveal much coddling and spoiling in their childhood. It would be difficult, however, to get reliable witnesses from whom to gather information.

The recognition of this psychogenic factor does not exclude a constitutional groundwork for the parataxis. Some children who have been spoiled at home learn their lesson when thrown upon the mercy of school companions. Others react with a parataxis of withdrawal. Their negativism might have been avoided had they been properly trained from infancy, but the reason why they are negativisitic at boarding school and not "one of the bunch" may be sought also in constitutional hereditary factors.

### Treatment of Defense Reactions

All treatment should spring from a knowledge of causes. If the etiology suggested above is correct, the prophylaxis of the parataxes of defense is to be commenced at birth with a rational hygiene and regime which will be the basis of future instructions in the principles of law and order and which will teach the child from the outset that crying and tantrums are not the keys which open the door to satisfactions that are withheld or refused. Many of these parataxes of defense are simply the perseveration of childish reactions. Prophylaxis, then, should aim at eliminating them in the transition from childhood to boyhood. This is to be done in childhood by a reasonable regime regulating the hours of feeding and retiring and, later, of play and study. If a child has a tantrum because he is denied something that he

wants, he must be made to understand that this is no way to get it. If he has an hysterical convulsive seizure he is to be left alone until he comes out of it. As soon as possible he must be shown by examples and explanations that he is not in the world to seek his own personal pleasure but to find something useful and do it; that he has duties, obligations, and responsibilities; and that there is nothing nobler in life than to assume them and bear them with dignity and honor. To shirk is a despicable and shameful act. I cannot believe that the whining evaders of responsibility that got into the psychiatric wards in this country and in France were ever taught the moral lessons of human responsibility or had ever learned to sacrifice themselves even in little things for the welfare of others.

Once a parataxic reaction has developed, further treatment depends upon its nature. The attempt must be made, at all hazards, to draw the shut-in type of patient out of his dreams and back to reality. He must be taught that it is far better actually to accomplish a simple job of carpentry than to dream of building temples; better to earn a penny than to picture one's self the proud possessor of millions. In many praecox reaction types such efforts will be crowned with surprising success. Once a child of 4 was brought to the clinic. It was impossible to engage him in conversation. At most, he answered "yes" or "no," or echoed the last words of your question (echolalia). He took peculiar attitudes, stared into space, suddenly fell into fixed positions. *Flexibilitas cerea* was well developed, that is, you could mold his legs and arms into any position and there they would remain indefinitely. The child's mother had recently been taken to the insane asylum, and the child was in an orphans' home where all the children were much older than himself. He had no playmates and had lost his mother. On the assumption that these catatonic symptoms were associated with the shut-in reaction type and, therefore, symptomatic of a parataxis of recoil, I argued that the condition could be cured if the child were placed with other children of his own age who would get him to playing, and so draw him out of himself. This recommendation was accordingly made and was carried out with surprisingly successful results. The mental condition cleared up, and within a week he was laughing, and playing, and talking like other children. Traces of the flexibilitas cerea lasted longer and could be demonstrated weeks later, though they would have passed unnoticed by one who had not seen the child when the condition was at its height.

In treating the parataxes of disablement, one should find out, if possible, the motivation which lies at the bottom of the condition, and then attempt to find, for the patient, some more satisfactory solution, and, if possible, create a desire to get well. If this can be done the cure can then be hastened by such suggestive means as an electric battery. Physiological ex-

planations help whenever they are in order. Thus, to explain the mechanism of muscular contraction to a patient with a disabling tremor, the contraction of the agonists and relaxation of the antagonists, to show him that a tremor must result when both sets of muscles contract, and then to take his trembling arm, for example, and temporarily conquer the tremor by a few movements of relaxation, and assure him that he can do the same, all help to make the tremor disappear. I have seen arm tremors of patients just back from the battlefield clear up permanently in two or three minutes with such treatment.

Hysterical convulsive seizures should be made "not worth while" by neglecting them as of absolutely no significance or by treating them with an emetic. A hysterical girl was once brought to the clinic, her face all broken out with a bromide eruption. In spite of heavy doses of bromides, her nightly convulsive seizures had not been overcome. Directions were given to have her sleep alone, well away from anyone else, to pay no attention to any future convulsions, and to stop the bromides. After one tantrum, which she was left to finish by herself, the convulsive seizures ceased. She uttered the complaint, however, that nobody cared whether she died in one of her spells or not.

Ingenuity in finding more reasonable solutions for the patient's unpleasant situation, persuasion, and encouragement to bear his burden manfully, sympathy and kindliness, all have their function in dealing with these cases. Whatever we may think of the moral degradation of a shirker had best be kept to ourselves until we have cured the patient's disability. We may then instruct and philosophize. I once made the mistake of letting a big, strapping fellow know what I thought of his limp and hysterical gait. He at once became very antagonistic to me and clung tightly to his disability in order to prove that I was a very poor diagnostician.

Opening new vistas and channels of compensation and sublimation has its function in these, as well as in the other parataxes.

## Chapter 25

# COMPENSATION

The root of compensation lies in our multiple interests in life. Our impulses and desires are many and diverse, and, therefore, the possible modes in which they may be satisfied are many and diverse. At the beginning of life, all ways are more or less equally possible, for none has been tasted. With tasting develops appreciation and a craving for more. This results in an eventual fixation on some form of satisfaction which ultimately dominates life, and, if adequate, leads to more or less peace and happiness.

Through the accidents of life—sickness, death, financial loss, the intervention of other human beings—the psychic fixation may be broken, and the plan of life on which it depended distintegrated. The result is unhappiness and restlessness. We have already considered some of the readjustments that such calamities bring about. Very different from these is the compensatory readjustment. It is perhaps the antithesis of the psychotaxis of depression. Depression leads to sadness and inactivity; compensation to an attempt to get rid of sadness by action that leads to a refixation. *Compensation, therefore, is an attempt to make good one loss by finding an equivalent substitute.* The compensating character must be active. He demands promptly the equivalent of his loss. He cannot mope and mourn. He may even disregard the sanctioned customs of religion and society that he may promptly make good the deficit in his mental life.

### Ordinary Compensation

Not every loss knocks out the keystone of the arch in our hierarchy of desires. There are great losses and little ones, and so there are, corresponding to these losses, major and minor compensations. Many of these minor compensations are trivial indeed, but they mean a great deal in the general tone of the mental life. The United States Army realized the value of these minor compensations when it sanctioned the establishment of Red Cross, Y.M.C.A., and K. of C. huts in the camps and hospitals in this country and in France and furthered the work of entertainment carried on by the chaplains. What was thus offered to the soldiers was, when we leave out of consideration religious service, nothing but a series of trifles, but these trifles prevented many a mental breakdown and sprinkled a life that would have been otherwise scarcely endurable with moments of rest and enjoyment.

In civil life also, the theater, the movies, and all the varied and numerous entertainments of modern life offer some compensation for trivial losses,

and even lighten the burden of those who have suffered life's gravest calamities.

Wit is often the compensation of one whose inner life is far from the peaceful content that comes to him who has worked out a satisfactory solution to the riddle of existence.

Literature is a twofold compensation: first of all, to him who composes the poem or the novel or the short story, and secondly, to his readers. The author dreams of his own unfulfilled desires and compensates himself for life's disappointments by living out in imagination the dream that he weaves for his readers; his readers are charmed and attracted because they see in the hero or heroine one whose lot they secretly wish might be theirs. Therefore it is possible to analyse an author by analyzing his poems or his romances, or to get an insight into the deeper trends of anyone's life by learning what poems or novels he finds particularly interesting.

It is not necessary to write in order to dream. Many are the unrecorded dreams that some people indulge in during the waking hours of the day. Some take keen delight in this vain and fruitless exercise, wasting hours that might lay the foundation of real accomplishment and lead to the enjoyment in reality of what they are doomed to taste only in their dreams.

The dreams of the night, though involuntary and quickly forgotten, are nevertheless compensatory mechanisms. To a large extent, they are, as we have seen, wish fulfillments and, as such, act perhaps as safety valves, lessening to some extent the nervous tension of repression that makes part of the burden of the day.

Pets and playthings of one kind or another compensate for more adequate sources of human satisfaction. Many a woman lavishes on a dog the affection that should go, by right, to a child of her own or of her adoption. Unfortunately, however, dogs are more frequently adopted than children.

Intellectual pursuits compensate only a few, and yet art, music, or science are fully adequate to give to a human being a high degree of natural peace and content.

The minor share of things of the mind in the compensations of the age is probably due to the fact that education aims too much in our day at mere breadwinning and too little at awakening the mind to the appreciation of the treasures of the intellectual life. Hence education too often launches men on careers but leaves them helpless in case of mental shipwreck on any one of the reefs of life's calamities.

Companionship and the sympathy that it provides affords the most common and the deepest compensation of our day. *Alter alterius onera portate.* Mutual kindness is the source of life's most genuine and deepest compensation.

## The Parataxis of Compensation

It is easy for any one of the ordinary compensations to become pathological by diverting the mind from an adequate goal in life, by absorbing one's energies entirely, or accentuating a type of behavior that is unproductive and useless.

How many there are who idle their life away in trifles! Amusements that are meant as a momentary diversion become their daily occupation. Day-dreaming, which might be pardonable as the occasional occupation of an adolescent, leads some permanently to a life of unreality.

Friendship and kindly help are true sources of consolation to one who has lost a friend by death or perhaps never had a true friend. They become true helps because the affection bestowed formerly on the relative or friend departed is unconsciously transferred to, or to speak more correctly, re-fixated on the one who helps and sympathizes. It is in general impossible for the one who helps and sympathizes fully to replace the one who is lost. Divine friendship alone can be universally extensive. When the one who suffers attempts to make the partial transfer of ordinary friendship fully satisfy the loss sustained, this transfer may become pathological, inasmuch as it prevents a normal readjustment with its multiple interests in life and fruitful occupation.

The line in which compensation is most likely to become pathological is sympathy. It is most remarkable to observe the extreme lengths to which men as well as women will go to get their much-craved sympathy. I can call to mind an able-bodied man who had to be petted and coddled by his wife and daughter at a funeral. His demonstrations of sorrow, certainly as far as outward appearances were concerned, looked like attempts to call forth sympathetic caresses that he enjoyed rather than genuine expressions of grief that he could not restrain.

There are a number of convulsive seizures that are to be explained as mentally motivated by an appeal for sympathy.

A fairly common psychic disorder is the loss of the voice—an aphonia. Such an affliction attracts attention and with the attention comes the much-craved commiseration. I have seen several such cases, all of which yielded promptly, even though they were of months' or years' duration, to a little persuasion, reinforced by the electric battery.

In one of these, the aphonia came on during a spell of illness in which the patient learned that a man to whom she was engaged had married someone else. The aphonia merely declared to all observers that she had been badly treated. "See," it said constantly, "what he has gone and done to me!"

During World War I there were a number of cases of so-called "shell shock" whose chief manifestation was trembling of the body or gross in-

voluntary movements of arms or legs, or both. Most of these were cured promptly by a few relaxation exercises immediately on being received in the neurological hospital. Those who were not cured were put to bed. If in a day or so the trembling did not cease they were screened off so that no one in the ward could see them. What could not be seen was not worth having. It obtained no sympathy, and so there was no longer any reason why the "shell shock" should not disappear, which it promptly did, and thereby the tedious isolation was brought to a close.

Once sympathy has been tasted it soon becomes an end in itself. I remember a doctor's wife who had frequent tantrums and crying spells. These led to a great deal of nursing and petting by her husband and her mother. They even necessitated her being taken to a hospital where she absorbed much more of her husband's time than he could possibly have given her were she well. In less than a week she became a brand new woman under the following treatment.

1. Isolation from her mother and husband until she had complete control of herself.

2. Assurance that if this control were not established within a reasonable time she would have to be taken to an asylum.

3. Plain explanation to her of her conduct as an unreasonable appeal for sympathy. Pointing out to her that she was wasting her life in these tantrums and preparing the way for the distintegration of her married life. Though this denouement called forth tears and protests, she told us the next day that she had resolved to get control of herself. In a few days she did so, and in general appearance and behavior underwent a remarkable transformation, which was maintained without relapse for the year during which the case was followed.

Another case in which the craving for sympathy and attention manifested itself as an end in itself rather than a compensation for a loss sustained was the following.

A young girl was brought to the clinic because she was supposed to be possessed by the devil. The reason for the supposition was that she had weird tantrums that prevented her from going to school (defense reaction). The feathers in her pillow were found tied together with peculiar shreds of cloth in the most remarkable fashion. How it occurred to anyone to open the pillow and discover these wonderful "manifestations" I could never learn. I suggested that the pillows be sewed up and never opened again and that if she had any more tantrums she was to be scalded down the back with uncomfortably hot water, given asafetida and put to bed for twenty-four hours. The spells stopped, the feathers were not molested thereafter, and her schooling suffered no further interruptions from these spells.

I have seen many children whose ills were consciously fabricated, or per-

haps more likely unconsciously exaggerated, for the sake of the petting and interest their imaginary sickness obtained.

### Treatment of the Parataxis of Compensation

One reason why it is possible for human beings to make these bizarre appeals for sympathy is that they do not understand themselves and what they are doing. Unworthy motives are easily repressed into the background of one's mental life, and hence abnormal behavior results. What would disgust, if seen in others, is carried out without insight by themselves. One often only needs to know and understand in order to correct one's abnormal behavior. This is true at least of the better types of character. The lower types often refuse to cooperate, or cannot understand.

Prophylactic treatment should consist in a wider dissemination of psychological information about abnormal behavior. This will give the world in general a better insight into unworthy appeals for sympathy and make it less likely that such appeals will be heard.

In an actual case, treatment should involve an explanation of conduct whenever the mentality is capable of understanding it. Understanding, however, is not necessary for a cure of the symptoms. One need only make them not worth while, and they will promptly disappear. When this is done there seems, at times, to be an unconscious logic at work even in the hopelessly obtuse, and for some reason or other, what is once found to be not worth having is sometimes never sought again.

## Chapter 26

# SUBLIMATION

THE TERM "SUBLIMATION" as used in modern psychology comes from the science of chemistry. In chemistry, sublimation is one of the processes by which a salt may be purified. If a volatile salt is heated beneath a bell jar, it vaporizes and the vapor rises to the cool dome of the jar and there recrystallizes in its pure state. In the psychoanalytic school, sublimation is a term used to indicate a change in the mode of satisfaction of desires in which an outlet is no longer sought at their previous lower levels but on what sociologically is a much higher plane. Thus, one disappointed in love is said to sublimate when, in his later life, he seeks an outlet along lines of religious activity or general social betterment. The new activity in some way stands as a symbol of the satisfaction of the former craving. The elevation, according to the Freudian school, is, however, not real but merely a masked indulgence of the same old craving. Therefore, psychoanalysts attempt by the process of analysis to seek out the fundamental craving of human nature which is ever manifesting itself in one and the same way.

According to Freud, the driving forces of human nature are the impulses. All impulses are essentially one because an impulse in itself has no quality. The source of impulsive activity is an organ of the body. All organs of the body give rise (a) to this undifferentiated impulse, and (b) to a specific sexual excitant. The real driving force, according to Freud, is the sexual excitant, which, in all impulses, is ever the same. Therefore, according to Freud, no matter what man seeks or on however high a level his impulsive activity may apparently manifest itself, it is nevertheless one and the same craving for sexual satisfaction:

> By an "impulse" we can understand, in the first place, nothing but the psychic representative of a continually flowing internal somatic source of excitement, in contradistinction to the "stimulus" which is produced by isolated excitements coming from without. The impulse is thus one of the concepts marking the limits between the psychic and the physical. The simplest and most obvious assumption concerning the nature of the impulses would be that in themselves they possess no quality, but are only taken into account as a measure of the demand for effort in the psychic life. What distinguishes the impulses from one another and furnishes them with specific attributes is their relation to their somatic *sources* and their *aims*. The source of the impulse is an exciting process in an organ, and the immediate aim of the impulse lies in the elimination of the organic stimulus.
>
> Another preliminary assumption in the theory of the impulse which we cannot relinquish, states that the bodily organs furnish two kinds of excitements which are determined by differences of a chemical nature. One of these forms of excitement we

designate as the specifically sexual, and the concerned organ as the *erogenous zone*, while the sexual element emanating from it is the partial impulse.[1]

Freud looks upon the tendency of sexuality to deviate to new and hidden aims as one of the most important factors in the betterment of the human race.

The historians of civilization seem to be unanimous in the opinion that such deviation of sexual motive powers from sexual aims to new aims, a process which merits the name *sublimation*, has furnished powerful components for all cultural accomplishments.[2]

Jung conceives of the nature of impulsive activity in a somewhat different manner. According to Jung, there is only one psychic energy, the *libido* of the organism. Libido is to the organism what energy is to the universe. The modern concept of energy recognizes only one fundamental kinetic power, which manifests itself now as heat, now as light, now as electricity, now as movements of the heavenly bodies, but at bottom it is all one and the same energy and can be defined as that which moves a mass with a given velocity. So, Jung says, in all the various forms of human activity there is one and the same driving force, the libido of the organism. Originally, libido had to do with nothing but the propagation of the species, but in the course of development a certain amount of it must be transformed or deviated so as to serve in the acquisition of food, protection of the young, and various other functions. This deviation of the primal libido into other channels is continuously going on in the human organism.

The process of transformation of the primal libido into secondary impulses always took place in the form of affluxes of sexual libido, that is to say, sexuality became deflected from its original destination and a portion of it turned, little by little, increasing in amount, into the phylogenetic impulse of the mechanism of allurement and of protection of the young. This diversion of the sexual libido from the sexual territory into associated functions is still taking place. When this operation succeeds without injury to the adaptation of the individual it is called *sublimation*. When the attempt does not succeed it is called *repression*.[3]

## The Unity or Multiplicity of the Driving Forces of Human Nature

When we come to consider whether or not the driving forces of human nature are one or many, we should recall in the first place that, however varied the forms of satisfaction, there is always only one individual to be

[1] *Three Contributions to Sexual Theory.* Translated by Brill, New York, Nerv. & Ment. Dis. Publishing Co., 1916, p. 33.

[2] *Op. cit.*, p. 41.

[3] *Psychology of the Unconscious.* Translated by Hinkle, 1916, p. 150.

satisfied. There is, therefore, a kind of unity in the modes of satisfaction which comes from reference of all drives ultimately to the satisfaction of the one personality. This, however, does not argue for the essential unity of the modes of satisfaction, any more than the fact that all perceptions are cognized by the one ego demonstrates that there is no difference in the forms of perception. For sight and sound are channels of perception for the one individual, and yet, sight and sound are different modes of perception and cannot be reduced to one and the same thing. In the same way two desires are cravings of the one person; but two desires may, for all that, be two different psychical entities.

In the analysis of impulses and desires that we have given, we found that there are just as many impulses and desires as there are abilities in a human being. We must, therefore, recognize a number of impulses psychologically different, and it cannot be said that any one of these is the sole driving force of human nature. Transformations of physical energy to light, sound, heat, etc., have been studied by careful experiment, and measurements have been made of the amount of energy at the beginning and end of the experiments, and this quantity of energy is found to be invariable. Nothing of this kind has been done to make Jung's hypothesis of the "libido" any more than a fanciful analogy. To substantiate it one should be able to measure the psychic energy in any one of the impulses, for example, the motor impulses and the psychic energy in the craving for knowledge—the intellectual impulse—and thus demonstrate by measurement that when one is transformed into the other no psychic energy is lost. Merely to put the question in such terms as this shows how impossible it is to reduce Jung's theory from an idle speculation to an established fact.

## Concept of Sublimation

Assuming, therefore, that we have as many impulses as we have forms of mental abilities, we may recognize two types of individuals. (1) In some characters the impulses all have a tendency to center themselves in the ego, so that if a person is disappointed in one way of satisfying himself, he seeks another mode of attaining his satisfaction. (2) There are other characters whose impulsive drives have a tendency to lead the individual outside of himself, so that if he has suffered a disappointment in some personal satisfaction, he seeks an outlet in doing something which is not merely a compensation that satisfies himself but is a mode of activity that brings him into relation to other beings so that he is of service to them. Whenever an individual compensates for a disappointment or makes good an unsatisfactory type of behavior by doing something of value to other

beings, he may be said to sublimate. This concept of sublimation differs, evidently, from that of Freud or Jung.

There are two forms of sublimation, the social and the religious, according as the form of activity has to do with other human beings or with God. It is to be noted that there sometimes exists an analogy between the form of sublimation which is chosen and the past disappointment or form of unsatisfactory behavior. It is therefore likely that the craving which dominated the older drive is partially active in the later sublimation. It may lend to it a peculiar charm and determine that this particular form of sublimation may be chosen rather than another. It does not, however, explain why a sublimation is attempted rather than a pure compensation.

The reasons why sublimations are attempted rather than compensations are, in the first place, the blocking which terminates some form of human satisfaction, and, in the second place, the type of character or accidental influences from the environment, education, or personal influence, that lead an individual to seek forms of activity that involve the welfare of others rather than pure personal satisfaction.

## Sublimation as an Impulse

A moderate experience with human nature will lead one to recognize the difference which is pointed out between compensators and sublimators. Some people never sublimate and never can be persuaded to seek a form of activity which does not terminate in their own self-aggrandizement. The difference is just as marked as the difference which exists between people who always attempt to compensate by a new form of activity and those who have no marked tendency to do this but simply mourn or worry over an impossible situation. There are idealistic types of individuals who are continually dreaming of social betterment, political reforms, religious activities, etc. It is worth while noting here that when we say that an individual manifests a tendency to sublimate and not a tendency to compensate, this does not mean that compensators have no tendency to sublimate and sublimators no tendency to compensate, but only that some individuals manifest sublimating tendencies much more strongly than they do compensating tendencies. In fact, it is to be taken as a working hypothesis that all the tendencies of the worst of us are in the best of us, and vice versa.

## Parataxic Sublimation

Many sublimations are perfectly normal and healthy. There are others, however, that are unreasonable drives that lead to the detriment of the individual. Whenever a person is afflicted by a drive that will lead to no positive advantage either to himself or to the human race, we

may conclude that he is suffering from some kind of mental abnormality. Thus, for instance, shortly after the close of the World War I, a young man with a good education and a lucrative position that gave promise of still further advancement came to me mainly because of a sense of inferiority that he had experienced in his dealings with others. He also had a drive which he looked upon as a noble and worthy tendency. He had heard of some kind of legion that was being enlisted in Europe to fight the Bolsheviki and he felt called upon to go over and join this battalion to battle against forces that were making for the dissolution of human society. I naturally suspected that a drive of such nature was in some manner connected with the feeling of inferiority, and this suspicion was confirmed. His feeling of inferiority went back to childhood. He was somewhat weaker than other children and never could make much use of athletic sports but nevertheless had a craving to excel. He was also very sensitive about his personal appearance. He thought his nose was excessively long and that as soon as he saw anyone they would remark the length of his nose and that, therefore, whenever he met other individuals he was at a distinct disadvantage. He had had other impulses besides the anti-Bolsheviki drive, such as to make good by study.

As said above, there is often some kind of analogy between the complex and the special form of sublimation sought. It is to be noted that this young man was sensitive about his nose. He was not a Jew, but he had been frequently taken for a Jew. He, therefore, adopts a form of sublimation in which he sacrifices his life and his opportunities to combating (as he thought) the Jews in the form of Bolshevism. I explained to him the mechanisms that his life history and his present tendencies indicated were at work in his mind. I also told him to read Alfred Adler's *Neurotic Constitution*. He came back, a few days after I had given him Adler's work, laughing, tremendously elated, thoroughly satisfied that he understood himself, and entirely free from any design to go over to Russia and fight the Jews.

Many reform movements, while good in themselves, will take on, in some individuals, the form of a parataxic sublimation. I have listened from time to time to ardent militant suffragettes and have been very interested to find out later that a number of these excited Amazons had had unhappy love affairs; either they were married and had very unfortunate experiences with their husbands or, perhaps, had never married because of some unhappy incident, and therefore, they rose up in protest against all male members of the species and strove to work for the betterment of society by political reforms in which woman will finally be elevated not only to her true sphere but will triumph over the cruelty and stupidity of man.

## Treatment of Parataxic Sublimations

The treatment of parataxic sublimations has already been indicated. We must, in the first place, look for some form of pathological association with a complex; that is to say, with a past unhappy or unfortunate emotional experience. We must try to analyze the source of the feeling of inferiority which leads to an overcompensation or sublimation, not along lines of rational adjustment but in a groove dictated by the pathological association. We must reason with such idealists, at times, that five cents actually gained is better than to dream of the possession of millions. We must attempt to direct a good impulse into rational channels. But, after all, the sublimator is much more likely to be a useful member of society than the mere compensator or mourner. We must remember that a great deal of the energy of important moves for social welfare comes from these hidden complexes, and this energy needs only to be rationally directed in order to accomplish a work for society that would otherwise be left undone.

## Normal Sublimations

These natural impulses may, very often, be made to conform to the dictates of reason, and in this way a valuable character trait may be made use of in social service or religious activity for the welfare of the human race. Many conversions or sublimations have in one way or another been brought about in a human being with an inadequate adjustment to life. The following editorial from the *Washington Post*, entitled "A Life Redeemed," gives a good example of a useful sublimation. The special form of the sublimation is here, as is often the case, clearly associated with the complex in past experience.

It was as Lena Cuen, a girl of twenty, that the woman, who afterward became the bane of the life of New York policemen, left her home in Troy twenty years ago to become a stenographer. The young girl fell a victim to the gay life of the Tenderloin, took the name of Mary Goode, and became a notorious character, paying blackmail to policemen and gunmen.

Some years ago Mrs. Goode reformed. She did not content herself with leading a respectable life, but threw all her energy, time, and money to the reclaiming of girls who had gone astray. Upon her wall she hung this motto: *What have I done this day to help others and make the world better?*

Army officers in Europe dismissed in disgrace for some seemingly unpardonable offense have won redemption through the European war. They have won back their place among their fellows as "officers and gentlemen." Mary Goode redeemed herself in like manner. The last years of her life were those of a noble woman, ever ready to do good and to help her fallen sisters. She more than repaid any debt owed to society. Others who have never sinned, except through omission, may find the balance even at the end, but the balance sheets of Mary Goode showed more on the credit than on the debit side when her books were closed by death.

Sublimations approach rational readjustments, but there is a big difference between a sublimation and a rational readjustment. Very frequently the sublimation runs counter to the dictates of reason, as in the example of the young man who wished to go to Russia and fight the Bolsheviki. On the other hand, a tendency to sublimate may, of itself, be inadequate as a drive to action, and may merely be a plan which the unconscious suggests, and which is taken up, considered, weighed carefully, and finally adopted or supplanted by another plan which seems more in accordance with the dictates of reason. Those who would make no mistake in the management of themselves and their affairs should never yield to the blind drive to sublimate but should mold their lives by rational adjustments and readjustments to the difficulties of life.

# PART VI

# THE WILL AND VOLUNTARY ACTION

## CHAPTER 27

## THE PSYCHOLOGY OF WILL

### 1. CONSCIOUSNESS OF VOLITIONAL ACTIVITY

#### A) THE ACT OF CHOICE

PSYCHOLOGY has concerned itself with looking for and differentiating the consciousness of volitional activity from other forms of mental life.

Narziss Ach,[1] by an ingenious set of conditions, adapted the reaction-time experiment to a study of the will. He was able to analyze an act of choice into the following elements: (1) the sensory element, i.e., the kinesthetic sensations; (2) the intellectual element or the idea of the end to be obtained and the ways and means of realizing it; (3) the essential element, i.e., the consciousness of willing; and (4) the dynamic element or the feeling of effort.

A number of other pieces of experimental work have also found this essential element or the consciousness of willing.

The same year Michotte and Prüm[2] studied the consciousness of choice in making a selection between such a simple task as multiplying or dividing, adding or subtracting two pairs of numbers suddenly presented to view. Such a task is indeed simple and far from the momentous decisions that one must make at times in real life. Nevertheless, the simple experiment did give some information about what goes on in the mind when a choice is made.[3]

[1] *Über den Willensakt und das Temperament.* Leipzig, 1910. *Über den Willensakt und das Denken.* Göttingen, 1910.

[2] "Étude expérimental sur le choix volontaire." *Arch. de Psychol.*, **10**: 113–320, 1910–11.

[3] The work of Michotte and Prüm was confirmed by Edward John Boyd Barrett in his *Motive-force and Motivation-tracks* (London, Longmans, Green & Co., 1911, pp. XIV+225) and later by Honoria Marian Wells, "The Phenomenology of Acts of Choice" (*Brit. J. Psychol. Mon. Suppl.*, 1927, 4 (no. XI): pp. 155, 1927). R. H. Wheeler in his study *An Experimental Investigation of the Process of Choosing* (University of Oregon Publications, 1920, Vol. 1) attempted to reduce the consciousness of willing to kinesthetic sensations, but Mary Whiton Calkins ("Fact and Inference in Raymond Wheeler's Doctrine of Will and Self-activity." *Psychol. Rev.*, **28**: 356–374, 1921) showed that in Wheeler's own results there were nonsensory elements

We are here interested in the contribution of experimental psychology to the consciousness of volitional activity. Michotte and Prüm raised the question of whether or not scientific psychology should recognize the distinction made in everyday life between the voluntary and involuntary. "Is the voluntary sequence of events in mental life differentiated from the involuntary by containing a conscious experience of a special character?"[4] They found that the consciousness of willing was an experience *sui generis*. It was a consciousness involving the subject's own personal activity. "'It is *I* who have chosen'; or in other cases, 'I have designated. I have determined.' Any other way of expressing it would be false. I cannot say, 'That was brought about in me'; no, 'It is *I* who did it.' This consciousness of the ego seems to be one of the primary criteria of the phenomenon of volition."[5]

Rohracher, as a final result of his experimental studies, concluded that "the essence of will is an activity of the personality."[6]

Evidently Michotte and Prüm and also Rohracher have found the same specific mental experience as Ach: the essential element in volitional action which can be described as a consciousness of the ego willing to do what the ego decides and determines is to be done.[7] This consciousness of willing may or may not be associated with kinesthetic sensations giving rise to a feeling of tension or with various emotional states. It manifests a marked degree of independent variability when compared with other forms of conscious experience.

Aveling and Bartlett made an interesting study of the galvanopsychic reaction and the act of choice. To their surprise they found that the act of will—the determination to do—is unaccompanied by any swing of the galvanometer. The actual effort to carry out what one decides to do, the effort of accomplishment, is accompanied by a swing of the galvanometer. As Aveling expressed it, "Will is not itself effort, though it may initiate

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which he himself apparently did not recognize. And as Horace Graham Wyatt remarks in his book, *The Psychology of Intelligence and Will* (London, Kegan Paul, Trench, Trubner & Co., 1930, p. 237), "It is absurd to suppose that Wheeler's six subjects in his experiment should have concurred in experiencing radically different constituents of consciousness from those experienced by Well's six subjects in an experiment essentially similar."

[4] *Loc. cit.*, p. 119

[5] *Loc. cit.*, p. 133

[6] Hubert Rohracher. "Theorie des Willens auf experimenteller Grundlage." *Ztsch. f. Psychol.* (Suppl.) **21**: 188, 1932.

[7] For an excellent summary of the literature on the experimental investigation of volitional experience, see J. Lindworsky, *Der Wille*. J. A. Barth, 1923, pp. 20–53.

effort even of an extraordinary kind."[8] We should add, however, that will is often involved in the maintenance of effort.

The act of will in the sense of choice or determination, like all elementary conscious experiences, has its own specific quality, intensity, and duration.

The quality of the act of will is its voluntary character, something that belongs to no other conscious experience whatsoever.

Its intensity ranges from mere velleities to an irrevocable absolute determination.

Its duration may be momentary, as when one determines to do something and does it at once. On the other hand, when immediate execution is not possible or not called for, the determination to do a specific act may last for years.

Distinct from the problem of the duration of the act of will is that of the minimum time required to come to a simple decision. This was worked out in the early days of Wundt's laboratory by the reaction-time experiment. By subtracting the time it takes to discriminate between two stimuli from the time it takes to choose between them, his laboratory found a "choice time" of 60 to 80$\sigma$ (thousandths of a second).[9] It is to be noted that an act of choice can take place within this period, that is, less than a tenth of a second. Just what the minimum time required may be remains unknown.

### B) VOLITIONAL CONTROL

Among the many psychological studies which might be cited as showing the presence of a power of organization and control is an interesting piece of research by Abramowski.[10]

In his studies at Geneva, Abramowski found one subject who manifested very marked psychogalvanometric reactions but was able to inhibit them at will. He determined to make the matter a problem of special investigation, namely, to determine whether or not the ordinary emotional reaction measured by the galvanometer could be inhibited by volitional effort.

He used the technique in which a weak electric current (from two Leclanché cells) is thrown into a Wheatstone bridge and the subject's resistance is balanced by a variable resistance so that at the beginning of

[8] Francis Aveling, *Personality and Will.* New York, D. Appleton & Co., 1931, p. 93. The work of Aveling and Bartlett was communicated to the Eighth International Congress of Psychology under the title, "The Conative Indications of the Psychogalvanic Phenomenon."

[9] Wilhelm Wundt, *Grundzüge der physiologischen Psychologie.* Leipzig, Engelmann, 1903, vol. 3, p. 461.

[10] Edouard Abramowski, "Recherches expérimentales sur la volonté." *J. de pychologie*, **10**, 491–508, 1913; **12**, 14–43; 88–118, 1915.

the experiment the galvanometer gives a zero reading. The deflections were then measured when sudden unexpected visual, auditory, and tactual sensations were given, or certain words, likely to touch the complexes of the patient's life, were spoken, or he was asked to perform a difficult multiplication. The sum of the swings of the galvanometer in such a series of experiments, in which the subject made no effort to control his emotional reactions, was compared with a series in which he tried to use "all his force of will to remain absolutely calm and indifferent to everything that might happen."[11]

The result of this investigation was the demonstration that some subjects definitely manifested this power of volitional control over their emotional manifestations. And though all did not manifest it at first, there was a definite improvement in this power with practice. If one calculates the averages for all subjects that he gives for four successive series of experiments and plots the curve, one will see a marked drop in the average swing of the galvanometer which approximates a logarithmic curve of learning.

In an attempt to investigate how volitional activity reduces the amplitude of the swing of the galvanometer, Abramowski ruled out the possibility of doing so directly by muscular, respiratory or circulatory activity. Nor was there an intercalated emotion that acted on these physiological functions. It depended on a central power of control which prepared the subject to receive stimuli of any kind with indifference and a resultant lowering of emotivity.

The experiments deserve repetition and suggest an extensive study of the sphere of volitional control and the ways and means of its accomplishment. But they point clearly to a power of the human mind to exert some kind of an influence which controls mental life more or less successfully and can even affect the organic reactions to emotional experience The freedom of this power to exert or not exert the influence of which it is capable is another matter and must be the subject of a special investigation.

### c) FACTORIAL ANALYSIS AND THE VOLITIONAL FACTOR

The pioneer study in the factorial analysis of mental life which led to the discovery of a will factor was that of Webb. He found a general factor underlying such traits as "tendency *not* to abandon tasks from mere changeability." "Tendency not to abandon tasks in face of obstacles." "Kindness on principle." "Trustworthiness, conscientiousness." It is clear that traits such as these demand an active control of conduct by the individual.[12]

[11] *Loc. cit.*, **10**: 501, 1913.

[12] Edward Webb, "Character and Intelligence." *Brit. J. Psychol.*, (Mon. Suppl.) vol. 1, 3: 53 ff, 1915.

Richardson[13] has also found some evidence of a factor of control in mental life which is different from educational achievement and intellectual ability. He utilized a modified form of the Downey will-temperament tests into which he introduced such factors as the ability to switch readily from one train of activity to another, the ability to work near the level of maximum capacity, and the power to concentrate on a task until satisfied that it is accomplished. His battery of tests has a low correlation with both intelligence and educational achievement,[14] whereas intelligence and educational achievement are highly correlated.[15]

It is interesting to note that this conative ability in girls manifests a sudden development at the age of puberty. Unfortunately, Richardson did not measure the increase of growth at the corresponding age in boys.

Webb's analysis, Richardson's work, and that of Abramowski are complementary and, compared with the previous studies, suggest that one should accentuate the distinction between the act of will in the sense of choice and the act of will in the sense of voluntary activity and the control of conduct. Choice is a specific psychic experience and is a manifestation of volitional activity. But volitional activity does not end with the act of choice but continues in the control of conduct.

In Chapter 13, "Factorial Analysis of Emotional Life," we found evidence for a general factor underlying the following series of traits and functions of the mind: attention, truthfulness, self-control, will, reliability, stability, refinement, religion, response to reproof, attitude toward work, and generosity.[16] The G-factor technique shows that the intercorrelations of all these traits are accounted for by one and the same thing. It is evident that this thing is something that has to do with the control of the mind and the behavior of the individual. This can be understood if there is a real ability in the mind of man, a specific faculty, whose function it is to control the flow of thought and conduct.

The recognition of this faculty is called for by the G-factor technique and once having determined the existence of such a mental function we can see how it would enter as an essential element not only in the interesting data of Abramowski and the statistical work of Webb and Richardson, but also in the understanding of man's reaction to the stress and strain of life and the pursuit of worth-while ideals.

Experimental psychology has had to withdraw from the task of providing

[13] C. A. Richardson, "The Measurement of Conative Factors in Children and Their Influence." *Brit. J. Psychol.*, **19**: 405–412, 1928–29.

[14] $0.272 \pm 0.082$ and $0.364 \pm 0.076$.

[15] $0.881 \pm 0.02$.

[16] For an empirical description of all these traits, see Sister Rosa McDonough, "The Empirical Study of Character." *Studies in Psychol. & Psychiat.*, Vol. II, no. 4, 1929.

a helpful basis for understanding and dealing with human conflicts because it has been unwilling even to consider the real existence of a faculty of will in mental life.

Wundt, for instance, complained that, "Whereas no one thinks, in using such expressions as image, sensation and the like, of anything more than abstract general terms for a number of individual facts, which always appear as concrete individual contents of consciousness, each one of which perhaps is not just the same as any other; nevertheless one is inclined to see in the 'will' a general mental force, which, in any individual at least, is always the same and which stands over against the other individual events of consciousness as an independent being."[17]

No one perhaps even conceived of mental faculties as independent substantial entities, but each faculty of the mind is different from every other faculty. The faculty of vision is as truly a faculty as the faculty of will; and memory is different from reasoning and so on throughout the entire gamut of the functions of the mind. All mental faculties are specific ways in which the soul, the organizing principle of man, carries out its various functions. Because Wundt conceived of the states of consciousness as actions merely and not as functions of anything, either of body or of mind, he naturally looked upon images, sensations, choices, and all mental phenomena as mere items in the stream of consciousness and not as manifestations of a faculty, that is, of one of the various ways in which the human psyche functions. If however, we look at the Wundtian concept a little more closely we see that it harbors impossibilities. There is a flow of consciousness but what flows? Nothing. There is sensation and perception, but what perceives? Nothing. There is choice, but who chooses? Nobody. There is action, but nothing acts; motions, and nothing moves.

As a result of this fundamental philosophy, Wundt can only point to some events that can be observed in a volitional sequence. His analysis is based largely on what takes place in the reaction-time experiment. One is waiting for the signal to make a movement. The signal is given and suddenly there is an apperception of a mental content. This apperception involves the idea of an action and leads to the action. In the sequence of events one can distinguish a triad of feelings: a feeling of activity, a feeling of decision, and a feeling of fulfilment.[18] But there is only a flow of events without anything flowing and the individual by his own spontaneity contributes nothing to the flow and is responsible for nothing.

Wundt is merely naming events which may be found in a reaction-time experiment. He is proving nothing. If we consider Wundt's concept

[17] Wilhelm Wundt, *Grundzüge der physiologischen Psychologie.* Leipzig, Engelmann, 1903, vol. 3, p. 242.

[18] Wundt, *op. cit.*, 306 ff.

in the light of the experimental literature we notice a remarkable conflict. The experimental literature points to the individual exerting an influence on the events of his life. With Wundt, the individual, if he can be said to exist at all, is a passive something experiencing feelings of various kinds but doing nothing. Abramowski's subjects were active in maintaining peace and reducing emotional resonance. Their conduct could not be described as merely experiencing feelings of activity, decision, and fulfillment. Webb's and Richardson's subjects were active in such things as fidelity to tasks, switching from one train of activity to another. And Sister Rosa's G-factor manifests a wide complexity of active control over thought and conduct. What is exerting this influence? It is the individual by means of a mental function, which function is appropriately termed *will.*

Wundt's concepts may be taken as typical of a number of writers who attempt to ascribe volitional activity to anything else but will. Ziehen, to take a picturesque example, attempted to add to the emotional elements pointed out by Wundt a series of sensory phenomena: consisting in (1) the idea of a desired action, (2) sensations of tension from various muscles, (3) a series of motor ideas of speech corresponding to "I will do something" and (4) the idea of "a causal relation existing between the Ego-idea and the desired action" which is purely cognitive in character and lacks any volitional element.[19] But Ziehen is merely outlining his own concepts and proving nothing. The literature and a little personal observation will show that in decision and the execution of what is decided and in the control of thought and conduct the flow of events is not the mere passive sequence which such writers as Ziehen imagine. The scientific literature demands a real and active part of the individual in the management of many trivial and momentous events of human life; and factorial analysis shows that there is one function by means of which control is effected. This function may appropriately be termed will.

## 2. Volitional Action

### a) Emotional disorders and volitional action

If one studies the disorders of emotional life one will see that phobias of the present are sometimes associated with definite events of the past which at the time produced a violent fear reaction for which there were ample grounds in the genuine danger experienced, or one which was conceived of as very dangerous but in reality was only an apparent danger. When one studies the attempts at treating these abnormal emotional conditions

[19] See Theodore Ziehen, *Introduction to Physiological Psychology.* London, Swan Sonnenschein, 1895, p. 295.

one will find some that clear suddenly when the patient, in the process of analysis, attains an insight into their origin and realizes that the conditions of the past do not obtain in the present and that therefore the present fear is utterly unreasonable.

Sometimes the clearing of the emotional condition appears to be due to living over the early experience and allowing free vent to the emotional outflow. An abreaction of this kind sometimes relieves tension permanently and results in a disappearance of the phobia or anxiety state.[20]

Recoveries which take place in such ways may be well described as pure emotional readjustments. They seem to require no effort on the part of the patient and if all cures were brought about by mere emotional readjustments there would be some reason for confining psychotherapy exclusively to the affective and conative sphere of our mental life. By conative is here meant mere impulse and sensory desire as distinct from true volitional activity.

The attention we have devoted to bibliotherapy, by means of which the child is led to formulate for himself principles of conduct and so solve his behavior problem,[21] indicates that besides the affective and conative there are also intellectual factors in the control of human conduct and the organization of mental life.

But seldom do intellectual principles by their native dynamic power alone guide and dominate conduct permanently without the support of what we may term *volitional action.* This volitional action is the subject of the present section. Many psychiatrists of the present day pay little or no attention to it. Otto Rank, while not having clearly conceived of it and properly defined it, recognized its importance.[22] Many psychiatrists recognize the fact that various psychoneurotic patients have a definite drive to persist in their parataxis and resist any attempt at cure even though they came to a psychiatrist for treatment. Many, too, agree with Rank that it is important to stimulate the patient's will to recover and enlist his cooperation in the therapeutic procedure.

When this will to recover is strong enough the patient can even effect his own cure by intelligent and persistent effort. Homosexuality is looked

[20] Clearing by abreaction was exemplified in a case cited by the author in *The Nature and Treatment of Mental Disorders.* New York, Grune & Stratton, 1943, 104 ff.

[21] See T. V. Moore, *The Nature and Treatment of Mental Disorders.* New York, Grune & Stratton, 1943. Chap. XIII, "Bibliotherapy," pp. 216–232.

[22] See Otto Rank, *Will Therapy.* New York, Alfred A. Knopf, 1936, pp. XXXV + 292; *Truth and Reality,* New York, Alfred A. Knopf, 1936, pp. X + 193; *Modern Education,* Alfred A. Knopf, 1932. Chap. III, "The Training of the Will and Emotional Development," 58 ff.

upon by psychiatrists as very difficult to cure even with skillful professional treatment. But some homosexuals have cured themselves.[23]

Any psychiatrist who attempts to dispense with the personal cooperation of the patient will often fail in the treatment of a number of psychoneurotic conditions when it would have been possible to effect a cure by enlisting his cooperation.

### B) HUMAN RESPONSIBILITY

What is this power of cooperation which brings under control the strongest emotional drives? If one looks at it more closely, one will see that it operates in the light of intellectual ideals. It is thus something very different from the emotional drives themselves, which are blind impulses to action that operate without any dependence whatsoever on intellectual ideals. We may speak of the power that controls emotional drives and sensory impulses, in the light of ideals of conduct, as the will. A being without this controlling power is entirely lacking in what we recognize as human responsibility.

Now as a matter of fact, everyone, no matter what may be his metaphysics in theory, recognizes the existence of human responsibility and acts on the assumption that men are responsible agents. Let us dwell upon this point a moment.

1. Everyone recognizes his own responsibility. Let him look back on the accomplishments of his personal past. There are some things in which he feels that he had a share by his own personal effort. They might never have come about had he not thrown his energies into their accomplishment; or their realization might have been postponed for an indefinite period. As a matter of fact, no man regards the products of his lifetime efforts as purely mechanical effects of a machine that could not have done otherwise than as it did. And if one honestly looks at the past there are some things to be regretted, some wrongs were perpetrated and "it was all my fault." There are some things in the life of every man that he not only regrets but for which also he holds himself responsible.

2. Everyone holds others responsible for various injuries or damage which one has suffered at their hands. If a reckless driver kills a child, we do not say the poor driver could not help driving recklessly for he is a pure machine and cannot be held responsible for anything no matter what he may do. No. Everyone, no matter what his philosophy, acts upon the

[23] See, for instance, the case reported by this author in *Character and Personality*, 1945. The man had a triad of symptoms which some psychiatrists would have declined to treat: fetichism, homosexuality, and alcoholism. And still he cured himself.

assumption that other human beings are very often, if not usually, responsible for the results of their conduct.

3. Everyone acts upon the belief in the power of his own initiative. Who can honestly say that if he were a candidate for a very important position that he would wait for the mechanism of the cosmos to open the way to its attainment. Every such person initiates various steps and undertakes all possible measures and activities and does all he can possibly do to attain the desired end. But no machine can conceive of an end, nor perceive various means of its attainment, nor initiate anything whatsoever to bring about its attainment.

If now you believe in your own personal responsibility and hold others responsible and act on a belief in the power of your own initiative, be honest and admit what all this implies: your power of freedom. No machine is responsible, no machine has a power of initiative; and because man is responsible and has a power of initiative and can conceive of ends and perceive various means by which an end may be attained and, as a matter of fact, does take steps to attain the end he desires in this way or that, as he elects, it is quite evident that man is a free and responsible agent.

## Chapter 28

# THE PHILOSOPHY OF WILL

### 1. The Root of Freedom

Voluntary action differs from the actions of man or brute which derive exclusively from the cravings of sensory nature, or animal desires or actions determined by the violence of emotional drives. It differs from such activity in as much as a free agent is endowed with intellectual insight into ends and their values and has a power of realizing consequences and of perceiving various means by which ends may be attained, and after due deliberation can choose one end rather than another and may select, without being forced, any of the various means by which the chosen end may be attained.

No being that is incapable of perceiving ends and the means of their attainment can be free and responsible. But the perception of ends, the evaluation between them, the realization of consequences and the insight into the nature of means in relation to the end to be obtained is intellectual activity.

Intellectual power is therefore the foundation stone on which volitional activity must rest.

As St. Thomas expressed it; "The root of liberty is the will as subject; but as cause, it is reason. For on this account can the will be inclined to many things, because reason has various concepts of the good. And, therefore philosophers define free choice as the free judgment of reason, for reason is the cause of freedom."[1]

Volitional activity, in this sense, is free and responsible activity. This implies that the free and responsible agent must be capable of saying, "I had ample knowledge of the various possibilities open to me and in the light of this knowledge I elected one course of action rather than another. I realized the consequences that might follow if I entered on this course of action and with full knowledge I decided to adopt it. I saw various means of attaining my objectives and chose some and discarded others."

It is readily seen that only an intellectual being is capable of such conduct. Though animals may use simple tools to obtain food or freedom and so adapt simple means to attain an object perceived by the senses, there is no evidence that they are capable of deliberation in the sense above described. Unlike man they do not habitually use tools and store them up to obtain their objectives. Though spiders build webs there are various facts that

[1] *Summa theologica*, 1.2. Q. XVII, 1. ad 2.

indicate that in building the web they have no concept of the purpose of the structure they are weaving.[2]

Our problem here is not the nature of animal intelligence but the root of freedom in man. But it might be well to touch on the possibility of freedom in animals below man. If animals are endowed with intellectual power, and intellectual power is the root of freedom, then animals are also free. But are animals endowed with intellectual power?

Three answers have been given to the problem of animal intelligence:

*a*) Animals have no intelligence of any kind, but are pure reflex machines.

*b*) Animals are endowed with consciousness, are capable of sensory perception, sensory evaluation and can adjust conduct in accordance with their perceptions and evaluations.

*c*) Animals as well as man have human powers of abstraction, judgment and reasoning.

Anyone who studies the literature on the behavior of insects will see that they are endowed with sensory perception, sensory evaluation and do adjust conduct in the light of their perceptions and evaluations. They not only attain ends in virtue of instinctive endowment, but also learn by experience; and, in solving the simple problems of their environment, adjust means to ends in a way that excludes the possibility of regarding their behavior as mere reflex actions of an automaton. The cooperation of ants in attaining ends excludes the reflex action concept. There is no central nervous system of the colony to serve as the basis of cooperation reflexes, but only individual ants, each with its own nervous system.

But though many pieces of behavior in the insect would show intelligence in the sense of sensory evaluation,[3] we do not have evidence that animals below man are capable of formulating abstract general principles and guiding their conduct in the light of these abstract general principles. It is intellectual power of this order that is the root of freedom.

We might say that freedom is essentially present in a being who by nature is endowed with intellect to conceive ends and ideals and to evaluate means of attainment and is physically unrestrained in its power to take steps to attain the end or be faithful to the ideal and to organize conduct in the light of general principles.

One of the striking characteristics of the will is that it appears as a cause

[2] See Chapter XVIII, "Instinct and Impulse."

[3] For an interesting series of observations demonstrating this, see Richard William George Hingston, *Problems of Instinct and Intelligence*, New York, Macmillan Co., 1928, Chaps. X to XV. Hingston does not distinguish between evaluation on the sensory level and the formation of abstract general principles. Whenever a problem involves the formulation of a general principle in its solution, animals fail to solve it. See T. V. Moore, "Human and Animal Intelligence," in *Scientific Aspects of the Race Problem*. New York, Longmans Green & Co., 1941, 131 ff.

in mental life and that too as the most important causal factor in the inner world of man.

Sensations are products of external forces acting on the sensory apparatus.

Emotions are reactions to various mental experiences.

Concepts may become dynamic forces, but only if they lead to a determination, that is, to an act of will.

Volitional activity organizes mental life by a genuine causal activity. To understand the will and its activity we must digress for a while and discuss the concept of causality.

## 2. On Causality in General

In order to get a clear notion of what is meant by causality, let us lay down a few statements in order to crystallize our concepts.

*a*) Cause and effect are related in such a manner that when the causal action takes place the effect must follow unless factors intervene which prevent the causal action having its ordinary consequence.

Let us take an example: If one taps the patellar tendon just above the kneecap, the leg extends, giving a little kick. The movement of the leg follows of necessity upon the stimulation of the tendon. If, however, one stimulates an appropriate nerve, the subsequent tapping of the patellar tendon causes no knee jerk. It is said that the reflex has been *inhibited* by the stimulation of the nerve. The cause acts but the effect does not follow, because conditions have been introduced in the nervous system which prevent the operation of the cause.

It is quite clear that there is something more than Hume's concept of a mere temporal sequence: a tapping of the tendon followed by the kick of the knee. The tapping of the tendon has sent a stimulus to the central nervous system which under ordinary conditions will be followed by a stimulus from the central nervous system to the extensor muscles which produce the knee jerk. But if the appropriate nerve at the appropriate time is is also stimulated, something happens in the central nervous system which prevents the nervous discharge which would otherwise have contracted the muscles which produce the knee jerk.

Here the causal action is physiological but there are analogies in purely mental life. A poor man thinks of buying an automobile on the installment plan. But then there comes the idea of a debt that it will take a long time to pay and how in various ways his life and that of his family will be restricted and cramped by reason of the debt, and the desire which would have led to the purchase is inhibited by the idea of the consequences and no determination by the will takes place.

St. Thomas expressed the principle of voluntary action by the simple

statement that, "A cause is that upon which something follows with necessity."[4]

The possibility of inhibition in mental life, according to St. Thomas, makes freedom possible, "For it can happen," he said, "that something is the sufficient cause of another thing, and nevertheless the effect does not follow of necessity because of some supervening impediment. Otherwise it would follow that all things happen by necessity."[4a]

The sequence of events in our mental life is not something that we are incapable of influencing. We can inhibit drives to unwholesome ends by holding before our minds concepts, principles, and ideals which inhibit the unwholesome drives.

It may be well to point out here that once the individual makes use of his power of voluntary choice the action follows by necessity. The resulting action is not uncaused but caused and a cause is that upon which something follows of necessity. But all causes do not commence to act by necessity. God and man are both capable of free volition.

*b*) That without which a specific thing cannot come into being, can be termed the cause of its existence.

There are a number of effects which can be caused in a number of different ways. Thus there are myriad ways of causing the death of an organism. But there are also a number of things which have a specific cause and cannot be produced in any other way. For example, pulmonary tuberculosis cannot be produced except by infection with an acid-fast organism known as Koch's bacillus. When this organism gains entrance to the lung there develops a peculiarly specific pathological structure: the tubercle with its central giant cell and two surrounding encapsulating layers. Absorption of the protein, carbohydrate, and lipoid constituents of the tubercle bacillus gives rise to fever and specific changes in the blood picture, and with the growth and multiplication of the tubercles and the reaction and destruction of surrounding tissue we get the characteristic pathological changes and symptoms of tuberculosis.

Bacteriology can give us an indefinite number of specific causes for characteristic pathological effects. A study of the operation of these specific causes gives us a vivid picture of causal action. Such causal action is no mere antecedence and consequence as conceived of by Hume. But a specific entity acts in a specific way and by its characteristic type of action produces an effect which nothing else in nature is capable of producing. To

[4] *Summa theologica*, 1.2 Q LXXV 1. Obj. 2 and ad 2. Cf. hereon Gunther Schulemann, "Das Kausalprinzip in der Philosophie des hl. Thomas von Aquino," in *Beiträge zur Geschichte der Philosophie des Mittelalters*, Vol. XIII, No. 5. Münster, i. w. 1915, 6 ff.

[4a] 1.2 Q. LXXII, 1. ad 2.

understand causality as it is in *rerum natura*, a knowledge of mere antecedence and consequence contributes little. We must study the details of causal action to see how and in just what ways the cause flows over into the effect.

Whenever, however, we find a specific agent producing a characteristic effect which nothing else can bring about we have a right to say that that agent is the cause of that particular effect.

St. Thomas expressed this principle very simply and in a few words: "That is properly the cause of anything, without which it cannot be; for every effect depends upon its cause."[5]

*c*) Over and over again we see things that were possible becoming actualities, or to express it in more philosophical terms, we see things passing from potency to act. But nothing makes itself pass from potency to act.

We know by experience and by reflection that nothing leads itself from potency to act. Every lung is capable of developing tubercles, but no lung ever does so unless it is infected by tubercular bacilli. And reason tells us that what is in potency does not exist as yet and hence it cannot act.

Therefore all that is produced must have a cause which brings it into being.

*d*) When now we look at the various causes which determine a thing to be what it is, we must distinguish two groups: (1) causes *intrinsic* to the thing itself; (2) causes outside the thing itself: *extrinsic* causes.

It is the concept of change which points out the necessity of two different intrinsic causes in material things. The oak grows from the acorn by assimilating nourishment from the ground and developing according to a specific plan. But in the ground on which it grows there is no chlorophyll for the leaves nor tough fiber for the trunk. The content of the soil has been changed. We cannot say that the chemicals of the soil have been annihilated and the substance of the tree created. On the contrary the chemicals of the soil and the air have been changed into the substance of the tree. Now change means the perendurance of something in the process of change. The annihilation of one thing and the creation of something else would not be change. That which perendures and is changed into something else is termed the *material cause* of the final product. But something must account for the process of organization and this is inherent in the growing acorn and the developing tree. This organizing principle is the *formal cause*. There could be no tree without something to be organized into its final structure. But organization is an active process and must have a cause.

So there are two intrinsic causes in all organisms: a material cause and a formal cause.

[5] *Summa theologica*, 3. Q. LXXXVI, 6. Sed contra.

What is true of organisms is true of all simple substances. Philosophically a "substance is a thing to which it is proper that it should not reside in a subject."[6] As, for instance, shape resides in plastic material. But simple substances manifest specific properties. What is it that makes them manifest such and such properties rather than others. The root of their activity is a formal cause and that intrinsic something which is activated by the formal cause is their prime matter or material cause.

The extrinsic causes are either efficient or final.[7] The efficient cause is something extrinsic to the effect produced as, for instance, the tubercular bacillus with its active constituent elements is the cause of the tubercle in the lungs.

The final cause is an end perceived by an individual which appeals to him as worthy of attainment. And here we step into the sphere of voluntary action.

Volition is not always taking place and therefore it is necessary that the process of voluntary action should be initiated. This initiation is brought about by the perception of an object worthy of attainment. The good to be attained is the final cause in the process of voluntary action. Without the perception of a good it could not possibly be willed. But the final cause is not an efficient cause and does not therefore force the choice by absolute necessity.

St. Thomas transcended the Aristotelian schema of the four causes by accentuating the Platonic concept of the *causae exemplares*—exemplary causes. Speaking in a human fashion, the divine ideas of nature and all the things in nature are models which organize nature in the process of its development.[8] And so, too, in volitional activity the character ideal which we derive from Christ or from God Himself is an exemplary cause which enters into the process of personal development. But it is evidently not an efficient cause destroying personal freedom.

### 3. Hume's Concept of Causality

Quite different from the concept of causality just outlined is that of David Hume. Hume had a profound influence on modern philosophy, and lest it should seem that we neglect the evidence contrary to our own concepts, we present here an outline and criticism of Hume's concept of causality.[9]

[6] "Oportet igitur, quod ratio substantiae intelligatur hoc modo, quod substantia sit res cui conveniat esse non in subjecto." *Contra Gentiles*, 1, XXV.

[7] "Causa autem extrinseca est vel efficiens vel finis." *Contra Gentiles*, 2, XXXI.

[8] See *Summa theologica*, 1. Q. XLIV, 3.

[9] It would take too much space to give an adequate outline of the various modern theories of causality. An excellent digest of these views is found in Joseph W. A. Hickson, *Der Kausalbegriff in der neueren Philosophie und in den Naturwissenschaften von Hume bis Robert Mayer*. Vierteljahrsschrift f. wiss. Philos., 24–25. 1900–01.

Hume approaches the study of causality from the point of view of pure sensationalism. "It is impossible," he says, "perfectly to understand any idea, without tracing it up to its origin, and examining that primary impression from which it arises."[10] By impressions Hume understands "sensations, passions and emotions as they make their first appearance in the soul."[11] By ideas he means "the faint images of these in thinking and reasoning."

Now it is clear, he goes on to point out, that no sensory quality of any body can ever be a cause, "since whichever of these qualities I pitch on, I find some object, that is not possessed of it, and yet falls under the denomination of cause or effect."[12]

Seeing that causality is an intellectual concept and not the sensory quality of an object, Hume has doomed his discussion to end in failure.

He goes on, however, to seek the concept of causation in some relation that can be perceived by the senses.

He points out, (1) that cause and effect are contiguous in time and place, (2) that the cause is prior to the effect. Having established the two relations of contiguity and succession, he says he cannot proceed further. "Motion in one body is regarded upon impulse as the cause of motion in another. When we consider these objects with the utmost attention, we find only that the one body approaches the other; and that the motion of it precedes that of the other, but without any sensible interval."[13]

But one seems to perceive a "necessary connection" between cause and effect. This cannot be, in Hume's philosophy, for all knowledge is the perception of sensory qualities or the revival of these perceptions as images and no sensory quality can ever be a "necessary connection." The difficulty Hume here experiences derives entirely from the inherent impossibilities of his own philosophy.

Let us consider for a moment the following passage in his later book, *An Enquiry Concerning the Human Understanding:*

> When we look about us towards external objects, and consider the operation of causes, we are never able, in a single instance, to discover any power or necessary connexion; any quality, which binds the effect to the cause, and renders the one an infallible consequence of the other. We only find, that one does actually, in fact, follow the other. The impulse of one billiard-ball is attended with motion in the second. This is the whole that appears to the *outward* senses. The mind feels no sentiment or *inward* impression from this succession of objects: Consequently, there is not, in any single, particular instance of cause and effect, anything which can suggest the idea of power or necessary connexion.[14]

[10] *A Treatise on Human Nature*, Bk. I, Pt. III, Sec. II, p. 377 in edition edited by T. H. Green and T. H. Grose, New York, Longmans, Green and Co., 1898.

[11] *Op. cit.*, Bk. I, Pt. I, Sec. I, p. 311.

[12] *Op. cit.*, p. 377.

[13] *Op. cit.*, pp. 378–9.

[14] "An Enquiry Concerning Human Understanding." Sec. VII, Pt. I, Sec. 50.

Let us consider a little more closely the facts on which this billiard-ball metaphysics is based.

Why does one billiard ball repel another? Solid substances manifest various degrees of resistance to deformation by the application of external forces and a tendency to return promptly to their original contour when this contour has been deformed by the application of an external force. The force with which they return to their original contour approximates in various degrees the force which deformed the contour, and in exerting this force the body performs work.[15]

The "quality which binds the effect to the cause" in this case is a property termed elasticity. It is a property whose power can be measured and is something specific and peculiar to the substance in which it resides.

When one billiard ball strikes another, each suffers a slight flattening which springs back into place, making the balls rebound in a direction determined by the planes of flattening.

Two billiard balls made of lead would behave very differently from two billiard balls made of steel because of differences in the inner forces arising from molecular structure.

It is not true that in the impact of billiard balls we have merely two objects moving in certain directions prior to impact and two objects moving in two other directions after the impact and no power which binds the effect to the cause; for in this particular case we have a very definite force, the *elasticity* of the constituent material. It is true that we cannot see this force; but by appropriate methods we can demonstrate its presence and measure its magnitude.

And so whenever we have causal action in which one thing in action produces an effect in another thing, careful study will demonstrate the existence of some kind of power which "binds the effect to the cause."

Mass and shape are incapable of accounting for the phenomena of nature. And when we commence to measure active principles we find this activity to vary both in quality and intensity. One micro-organism produces very different effects from another and different strains of the same micro-organism may vary widely in virulence. The restriction of the study of causal action, in accordance with Hume, to the study of antecedence and consequence would have placed a formidable barrier to the progress of scientific knowledge.

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p. 63 in *Enquiries Concerning the Human Understanding and Concerning the Principles of Morals*. Edited by L. A. Selby-Bigge. Oxford Clarendon Press, 1927.

[15] This is measured by the usual equation, Work = Force × Distance. See John Abraham Van Den Broek, *Elastic Energy Theory*. New York, John Wiley & Sons, 1942, p. 6.

Hume then attempts to explain the feeling of a necessary connection between cause and effect as due to a habit formed by long experience.

> We remember to have had frequent instances of the existence of one species of objects; and also remember, that the individuals of another species of objects have always attended them, and have existed in a regular order of contiguity and succession with regard to them. Thus we remember to have seen that species of object we call *flame*, and to have felt that species of sensation we call heat. We likewise call to mind their constant conjunction in all past instances. Without any further ceremony, we call the one *cause* and the other *effect*, and infer the existence of the one from that of the other.[16]

But Hume was not a genetic psychologist. A study of the origin of the concept of causality in the child's mind shows that it is the new and the strange that first calls forth the question "why" and a seeking for the cause.[17]

### 4. Psychical and Mechanical Causality

A study of the mental and physical life of man leads us to the conclusion that man is a being in whom the physical and the psychical are intimately interwoven. It is possible to explain some things in the life of man by the transformation of physical energy. Thus when a man does mechanical work by lifting weights, the amount of work done can be accounted for by the energy expended by the organism. But mental work seems to involve no expenditure of physical energy.[18] All this is possible, for man is a unit substance manifesting physical and psychical properties. The living principle of thought and action in man is not entirely immersed in matter, for there are functions of man that act independently of the organism.

Owing to the physical and the psychical in the human organism, it is natural to suppose that two forms of causality will be manifested in human activity: physical and psychical. Man himself is the substantial being underlying each form of causal activity. It is not necessary to suppose with Wundt that physical causality has for its basis the nervous system and that psychical causality is exercised by no substantial being whatsoever but that one mental process is the cause of another process and nothing whatsoever ever acts in the manifestations of mental life.[19] This Wundtian concept is inherently contradictory, for a mental event is an activity and there can no more be action without anything acting than there can be

[16] *Op. cit.*, Sec. VI, p. 388.

[17] See the literature cited in T. V. Moore, *Cognitive Psychology*, p. 369.

[18] Cf. T. V. Moore, *Cognitive Psychology*, 540 ff.

[19] Wilhelm Wundt, "Über psychische Causalität und das Prinzip des psychophysischen Parallelismus." *Psychol. Studien*,, 10: p. 107, 1894. See also *System der Philosophie*. Leipzig, Engelmann, 1897, p. 301.

motion without anything moving. Man acts in all that he does, but he has various powers and various ways of acting.

We may approach the problem of differences in the form of causality in the life of man by asking the question: Does all determination of any kind of effect whatsoever demand the expenditure of energy, the word energy being taken in the sense that it is equal to the product of one half the mass times the square of the velocity($E = \frac{1}{2}mv^2$)? This equation has a very wide application in physical nature, but it is very difficult to see how it can possibly apply to certain things that are determined to be in the mental life of man. Let us take, for instance, the determination of the conclusion when the premises are assumed.

Let us consider the following problem. A man with malicious intent to injure another man aims a blow at him with his belt. The belt glances from the man it was intended to injure and cuts open the face of a woman standing near, injuring her severely. Was the man striking with the belt guilty of injuring the woman?[20]

The court held that the law maintained that "if a person has a malicious intent towards one person, and in carrying into effect that malicious intent he injures another man, he is guilty of what the law considers malice against the person so injured, because he is guilty of general malice."

But the man in question did have a malicious intent towards one person and did injure seriously another person.

Therefore he is guilty of malice against the person he did injure.

When one assumes the two premises given above, one is determined to draw the conclusion that follows. But how can this determination be expressed by the energy equation, $E = \frac{1}{2}mv^2$? Mass and velocity are concepts that simply do not apply. The determination is not brought about by mechanical causal action but by nonmechanical or psychic causality.

Let us look at the matter further. One reads the problem and the given premises. This reading results in an understanding of the problem and insight into its various ramifications. The insight is a product initiated by rays of light impinging on the retina. Careful study would show a certain very small production of heat in the retina and optic nerve but this heat change cannot account for the insight into the problem and the principles, and the deduction of the conclusion. Unless the rays of light impinged on a psychophysical organism endowed with intellectual power and capable of psychic activity, no insight would take place and no conclusion would be deduced. The psychic activity that produces the conclusion cannot be understood in terms of mass and velocity but is something quite different.

[20] See Miriam Frances Dunn, "The Psychology of Reasoning." *Studies in Psychol. & Psychiat.* Vol. I, 1: 63–64, 1926.

Again one has insight into the full import of a sudden dangerous situation and there results a violent emotional reaction. The meaning of the situation is a psychic something that cannot be expressed in terms of the energy values of the sensory stimuli that initiate perception. These sensory stimuli impinge on a psychophysical organism endowed with cognitive powers and a storehouse of memories in the light of which the present is interpreted. But mere mass and velocity of motion could not produce the insight that leads to the emotional reaction, nor color the present in the light of the past.

Furthermore we are capable of perceiving an end and adopting a goal towards which we strive. The adoption of this goal brings about, by psychic causality, a whole series of acts adapted to its attainment. But mere mass in motion is incapable of conceiving anything, nor can a moving mass direct itself by deviating from the line in which it is moving.

It has been many times maintained by various authors that there can be only one type of causality in the whole universe of inorganic matter, plants, animals and man and that this universe is essentially homogeneous throughout its entire extent. The only energy that functions anywhere in the universal system is said to be that which is represented by the equation $E = \frac{1}{2}mv^2$ and the law of conservation of energy dominates the whole. It is conceived that this law is not only empirically verified but also metaphysically established, and that it eliminates the possibility of freedom; for a free choice would be a mechanically undetermined event and such an event could only take place by addition or subtraction of energy from the universe and this would be in contradiction to the law of the conservation of energy.

If what we have just said is true, we must recognize in man, over and above the existence of mechanical energy and mechanical causality, a spiritual power of action and a psychic causality producing events in mental life that have no explanation in terms of mechanical causality and to which the concept of matter in motion simply does not apply.

Some time ago Jakob Hacks[21] pointed out that there are cogent reasons, derived from an analysis of Hertz's *Principien der Mechanik*, which force us to admit that the principles of mechanics do not hold beyond the realm of inorganic nature.

The fundamental law of mechanics, according to Hertz, is thus formulated: "Every free system perseveres in its state of rest or uniform motion in a straight line." Hertz himself thought it unlikely that the fundamental

[21] "Die Principien der Mechanik von Hertz und das Kausalgesetz." *Arch. f. syst. Philos.*, 5: 202-214, 1899.

law of mechanics was applicable to living nature and said that "if it could be demonstrated that living systems contradict the fundamental law of mechanics these would have to be taken out of mechanics."[22]

Hacks brings forward considerations that make it impossible to apply Hertz's principles of mechanics to the mental life of man.

Among Hertz's principles of mechanics is the following: "Could one in any position reverse the velocity of the system (which would not at all offend against the equation of equilibrium in the system) the system would then run through the positions of its previous motions in reversed directions."

When we conceive of this as being done in a purely mechanical system there is no change of critical importance, only a reversal of direction, and nothing essential is lost. Thus if the velocity of the solar system were reversed, the sun would seem to rise in the west and set in the east and there would be no change of crucial importance.

But when we think of applying this reversal of motion to anything involving the life of man, something essential is lost: the meaning of the whole and its parts. Hacks takes as an example the reversal of velocity in all the particles involving the delivery of a speech. The resultant would be an unintelligible jumble of sounds. Again let us look at a funeral. Men walk and ride backwards from all directions, gather around a grave. The earth flies up from the grave, a coffin rises from the ground and goes back to the house; a man is taken from the coffin and put to bed in a strange manner, he eventually gets up in a still more strange manner and goes back in reverse direction over all the scenes of his life until he re-enters his mother's womb. The whole and the parts have lost their meaning. The all-important things in human existence—meaning and purpose—are lost where the material particles suffer a reversal of direction. But there has been no infringement of the law of conservation of energy, for in the purely mechanical system a reversal of direction does not disturb the equations of equilibrium.

It is readily seen that the life of man is something which the principles of mechanics fall far short of adequately explaining. Even organisms lower than man are not explained by a purely mechanical system. The dog scents the ground and starts in pursuit of the rabbit. This has a rational explanation. Reverse the direction of the particles and the rabbit runs after the dog and the dog runs away from the rabbit, both with heads behind and tails in front. This has no rational explanation. Whenever the activity of a living organism is involved, reversal of direction results in a loss of meaning.

[22] *Loc. cit.*, p. 206.

It is thus seen that no objection to freedom can be raised from the law of conservation of energy, for this law applies only to mechanical energy and free will is a spiritual power that operates by processes of psychic causality. And even though we could conceive of the law of conservation of energy having been proved for the infinitesimal changes involved in the activity of a nerve cell, there are various ways in which potential energy might be changed into kinetic in the psychophysical organism without adding to or subtracting from the mechanical energy available to the organism for actions involving mass and velocity.[23]

## 5. The Analysis of Volition

From our discussion of psychic and mechanical causality it is evident that psychic causality plays a major role in the mental life of man. In man psychic causality involves intelligence, the conception of ends and insight into the relation of means to ends and the weighing of values and consequences in the light of ideals and principles.

Volition is the power of choice between means by which an end is attained. Unless an individual is constrained by inner drives or external force in selecting between the means offered him, he is said to be free and responsible in arriving at the choice that he finally makes.

This freedom of choice is not the ability to choose either good or evil but to make a selection between the various goods that are presented for consideration. The freedom of the will is not the power to pick out what one sees as evil under all respects, if one wants to will the evil, for from this point of view the will is necessitated and determined to choose a good of some kind. Freedom lies in the ability to choose one good rather than another.

St. Thomas expressed this in this way: "The will is a kind of rational desire. There can be no desire except for some kind of good. The reason for this is that desire is nothing else than the tendency of the one who desires towards something. Nothing, that is, no conscious being, has a tendency towards anything unless it in some way harmonizes with and is suitable to itself. Since, therefore, everything in so far as it is being and substance is under some aspect good, it is necessary that every tendency should be towards a good."[24]

But it is not necessary that the good that a rational being chooses should be objectively and truly a genuine good. For it may be only apparently good or a present good from one point of view but later will be experienced as a great evil.

[23] Hacks points out that a reversal of velocity of particles would involve no infringement of the law of conservation of energy.

[24] *Summa theologica*, 1.2. Q. VIII, 1, c.

There is a sense in which the will is thrown into action by the external object. That this must be so is evident when we stop to think that we are not always actually willing. Why do we commence to will? Evidently the initiation of the process of willing is the presentation of an object that is attractive from some point of view. This object may be a sensory object and in this way the will is moved to act by an exterior sensory presentation.

St. Thomas expressed this as follows:

> Every being which at times is actually doing something and then (not doing something) but merely capable of doing something, needs to be moved by some moving power. Now it is evident that the will begins to will something which it was not willing previously. It is necessary, therefore, that it should be moved by something to actual volition.[25]

Thus the external object initiates a process of volition in virtue of the ordinary powers of perception, memory, reflection and the whole psychology of man.

But it is not necessary that the process of volition should terminate in a choice of the object presented to perception. And if the object should be willed, the object itself neither determines by necessity its own choice nor the selection of the specific means by which its attainment will be secured.

It is evident that the choice of the object and the selection of the means is not a kind of reflex activity involving nothing more than a response like the kick of the knee when the patellar tendon is tapped by the reflex hammer. The choices involved do not result immediately from the activity of the object but from the action of the will.

The act of choice is an act of psychic causality impossible in a purely mechanical world. It has a psychic spontaneity of which the inertia of matter is incapable.

In virtue of this psychic spontaneity, the will is the master of its own act and moves itself in its volitional choice.

> The activity of the end in matters of desire is like that of the principle in things of the intellect. It is evident that the intellect by the very fact that it knows the principle, reduces itself from potency to act as far as the knowledge of the conclusion is concerned. And in this manner it moves itself. And in like manner the will by the very fact that it wills the end, moves itself to will those things which are involved in attaining the end.[26]

In discussing the ways in which the will is moved to action, St. Thomas rises to a sublime conception of the universe. All the activity of nature

[25] *Summa theologica*, 1.2. Q. IX, 4, c.
[26] *Summa theologica*, 1.2. Q. IX, 3, c.

and all the acts of man are participated in, guided and directed by God, the first cause of all. This is metaphysically necessary.

"Everything that acts is in some manner the cause of being (essendi) either in regard to substantial or accidental being. But nothing can be the cause of being (essendi) except in so far as it acts by the power of God."[27]

The production of "being" implies a certain creative power impossible to the creature. Therefore, God presides over the universe as a general over his army, directing all natural and secondary causes in their activity, giving the necessary reality to their acts and guiding all to the final triumph of good in the consummation and the end.

But just as the instrument gives a specific character to that which is produced by the one who uses it, so the secondary cause contributes to the effect in which it has a share. God is not the total cause of any act in which a creature functions. And so human acts are produced both by God and by man and there is a special character to the act which is contributed by the creature.

God moves the wills of men to that which is good, and no will can choose anything except under the aspect of good, but it is within the power of the will to choose a good which is apparent and not real and be responsible for the choice. For the divine action moves to what is good. The character of the good which is actually chosen depends on the act of the creature. The reality of the act is from God moving to good, the character of the good whether true or apparent is determined by the secondary cause, the will of the creature.

God moves the will of man as the universal Mover to the universal object of the will which is the good. And without this universal motion man cannot will anything. But man by reason determines himself to will this or that which is a true good or an apparent good. But nevertheless God moves some at times in a special way to willing something of a definite character, which is good, as in those whom he moves by grace.[28]

### 6. Ach's Experiments on Will and the Problem of Determination by the Psychophysical Constitution

Narziss Ach undertook a most interesting experimental study of the will. He attempted to study the choices of his subjects in a series of experiments until he could predict with 100 per cent accuracy the choices they would make in subsequent experiments.

In order to do this he chose as material of selection a field of activities in which the subject had no previous experience—that is to say, nonsense

[27] *Summa contra Gentiles*, 3, LXVII.

[28] *Summa theologica*, 1.2. Q. IX, 6 ad 3.

words of five letters each. The subjects were presented with various tasks that they might carry out on these nonsense syllables and told to pick any one of these tasks they might choose and carry it out. Sometimes several tasks had to be chosen, but the subjects were not always held to the full completion of all the chosen activities.[29]

These tasks were such as the following:

A = Change the first consonant of the nonsense word into any other consonant. Thus *ganos* might become *lanos*.

B = Change the middle consonant of the nonsense word into any other consonant. Thus *ganos* might become *gabos*.

Af = Change the initial consonant into the one that follows next in the serial order of the alphabet. Thus *ganos* becomes *hanos*.

There are many such tasks that can be performed on the vowels and consonants of nonsense words. The task can be complicated by calling for two or more changes at the same time.

Naturally some of these tasks are easy and some difficult. Ach found that his subjects could be classified into two groups:

*a*) Those who chose the easier tasks and

*b*) Those who chose the more difficult tasks.[30]

"The subject," says Ach, "knows as a rule that there has developed within him through the experiments a very definite type of reaction which is the adequate expression of his personality and from which he will not later deviate."[31]

Ach thinks, but he does not give in this book the empirical reason for the conclusion, that those who chose the difficult tasks belong to what modern psychology terms introverts or schizothymic personalities and those who chose the easy tasks are extroverts or cyclothymic personalities.

By studying the introspection of his subjects and eventually arranging one type of task or another, Ach was able eventually, even in rather complicated multiple choice problems, to predict the selections of the subjects with 100 per cent accuracy. It is naturally essential that the subject should not know that the essence of the experiment is to predict the choice he is going to make.

Ach builds upon his experiments the conclusion that the behavior of a man in various situations is essentially determined by his character.

"The true standard of preference has its foundation in the psychophysical constitution and is not known by either the introvert or the extro-

[29] *Analyse des Wollens*. Berlin, Urban und Schwarzenberg, 1935. This book constitutes also Sec. VI, Part E of Abderhalden, *Handbuch der biologischen Arbeitsmethoden*.

[30] *Loc. cit.*, p. 415

[31] *Loc. cit.*, p. 429

vert. This inner dependence was first discovered by experimental investigation."[32]

Ach calls attention to the following proposition as the main result of his experiments: "Even in so called free choice, the sequence of mental phenomena is uniquely determined."[33]

The argument leading to this conclusion might be thus formulated: If by an experimental study of a subject's mind I can arrange for him a choice of activities of such a character that I can always predict the selection he will make, then the selection made is not a genuine free choice but one that is uniquely determined (by his psychophysical constitution).

But I can so arrange and predict with 100 per cent accuracy.

Therefore the subject's choice was uniquely determined (by his psychophysical constitution).

Joseph Fröbes, S.J., who was present at the Tenth Congress for Experimental Psychology held in Rome in 1927, rightly pointed out that you cannot conclude that acts "are uniquely determined because they can be in some manner predicted."[34]

Ach seems never to have realized the force of this objection. Let us dwell upon the matter.

First of all, your knowledge of another person does not determine his conduct. Even divine knowledge of future events does not, as knowledge, determine their occurrence.

Furthermore, no human volitional act ever takes place without in some manner being motivated. And the more we know about a human being and the simpler the circumstances in which he is placed, the greater the ease and certainty with which we can predict his conduct.

We can be quite sure that a man who has been a total abstainer all his life will not get drunk if he accompanies us to a banquet. As Ach points out, the deeper the roots of the motivations in the character of the individual, the easier and more certain is the prediction of conduct.

But with all that the virtuous man remains free, and in two ways.

1. He is free because he was responsible for developing his character and forming habits of conduct in accordance with moral principles. It is this that makes him a man to be relied upon, that is to say, makes his conduct predictable.

2. He is free in the very act itself because it is physically possible for him to act against his principles. *He could if he would, but he will not.*

Nothing in Ach's experiment shows that his subjects could not have acted

[32] *Loc. cit.*, pp. 430–431

[33] "Über die Entstehung des Bewusstseins der Willensfreiheit." Ber. ii. d. *Kongr. f. exper. Psychol. in Rom.* 1927 (Jena, Gustav Fischer, 1928), p. 92

[34] *Loc. cit.*, p. 95

in any other way even had they willed. This is evident by the condition that he laid down that the subjects must not know that the experiment aims at predicting their behavior. Such a knowledge would not change the introverts into extroverts or alter the psychophysical constitution determined by heredity and years of experience, but their conduct would at once become unpredictable.

The possibility of predicting an event tells us merely that the event will take place. It tells us nothing of how the event is going to take place, whether by the mechanism of a purely mechanical causal sequence or by the free choice of means to attain an end by a being endowed with intellect and will.

Seeing that an eminent physicist has made the possibility of prediction essential to the concept of causality, we might turn for a moment to consider his theory of causality.

## 7. Planck's Concept of Causality

Max Planck, Professor of Theoretical Physics at the University of Berlin, devoted a special study to the concept of causality and freedom.[35]

His starting point in the discussion of causality was the principle, "An event is then causally determined when it can be predicted with certainty."

There are several difficulties in the admission of this principle as the starting point of the discussion of causality, especially when we are dealing with the problem of causality and free will.

First of all, it fails to bring out the necessary truth that every event must be causally determined.

Then it is necessary to dwell on the concept that causal determination does not eliminate but is implied in the concept of free will.

The free act is not uncaused but caused by the free choice of the will choosing one of several means to attain an end conceived of by an intelligent being. No event transpires without being caused in some way. The problem is whether or not there are some events that are produced by purely mechanical causes and others by the nonmechanical free action of a will choosing in the light of intellectual insights.

The fundamental principle of Planck involves an ambiguity: does "causally determined" mean "mechanically determined"? If that is the meaning, can one say that "an event is mechanically determined when it can be predicted with certainty"? And the answer is "no," because some events that are due to free volition can be predicted with certainty, for example, when the principles and consistent past behavior of a just man are thoroughly known we can predict with certainty correct moral behavior in

[35] Max Planck, *Der Kausalbegriff in der Physik.* Leipzig, Ambrosius Barth, 1932, pp. 26.

a number of situations. And still the behavior of the just man will not be determined by our prediction nor mechanically caused like the flight of an arrow to the target but will be an act of free volition choosing between known means of attaining an end conceived of by the spiritual insight of intelligence.

Furthermore, one must conceive of the possibility that many events may be causally determined, either mechanically or volitionally, which no human intellect could predict. Later in his study Planck says that "the certainty of the predictions depends in large measure on the individuality of the prophet."[36] And so he suggests but does not raise the question whether or not Infinite Intelligence would be able to predict all events. And of course the answer is "yes," but the predictions of infinite intelligence would not be, as predictions, determinations of the events predicted, nor would any prediction show whether or not the event predicted was caused by mechanical necessity or came about by an act of free volition.

Planck calls attention to Heisenberg's principle of uncertainty and points out that when we come to the finer analyses of modern physics an event which is exactly determined in position is not determined in time. Therefore, we can never predict with certainty and exactness. If human prediction is necessary for the objective functioning of a principle of causality in the real world, then Planck's final conclusion would be justified, namely, "The law of causality is neither true nor false. It is rather a heuristic principle, an indicator that points the way and, to be sure, in my opinion, the most important indicator (*Wegweiser*) that we possess."[37]

But prediction is not essential for causality except in the sense that all events can be predicted by Infinite Intelligence because nothing can begin to be except through the operation of some cause or group of causes. But prediction by human intelligence is not necessary for the operation of free or mechanical causes, nor is the possibility of prediction by human intelligence necessarily involved in the concept of causality.

[36] *Op. cit.*, p. 26.
[37] *Op. cit.*, p. 26.

## Chapter 29

# THE SENSATIONS INVOLVED IN VOLUNTARY ACTION

We have seen that in voluntary action concepts are necessary. We must know what we are going to do before we can perform a voluntary action. We have seen, too, that mere knowledge is not sufficient. After knowing what we are to do, we must also decree that it shall be done. Besides knowledge, therefore, there is necessary also a specific *fiat* or act of will. Without an act of will, there is no *voluntary* movement. Imagery is of doubtful value as a precursor of voluntary movement. The question to be taken up in this chapter is to what extent *sensations* are necessary in the execution of a voluntary movement.

Note that the problem before us now is not voluntary action in general but voluntary movement in particular, and it may be well to point out, too, that we are not discussing here the necessity of images, but the necessity of sensations for the execution of a voluntary movement.[1]

There are several pathological cases that demonstrate beyond any question the necessity of some kind of sensation for the initiation and control of a voluntary movement. Perhaps the most remarkable case on record is one reported by Professor Schüppel in Tübingen.[2] The case was that of a young man who suffered from a complete anesthesia, except for a limited portion of the face, over the forehead, nose, eyes, lips, and chin. He also experienced pain in a few places of the body. Many cases of anesthesia are hysterical in nature, and have no organic foundation. These hysterical cases are not good evidence in the present problem because we do not know to what extent any lack of ability in movement would be due to the lack of sensation or would itself be an hysterical phenomenon. If, therefore, we are going to find out what sensations are really necessary in the execution of a voluntary movement, we must have a real organic injury. There can be no question that Professor Schüppel's patient had an organic loss of sensi-

[1] "The first mention of such impressions goes back, according to Sir William Hamilton, to a rather remote past. He tells us that two Italian physicians, Julius Caesar Scaliger, 1557, and Cæsalpinus of Arezzo in 1569, quite independently of one another, were the first to recognize and definitely state that the exercise of our power of movement is the means whereby we are enabled to estimate degrees of 'resistance,' and that by a faculty of 'active apprehension' which was by them contrasted with touch as a 'capacity of sensation or mere consciousness of passion.' " H. Charlton Bastian, "The Muscular Sense: Its Nature and Cortical Localization," *Brain*, X; 8, 1888.

[2] "Ein Fall von allegemeiner Anästhesie," *Arch. d. Heilkunde*, XV; 44–62, 1874.

bility, for in the autopsy it was found that he had been suffering from what is known as syringomyelia. There was a canal in his spinal cord that extended from the first cervical root to the first lumbar, widest from the fourth to the seventh cervical regions where the posterior columns also were destroyed. The pyramidal tracts were intact from the medulla to the second cervical but below were more or less sclerosed. In life, movement was possible to this patient only under direction of the eyes. If he could not see his hands or his feet, he did not know where they were and could not move them. Thus, for instance, he made use only of his vest pockets, because he could see them and direct his hand to them. It was impossible for him to find the hip pocket because he could not see it. If during the nighttime the covers fell off of him in bed, in some way he experienced chilliness, perhaps through the chilling of the blood, but he could not cover himself, for two reasons: first, he could not find the covers; and, second, he could not find himself. It is, therefore, clear that sensations of some kind are necessary in the execution of a voluntary movement.

Another classic case was reported by Strümpell.[3] A man received a stab wound in the neck which penetrated the spinal cord. Strümpell, on the basis of the evidence, diagnosed a destruction of the posterior horn and the outer fibers of the posterior columns. After some months had elapsed, allowing the inflammatory extensions of the injury to subside, the patient's right arm could execute movements under control of the eyes, but not when they were closed. With his eyes closed he could not maintain his arm in a given position; it would gradually deviate without his being conscious of any movement taking place. Movement under visual control was intact, but both superficial and deep sensibility were gone. It is clear, therefore, that some of the sensations that were lacking are necessary in the normal execution and control of a voluntary movement.

This conclusion is confirmed by the results of animal experiments. After cutting the sensory roots of one of the extremities of a monkey, Mott and Sherrington[4] found that movements of the part were seriously impaired. Since then the experiment has become a common laboratory exercise with the frog.

It is clear, then, that sensations of some kind are necessary in the proper execution of voluntary movements.

The will has no immediate control over the muscles but indirectly by way of the pyramidal cells of the cerebral cortex and the motor cells of the an-

[3] *Deutsche Ztschr. f. Nerven h.*, XXIII; 1–38, 1902.

[4] *Proc. Roy. Soc.*, London, LVII; 481–488, 1894–5. An experiment originally done by Claude Bernard: *Leçons sur la physiologie et pathologie du système nerveux*, Paris, 1858.

terior horn of the gray matter of the spinal cord. Not only is this so, but the pathological cases and experiments we have just mentioned prove that sensations of some kind are necessary for the execution of a voluntary movement. Not only must nerve impulses pass from the brain to the muscles, but they must come back again from the muscles to the brain that normal action may take place. The question now arises, What sensations are necessary, and whence do they come? The possible sources of sensations are the bones, the periosteum, the joint cartilages, the joint capsules, the subcutaneous tissues, the skin, the muscles, and the tendons. The sources of evidence on the point may be grouped under the following headings: anatomy, psychological experiment, and pathology.

As far as anatomy is concerned, all of the above possibilities are to be considered with the one exception of the joint cartilages which are not supplied with nerves. They can, therefore, mediate no sensations whatsoever, but the bones, the periosteum, the joint capsules, the subcutaneous tissues, the skin, the muscles, the tendons are all more or less richly supplied with sensory nerve endings.

In the muscles and tendons there are peculiar nerve endings whose structure suggests that they must have something or other to do with the sense of muscular contraction or kinesthetic sensation. Their structure is so interesting and suggestive that it may be well to study these organs in detail.

### Anatomical Basis of Muscular Sensations[5]

Prior to 1850, muscles were supposed to be pure motor organs lacking in sensation. In this year, Koelliker[6] called attention to fibers he had discovered, and which he considered sensory because their structure was different from that of the ordinary motor fibers.

Since then, the sensory neuromuscular end organs have been made the subject of many anatomical and physiological studies. Various forms of nerve endings have been found. The most interesting of these are the muscle spindles, their interest arising from the fact that their structure suggests that they are especially adapted to respond to the contractions of muscles in which they are imbedded.

The muscle spindles are located in the muscle towards the tendon of insertion, or just before the point where the muscle fibers pass over into tendinous fibers. In the tissue of the tendon itself lie similar organs, the

[5] The classic study of this subject is that by C. Regaud, and M. Favre, "Les terminaisons nerveuses et les organes nerveux sensitifs de l'appareil locomoteur," Part I, *Rev. gén. d'histol.*, 1904, 1905, Vol. I, pp. 1–140. Part II, II, pp. 587–685.

[6] *Mikroskopische Anatomie II*, also "Untersuchungen über die letzten Endigungen der Nerven. 1. Über die Endigungen der Nerven in den Muskeln des Frosches," *Ztschr. wiss. Zool.*, XII; 149–164, 1862. See Regaud and Favre, *loc. cit.*

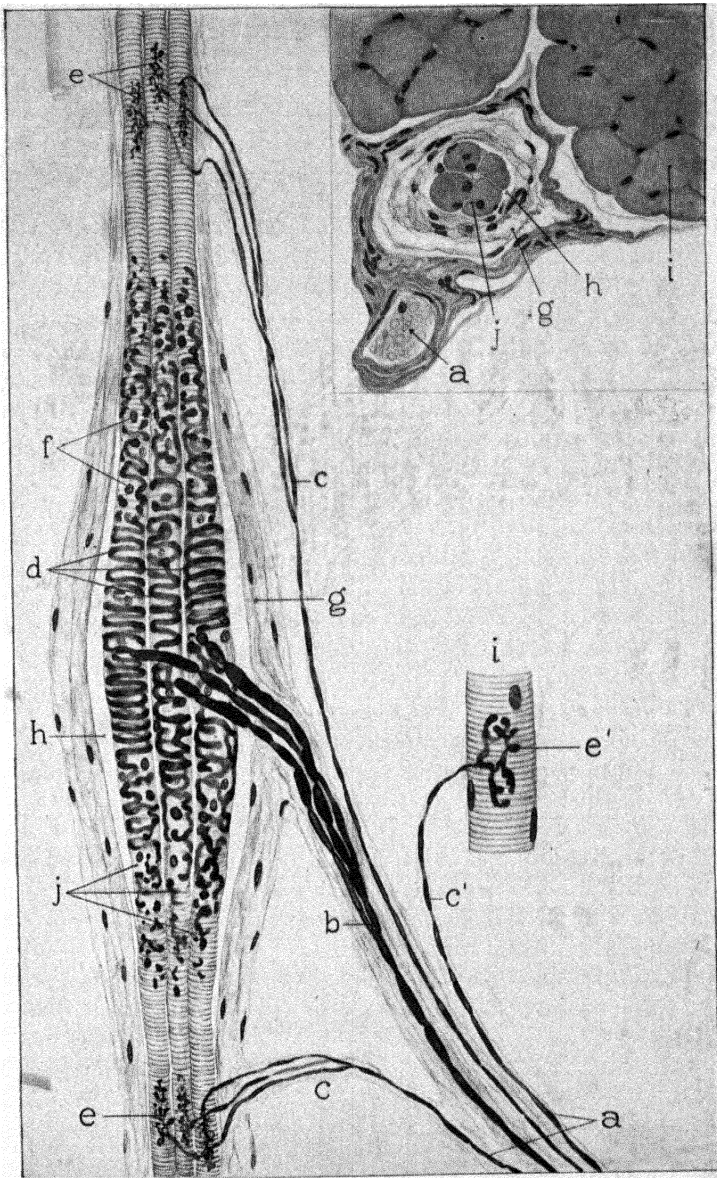



FIG. 18. Upper right hand corner, cross section of muscle spindle from Sloth drawn from preparation loaned by Dr. George Wislocki. Below, semischematic drawing of muscle spindle. Corresponding structures in the two drawings have same lettering. a, nerve bundle; b, sensory fibers; c, motor fibers to muscle fibers in spindle; c′, surrounding fibers of muscle; d, sensory endings in spindle; e, motor endings in spindle; e′, motor endings on surrounding muscle fibers, f, nuclei of spindle fibers; g, capsule; h, lumen of capsule; i, surrounding muscle fibers; j, intracapsular fibers (Fascicle of Weissmann). Muscle spindle drawn after schema of Regaud and Favre and drawings from nature by Rufini (*Journal of Physiology*, Volume XXIII, Plate II.)

neurotendinous end organs of Golgi, in which tendinous fibers replace the special muscular fibers of the neuromuscular end organs.

Though of various forms, simple and complex, a muscle spindle may be considered as being formed of the following elements:

1. Its outer limit consists of a *capsule* formed of two zones of tissue, (a) an outer layer of connective tissue which ties the muscle spindle to the interstitial connective tissue of the muscle; (b) an inner layer—the true capsule formed of layers of amorphous connective tissue with imbedded nuclei. These layers are separated from each other by endothelial cells.

2. Within the capsule filling its interstices, is a *liquid* of unknown composition, but probably of albuminous content. Golgi supposed that it was derived from the lymph vessels. Sherrington was able by injecting the lymphatics to fill the intracapsular space of the muscle spindles with Prussian blue. Regaud and Favre do not look upon Sherrington's experiment as conclusive but think that the space is probably hermetically sealed because of the fact that it is always present in every muscle spindle. Were it open, it would often be found collapsed.

3. The capsule is traversed from end to end by a *fascicle of muscle fibers* (fascicle of Weissmann). They are much smaller in the adult than the ordinary surrounding muscular fibers, though in the fetus they are almost one-third thicker than fibers that make up the body of the muscle. In the region of the insertion of the sensory nerve, the muscular striae more or less completely disappear, and a number of nuclei are crowded together. The signification of this remarkable structural peculiarity is unknown.

4. There are *two kinds of nerves* which enter the fibers. One type terminates in motor plates on the muscular fiber. The other, in typical cases, coils around the muscle fiber for a considerable distance. The motor fiber, which supplies the muscle fiber of the spindle, may not, however, terminate in the spindle but outside it.

Similar structures exist in the tendons—the neurotendinous end organs. In these, tendinous fibers replace the intracapsular muscular fibers.

### Demonstration of the Sensory Functions of the Muscle Spindles

As early as 1874, Sachs[7] demonstrated the presence of sensory fibers in the muscles of the frog by a brilliant series of experiments.

1. He injected strychnine into a frog, thus enormously increasing the animal's reflex excitability. He isolated and sectioned the nerve to the

[7] "Physiologische und anatomische Untersuchungen uber die sensiblen Nerven der Muskeln," Reichart und Du Bois-Reymond's *Arch. Anat. Physiol. und wiss. Med.*, 1871, pp. 175–195, 491–509, 645–678. See Regaud and Favre, *loc. cit.*, 11 ff.

sartorius muscle. He stimulated the central end of this nerve, producing a general convulsion. The nerve of this muscle must, therefore, contain fibers which bring stimuli from the muscle to the cord.

2. If you leave the nerve intact and dissect out the muscle, the stimulation of the muscle at any point produces convulsions in the strychninized frog.

3. Cutting the anterior roots of the spinal nerves in a frog leaves some fibers undegenerated after six weeks. Cutting the posterior roots led to inconclusive results.

4. When a thin muscle, such as the sartorius, was exposed in the living frog under the microscope, Sachs found some fibers which caused muscular contractions when stimulated; others which caused no contraction.

These experiments demonstrate the presence of afferent nerve fibers in the sartorius muscle of the frog and its nerve of supply. They do not show that the muscle spindles take up centripetal stimuli.

Cattaneo[8] attempted to find out whether or not the similar neurotendinous end organs undergo Wallerian degeneration. Cattaneo sectioned the posterior spinal roots of a dog. He does not specify which ones nor how many, nor whether above or below the spinal ganglion. It is likely that he cut them central to the ganglion. The result was an ataxic gait, but no degeneration of the musculotendinous end organs. Sectioning the anterior root also left the end organs intact. They degenerated, however, on sectioning the sciatic nerve. He concluded that the neurofibrils are connected with centripetal fibers and are sensory in character.

Sherrington, in 1894,[9] confirmed the results of Cattaneo.

Pathology teaches us the same lesson. The neuromuscular end organs are left intact in degenerations that affect the anterior horns of the spinal cord. Thus, Eisenlohr, seeing the muscle spindles in the degenerated muscles of patients who had suffered from infantile paralysis, thought that they were sclerotic areas.[10]

Pelliet[11] and Batten[12] found the muscle spindles intact in the degenerated muscles of infantile paralysis.

In a case of diffuse myelitis with destruction of the cord but intact spinal

[8] A. Cattaneo, "Organes nerveux terminaux musculo-tendineux, leur condition normales et leur manière de se comporter après leur section des racines nerveux et des nerfs spinaux," *Arch. ital. di biol.*, X; 337–357, 1888.

[9] *J. Physiol.*, XVII; 211–258. See Regaud and Favre.

[10] "Mittheilungen über anatomische Befunde bei spinaler Kinderlähmung," *Tageblatt* d, 59. *Versamml. deutscher Naturforscher u. Aerzte*, zu Hamburg, 1877.

[11] *J. Anat. et Physiol.*, XXVI; 602–616, 1890.

[12] *Brain*, XX; 138–179, 1897. See Regaud and Favre.

ganglia, Forster found[13] that the neuromuscular spindles were still preserved.

The observers quoted by Regaud and Favre (*loc. cit.*, p. 80) found the muscle spindles intact in *tabes dorsalis*. But Brazzola,[14] in a case where the disease had progressed very far, found them degenerated. Whenever tabes goes so far as to destroy the spinal ganglia, it cannot be doubted that the muscle spindles will degenerate.

From all the above it is evident the muscle spindles send centripetal impulses to the cord and probably thence to the brain. It is not, however, evident that they mediate for us *conscious* sensations.

There are two theories as to their mode of action.

Sherrington supposes that the pressure of the contracting fibers external to the capsule gives a mechanical stimulus to the intracapsular nerve fibers. He has even demonstrated that mere pressure or pulling on a muscle, dissected free from its tendon of insertion, causes a reflex contraction of the antagonists.

Regaud and Favre,[15] however, believed that the normal physiological stimulus of the muscle spindle is the contraction of the intracapsular muscle fibers (fascicle of Weissmann) which stretches the nerve fiber coiled about them. These fibers are supplied by collaterals coming from the same nerve fibers that supply the extracapsular muscle fibers. A part of the current, therefore, that goes to the body of the muscle must go simultaneously to the muscle spindle. The histology of the muscle spindle strongly suggests the view of Regaud and Favre. But, if it is true of the muscle spindle, what is to be said of the analogous organs of Golgi in the tendons, where tendinous fibers take the place of the fascicle of Weissmann?

After careful consideration of the anatomical evidence, Regaud has suggested the following association between the various forms of nerve endings and specific forms of sensations coming from the organs and tissues involved in movements.

### 1. KINESTHETIC SENSATION

1. *Muscle spindles*—end organs—whose chief function is to react to the degree of contraction of the muscles and thereby give us information about the position of the members of the body.

2. *Neurotendinous end organs.* These terminations are especially adapted to react to intense muscular effort and give information about the degree of resistance experienced.

3. *Corpuscles of Ruffini.* These are found about the tendons, the peri-

[13] "Zur Kenntniss der Muskelspindeln," *Virch. Arch. Path. Anat.*, CXXXVII; 121–154, 1894. See Regaud and Favre.

[14] *Memorie della R. Accademia della Scienze dell instituto di Bologna*, V; 465–496, 1890.

[15] *Op. cit.*, p. 86.

osteum, the ligaments, and capsules of the joints. These, according to Regaud, are specifically adapted to respond to tension of the fibrous organs.

4. *Paciniform corpuscles.* These are located around the joint and, according to Regaud, are specially adapted to respond to external pressure.

### 2. PAIN SENSATIONS

Regaud understands by this various nuances of the sense of pain. He supposes that the free ends of the nerve fibers mediate for us sensations of pain.[16]

Let us now turn to the experimental and pathological evidence.

### *Joint Sensations*

That kinesthetic sensations are functions of articular motion was made evident by the experiments of von Frey.[17] He enclosed the arm in a rigid sleeve and hung weights close to the joint and at some distance from it.

With slow movements of lifting, those weights appeared equal that would be balanced by another force, acting at the other end of the lever; that is, they appeared equal when they had the same moment of rotation. Since now the force at the other end of the lever is the muscle attached by its tendons to the bone, it seems likely that the judgment of identity comes from sensations resident in the motor organ, i.e., muscles and tendons. If this is the case, then the sensations may be spoken of as functions of articular motion but need not be articular sensations themselves. This, indeed, was the conclusion drawn by von Frey. We may now ask ourselves: Could not the joint surfaces be the source of the sensation? Thus the degree of pressure between the articular cartilages must vary with the moment of rotation of the force acting on the arm. Could not this give rise to the sensations involved? This is one of the earliest views of the kinesthetic sense. Oehrwall[18] says it was first propounded by Lewinsky[19] and is today generally accepted. Histological evidence and physiological experiment rule it out completely. There are no nerves in the joint cartilages or the cartilaginous disks found in some joints.

Goldscheider[20] himself, in his animal experiments, could obtain no reflexes by stimulating the articular cartilages, and concluded that they acted as if they were without any sensation whatsoever.

Lennander[21] made use of a patient with a cut that slit open the knee joint

[16] C. L. Regaud, "Les terminaisons nerveuses et les organes nerveux sensitifs de l'appareil locomoteur," Part 2, *Rev. Gén. 1907 d'histol.*, II, part 7.

[17] M. von Frey, "Studien über den Kraftsinn," *Ztschr. f. Biol.*, LXIII; 129–154, 1914.

[18] *Skandinav. Arch. f. Physiol.*, XXXII; 221, 1915.

[19] "Über den Kraftsinn," *Virchow's Arch.*, LXXVII; 141, 1872.

[20] *Gesammelte Abhandlungen*, II, p. 287.

[21] K. G. Lennander, "Über lokale Anästhesie und über Sensibilität in Organ und

to test the articular cartilages for sensitivity to pressure and pain but found them insensitive. In a student who had to undergo an amputation, he made more extensive experiments. He found the joint cartilages insensitive to touch, hard pressure, heat, and cold (17°–60°.)

Goldscheider[22] thought that by passing a faradic current through a joint he could reduce the interior joint sensibility. As a matter of fact, when one does this, the power of discriminating passive movements is considerably decreased. But just what happens here is not immediately clear. The sensibility of the skin around the joint is reduced. Pillsbury,[23] however, showed that the sensitivity of the joints is decreased by passing the current though other joints than those involved in the movement. It would thus seem that something besides sensation from the joint in motion is involved in the perception of movement.

Von Frey[24] found that by anesthetizing the skin in the neighborhood of a joint one raised the threshold; but the same result was obtained by anesthetizing the skin at a distal joint. Furthermore, stretching the skin with adhesive plaster lowers the threshold. He also obtained the same results with faradization, as did Pillsbury. He also experimented on a patient two months after he had undergone a resection of the elbow-joint, that is, an operation involving the removal of the joint surfaces with a saw, and placing a strip of fascia lata between them. By analogy with the skin, one would not expect a notable return of sensibility at the end of two months. Von Frey found, however, that there was no diminution of sensibility to passive movement. He concluded that the perception of passive movement could not depend upon sensations originating in the joint.[25]

From all of these experiments and observations it seems clearly evident that sensations from the joints are a minor, if not a negligible factor in the perception of passive movements.

### *Sensations from the Skin*

Both von Frey and Pillsbury argue from the experiments we have just cited that sensations from the skin must be involved in the perception of

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Gewebe," *Gesammelte Werke*, I, pp. 138–142, Upsala, 1912, cited by H. Oerhwall, "Der sogenannte Muskelsinn," *Skandinav. Arch. f. Physiol.*, XXXII; 217–245, 1915.

[22] *Gesammelte Abhandlungen*, 2 vol., Leipzig, 1878.

[23] "Does the Sensation of Movement Originate in the Joints?" *Am. J. Psychol.*, XII; 346–353, 1901.

[24] M. von Frey and O. B. Meyer, "Versuche über die Wahrnehmung geführter Bewegungen," *Ztschr. f. Biol.*, LXVIII; 301–338, 1917–1918.

[25] "Über Bewegungswahrnehmungen und Bewegungen in resezierten und in anästhetischen Gelenken," *Ztschr. f. Biol.*, LXVIII; 339–350.

Also, "Weitere Beobachtungen über die Wahrnehmung von Bewegungen nach Gelenkresektion," *loc. cit.*, LXIX; pp. 322–330, 1919.

passive movements. But any sensations from the skin that may be involved cannot be ordinary touch sensations, for there are a number of pathological cases which show that touch may be practically normal and yet the sensation for passive movement and for the position of the members is profoundly disturbed.[26]

On the other hand, there are a number of cases where touch is more or less completely destroyed, and the sensation of movement is preserved.[27]

*Skin Pressure.* Schlesinger called attention to a mode of sensibility that he spoke of as skin pressure. He measured it by a pair of graduated spring forceps that clamped a fold of skin, and indicated the strength of squeezing that is necessary to give feeling of pressure. He found, in some of his cases, that this sense might be lost, and the sense of deep pressure remain which is measured by placing a weight on the skin of the arm, hand, etc. It may also be present or lacking when the mere touch sensation of the skin is preserved or destroyed. This sense, however, cannot account for the sense of active or passive movements, for in two of his cases(12 and 20), the superficial pressure sense was destroyed, and the sense of active and positive movements was preserved. In the same manner the deep pressure sense may be ruled out as the source of our perception of movement.

We may, therefore, say that some form of sensibility which is not usually tested in our experimental studies is the source of our perception of active and passive movements.

### *Sense of Tension*

Strümpell's clinical insight has enabled him to pick out what is probably the form of sensation that is essential in the perception of movements. In his *Lehruch der Speziellen Pathologie und Therapie*,[28] he writes as follows:

> Our judgment of the position of the members of the body and the passive movements that may be executed with them, does not depend exclusively on the sensibility of the muscles, but probably also on the sensibility of the joint surfaces, corpuscles and ligaments. All these parts, as well as the skin, are displaced and stretched in ever-changing degrees in various movements. Nevertheless, I believe that, as a matter of fact, the changing condition of tension in the muscles themselves and their tendons makes possible our judgment concerning the position and movements of the

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[26] Ad. Schmidt., "Auffällende Störung des Lokalisationsvermögen in einem Falle von Brown-Sequardescher Halblähmung," *Deutsch Ztschr. f. Nervenh.*, XXVI; 323–325, 1904.

Also, Hans Curschmann, "Über Syringomyelia dolorosa mit ausschliesslich sensiblen Störungen," *Berl. klin. Wchnschr.*, LVII; 1184–1187, 1920.

Gilles de la Tourette, "Un cas de Syringomyelie," *Nouvelle Iconographie de la Saltpêtrière*, II; 311–317, 1889.

[27] Herman Schlesinger, *Die Syringomyelie.* 2nd ed., Leipzig, 1902, case 2, data p. 455.

[28] 18th ed., 1912, vol. 2, p. 272.

members of the body. Many investigators have thought that the judgment concerning the degree and direction of passive movements depends upon the sensibility of joint surfaces rubbed against each other. I do not believe it, because I have repeatedly examined patients with joint surfaces that have been completely resected who, nevertheless, perceived the slightest passive movements in the parts concerned with absolute exactness and correctness.

It would thus seem that Strümpell lays chief stress upon what we may term our *sense of tension*. It is this sense of tension that is most likely to be responsible for the perception of movements. This does not mean that touch sensations are excluded in a normal individual. Thus the rubbing of the clothes in any movement in practical life aids its perception and perhaps its control. Pressure upon the skin and the muscles themselves in extreme flexion are undoubtedly factors. It is likely, also, that one joint differs from another joint in the relative value of the various elements of the kinesthetic sense. But pathological cases show that joint sensations are not necessary, that touch is not necessary, that skin pressure and deep pressure are not necessary, but that there is something over and above these that when destroyed makes the sense of passive movement impossible. Strümpell is, therefore, probably correct in attributing this to the sense of tension in the subcutaneous parts of the body. It is perhaps also possible that the skin itself has a tension sense different from the touch and pressure sense, although, so far as I know, the threshold of this tension sense has never been measured. Von Frey's experiments, referred to above, in which he increased sensibility for passive movement by stretching the skin, would indicate that the tension sense is localized in part, at least, in the skin itself.

We have seen, too, that Regaud suggests that there are two forms of end apparatus that may be involved in perception of movement—one the Pacini type of corpuscle, adapted to pressure; the other the Ruffini type of corpuscle, which seems more adapted to stretching. It is, therefore, likely that the sense of tension has its own end organ.

### *Active and Passive Movements*

Wundt analyzes the kinesthetic sense into two components. If a movement is made, a weight of some kind is lifted by the moving member, and it is lifted to a certain height. The mass times the height is the measure of the work done. The mass is related to the energy expended by the mechanism of the muscles. The height is related to the position of the lever system that the bones constitute. If someone else moves my arm, that is to say, if a passive movement is executed, one of these components falls away. I can, therefore, no longer judge by any sensations which come to me from the expenditure of energy, but I am left to make a judgment

purely on the basis of whatever sensations come to me from the position of the arm itself.

Pathological conditions also make a distinction for us between the perception of active and of passive movements. For there are a number of cases on record in which the patient lost the sense of passive movement but retained his perception of active movement.[29]

Neurologists are wont to measure these two perceptions in the following way. Passive movement is measured by moving a finger of the hand, or the hand itself, or the forearm, or the leg, etc., and asking the patient to speak as soon as he perceives the movement. Normal patients perceive the slightest change in position of the members of their bodies. Active movement is measured by placing, e.g., one arm in a certain position of extension or flexion and asking the patient, with eyes closed, to place the other arm in a precisely similar position. To do this the patient must perceive the position of the one arm and be able actively to imitate this with the other arm.

The perception of active movement must also be distinguished from the power of coordinate movement. A patient may be able to copy exactly the position of one of his members by placing the other in a similar position but still be unable to make a coordinate movement by which he would, e.g., touch his nose with the tip of his finger easily and without any wavering.

From the disassociation between the perception of active and passive movements, present in a number of patients, we may argue that they do not depend upon the same factors. The loss of perception of active movement always involves a much greater disturbance than the loss of perception of passive movement. The perception of passive movement probably depends upon the tension sense of skin and subcutaneous tissues, muscles, tendons, etc. But what is it that gives us the power of feeling the movements that we make ourselves?

### *The Feeling of Innervation*

J. Müller, in his *Handbuch der Physiologie des Menschen*,[30] suggested that when the muscles are innervated there may be an accompanying central feeling of innervation. The authority of Müller gained for this idea a friendly acceptance in the scientific world, and the feeling of innervation was looked upon by many as a fairly well established sense. William James attacked the idea in his essay on the feeling of effort (1880), and embodied the criticisms of that essay in the chapter on "Will" in his

[29] Schlesinger, *op. cit.*, cases 5, 10, 17, and 38.

[30] Bd. 2, S. 500.

*Psychology.* Müller and Schumann[31] argued against the feeling of innervation on the basis of their experiments on the comparison of weights. They found that if a weight of 676 grams be compared with one of 826 it will always be perceived, at the outset, as lighter. If the 826 gram weight be now compared with one that is considerably heavier than it and then again compared with the standard of 676, in the second comparison the heavier, or 826 gram weight, seems equal to, or even lighter than the standard of 676. They argued that this phenomenon cannot be explained by a feeling of innervation, for evidently, in view of having become accustomed to the heavier weight, the 826 gram is lifted with a stronger impulse than previously. If the strength of the impulse measured is indicative of the feeling of innervation, then the stronger impulse should make the weight feel heavier instead of lighter. They, therefore, concluded that there was no possibility of accounting for this illusion on the theory of innervation.

If the feeling of innervation were the only factor in the perception of an active movement for the lifting of weights, it would be very difficult to account for the illusion studied by Müller and Schumann. If, however, the feeling of innervation is one factor in a complex in which sensations from the moving member are normally important parts, it is quite easy to see that when the stronger impulse is not associated with the expected sensations of resistance from the object lifted, it would seem much lighter than it really is. Müller and Schumann's exclusion of this explanation by saying that it is too complicated does not rule it out. In fact, their experiment with the lifted weights does not constitute a crucial test of the theory.

On the other hand, those who favor the theory have appealed to illusions of patients with amputated arms and legs, who, when they intend to make a movement, feel that it actually occurs and are often capable of carrying out complicated movements with the phantom member. Though the feeling of innervation might account for these phenomena, they are capable of other explanations (e.g., mere kinesthetic imagery of the movement), and they do not constitute a crucial test or an absolute demonstration of the existence of the feeling of innervation.[32]

Pathology gives clear evidence that when there are no sensations that come from the moving organ the mind is nevertheless capable of perceiving active movement. If this is true, there must be something or other akin to a feeling of innervation. The above cases, of the loss of the sensation

[31] *Arch. f. d. ges. Physiol* (Pflüger), XLV; 37–112, 1889.

[32] Wundt's analysis of illusions, obtained in patients suffering from external strabismus, is strong evidence of the feeling of innervation. He shows there that James, who makes use of the same phenomena, bases his argument on an incomplete representation of the facts. *Grundzüge der Physiologischen Psychologie*, 5th ed. vol. II, 27 ff.

of passive movement without that of active movement being at the same time destroyed are evidences of this fact. The following case, however, carefully studied by Lashley,[33] is very strong evidence in favor of some kind of perception of muscular innervation. A man had a gunshot injury to the spinal cord, resulting in partial anesthesia of both legs and paralysis of the muscles below the knees. The region around the left knee was anesthetic to touch. Deep pressure was felt in this region only when a stimulus of from 2,000 to 3,000 grams was applied over an area one-half inch in diameter. Flexion and extension were still possible in the left knee joint. Careful experiments showed that the patient had no sense of the position of his leg. He could not detect passive movements in a speed of less than twenty centimeters per second. This, under the conditions of the experiment, would equal about 25° per second. He could not maintain the leg in a fixed position with the eyes closed.[34]

The subject could not imitate a movement of flexion or extension when a pattern was given by the experimenter moving the leg through a given angle. In such experiments he sometimes would flex the leg when the pattern called for an extension. Lashley tried to investigate the presence of afferent stimuli from the muscles and tendons. To do this he had the leg work against a spring and make a movement equal to three inches. The stronger the action of the spring, the shorter was the movement made by the subject. Under such conditions the subject perceived no difference between a movement of 33° flexion and 13° extension. It is to be noted, however, that the subject felt the resistance. The subject's sense of movement was so impaired that when his leg was forcibly extended during his attempts to flex it, it nevertheless seemed to him that he had executed the movement of flexion, or when the leg was held so that no movement was made he nevertheless felt that the movement had actually taken place. This illusion could be explained by a feeling of innervation.

From this set of experiments Lashley concluded that there were no sensations from the actively moving limb sufficiently specific to give a clew to the nature of the movements. When, however, the subject was called upon to make a movement himself, he never made an error of direction. He could also, when working without assistance, make a movement of 0.5° to 8° with about the same accuracy as a normal subject. The more quickly the subject executed a movement, the more accurate it was. When, however, the leg was working against a strain, the actual movements, judged as equal, grew progressively longer.

[33] K. S. Lashley, "The Accuracy of Voluntary Movement in the Absence of Excitation from the Moving Organ," *Am. J. Physiol.*, **43**: 161–194, 1917.

[34] Lashley unfortunately does not say anything about the eyes, but leaves us to conclude that the eyes were closed in these experiments. He does not say whether a fixed position could be maintained under visual control.

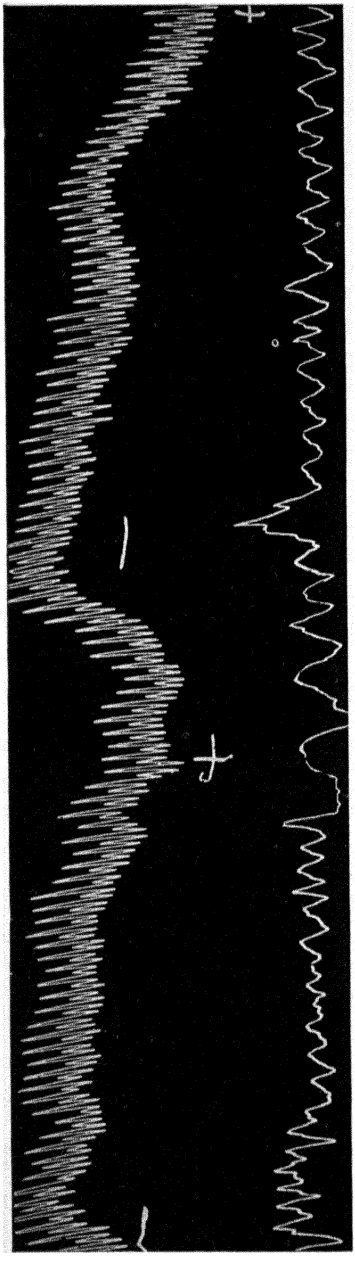



FIG. 19. Hypnotic suggestion of wrestling match given at each + and terminated at −. Upper curve, blood volume and pulse of arm; lower, respiration. Curve reads from right to left. (Weber, *loc. cit.* in text.)

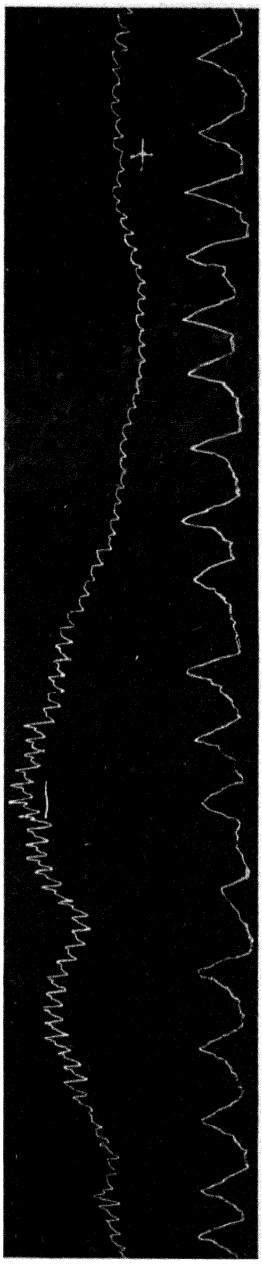


FIG. 20. Voluntary lively imagination of gripping hand. Subject awakes. Starts at +, cessation at −. Curve reads from right to left. Upper curve, blood volume and pulse of arm; lower, respiration. (Weber, *loc. cit.* in text.)

"The progressive increase in the length of movements estimated as equal seems almost certainly the result of frequent repetition of the movement. From the subject's statement it seems probable also that the increase resulted from some feeling of resistance or of increased effort necessary for the movement which led to an over-compensation."

Lashley also investigated the relation between the duration and extent of the movement and found "a degree of independence in the rate and extent of the movement which precludes the possibility that the extent of the movement is determined merely by the control of the duration of the excitation of the motor pathways." (P. 186.)

Lashley concluded that in the absence of excitation from the moving organ, the accuracy of its voluntary movement cannot depend on reflexes originating in sensations resident in the organ itself. Control must be exercised by the brain. There must be a set of some kind prior to the execution of a movement which determines its direction and duration.

We may ask ourselves whether or not this set is the voluntary fiat, the act of will itself, and nothing more. It cannot be doubted that ultimately the degree of movement depends upon the fiat. But is it possible that, over and above the fiat and sensations from the moving organ, there is some other kind of perceptual data by means of which the type and degree of the movement may be distinguished? This evidently must be the case. Thus, for instance, the muscles and nerves can themselves be normal and yet the feeling for active movement may be considerably disturbed.[35]

There is also evidence to show that the mere thought of a movement brings about an activity in the motor area of the cerebral cortex that is accompanied by vascular reflexes leading to a change in blood pressure. The perception of these reflex changes, and perhaps other associated sensations, as Wundt suggests, may constitute the feeling of innervation.

Ernst Weber,[36] experimenting first on animals that he had curarized,[37] found that stimulation of the motor cortex causes a rise of blood pressure in the carotid artery and at the same time a decrease in the blood volume of the viscera.

Turning then to man, he made plethysmographic experiments and found that voluntary movements, e.g., in the foot, caused an increase in blood volume of the arm, due to a general rise in blood pressure which is accompanied by contraction of the visceral blood vessels. This increase in

[35] Cf. E. G. Müller and H. Franz, "Syringomyelia mit bulbären Symptomen," *Deutsche Arch. f. klin. Med.*, LII; 259–299, 1894.

[36] "Das Verhaltniss von Bewegungsvorstellungen zu Bewegung bei ihren Körperlichen Allgemeinwirkungen," *Monatschr. f. Psychiat. u. Neurol.*, XX; 529–554, 1906.

[37] Injection of the drug curare blocks nerve impulses to all voluntary muscles of the body, thus rendering it impossible to stimulate them by electric current. When therefore Weber stimulated the motor cortex of the brain, it could have no effect on the muscles themselves.

blood volume of the arm may also be caused by hypnotizing a subject and in the hypnotic state suggesting movement of some kind, e.g., running. Under such conditions an increase in blood volume in the arm is even more marked than that obtained by actual movements of the foot. If one attempts to will a movement and think of a movement without actually executing it, one obtains a similar increase in blood volume in the arm but not so quickly, and when it does occur, it is not so marked in intensity as in hypnosis or in actual voluntary movement. This increase in blood volume during the hypnotic state does not take place if passive movements replace the active or suggested movements. Weber, therefore, concluded that the idea of movement causes in man the same phenomena as does the electric stimulation of the cortex in animals.

These experiments suggest very strongly that thinking about a movement[38] brings about some kind of change in the rolandic area of the brain, a change which results in vascular reflexes producing a change in blood pressure and thereby bringing about many sensations that could perhaps be factors in the feeling of innervation that precedes or accompanies the muscular contraction.

## Summary

Let us now attempt to indicate, on the basis of the study we have just made, the nature and character of the sensations involved in voluntary movement.

1. The sensations found in passive movement are, in all probability, one element of the voluntary movement sensation complex, even though they may not be essential for the actual execution of the movement.

The form of sensation essential to the perception of passive movements is the feeling of stretching that comes to us from the skin and subcutaneous tissues. Regaud and Favre's observations suggest as its anatomical end organ the corpuscles of Ruffini.

2. The form of sensation essential to the voluntary direction of active movement is the feeling of effort. This is a complex which results from vascular reflexes giving rise to various organic sensations from increased blood pressure, and also from sensations coming, in normal individuals, from the muscles and tendons of the moving member. The end organs of these sensations are probably the muscle spindles and the neurotendinous end organs of Golgi. Visual sensations are capable of functioning in the place of sensations from the moving member itself.

[38] Whether or not this thinking of the movement is in terms of thought or of kinesthetic imagery is not settled at all by Weber's experiments but is left entirely open. Whatever one normally does when he intends to make a movement brings about the reflexes that Weber has found.

CHAPTER 30

# KINETIC UNITS IN THE SERVICE OF VOLUNTARY ACTION

IT IS clearly evident that by a simple fiat of the will one cannot put one's self in equal readiness for every kind of action. If one who has never learned to play the violin is given that instrument and told to be ready to strike out boldly when the piano has played a few preliminary bars, how different the result from the attitude struck by the trained violinist under the same instruction. The one has nothing to call upon, the other has a neuromuscular coordination at his disposal, built up by years of practice.

This neuromuscular coordination may be termed more briefly a kinetic unit. There are one or more kinetic units of a more or less specific sort at the basis of every habitual action. Actions which are not in themselves habitual are made up of a number of such units that are thrown together to meet the immediate situation. Examples of such common units are walking, standing, sitting, writing, grasping, lifting, bending, etc.

The question now arises, what is the origin of these units? To what extent are they hereditary and to what extent acquired?

We have obtained definite and reliable information on this subject, owing to the labors of Professor John B. Watson, formerly of Johns Hopkins University. Watson undertook the systematic observation of children born in the maternity wards of Johns Hopkins Hospital. The results are published in an article by his student, Margaret Gray Blanton,[1] and in a summary in the seventh chapter of Watson's *Psychology from the Standpoint of a Behaviorist.*

From the observations of Watson and Mrs. Blanton, it is clear that the child has at its disposal a number of ready-made kinetic units at birth. From the moment the child is born, it reacts to certain stimuli, not with random movements, but with definite motor coordinations. Leaving aside such reflexes as sneezing, hiccoughing, yawning, suckling, the child has, by common human inheritance, complicated motor coordinations such as are used in the voluntary actions of later life. It does not have to acquire all kinetic units by the trial and error method of developing habits; they may be present at birth or develop somewhat later without any apparent labor of acquisition. Take, for instance, such a complicated motor coordination as following a light or a moving object with the eyes.

[1] "The Behavior of the Human Infant during the First Thirty Days of Life," *Psychol. Rev.*, XXIV; 456–483, 1917.

Though this coordination of the eye movements in some newborn infants was imperfect, this was not the rule. A large percentage of the children observed would fixate a light at birth.

Subjects S., A., M., F., and J., gazed at the light above the birth bed and also followed a moving hand. Subjects F. and K., neither of whom gazed at light or followed hand at birth, were seen to do both on the eighth day. Subject K., at eight days, subject R., at ten, and subject L., at twenty-six days focused first on one and then on another face. . . . A dim light, moved slowly at half a metre, was followed by subjects eight hours, eighteen hours, thirty-six hours, and 3, 4, 5, 6, 14, 15, 21, and 30 days of age. Subjects which did not follow were aged 9 hours. 3, 5, and 14 days, seventeen in all were tested.[2]

Grasping is a coordinate movement. One child was seen at birth to spread his fingers and close his hands four times in succession. We know no reason a priori why the fingers of a newborn child should act together rather than in a random incoordinate manner. But they do. Not only is the grasping movement a native endowment, but it has such strength that some children, on the first day of their lives, will support their whole weight with one hand. It is interesting to note that this reflex is more easily elicited from an angry child.

The child does not have to learn to locate the spot of every painful stimulus and how to get arm or leg to the point of irritation in order to brush it away.

"If a baby lies on its back with legs extended, and the inner surface of one knee is lightly pinched, the opposite foot is brought up almost with the regularity seen in the reflex frog."[3]

In most cases, however, preliminary movements are made, and it takes several seconds to locate the stimulus.

In spite of the demands of the recapitulation theory, a baby lowered in water at body temperature makes no swimming movements, but gives violent expression of fear and makes uncoordinated slashing movements of the hands and feet.

It is thus seen that a number of kinetic units are ready made at birth. Most, however, remain to be acquired. In his eighth chapter, on the "Genesis and Retention of Explicit Bodily Habits," Watson gives us a very interesting account of the eye-hand-mouth reaction. Experiments were commenced on the eightieth day with a stick of candy dangling before a child's eyes. When she did not take it, the candy was put into her mouth. The habit of grasping the candy and putting it into her mouth was acquired part by part. For fourteen days she never even grasped the candy. The candy was then put into her hand. She would put it in her mouth.

[2] Mrs. Blanton, *loc. cit.*, p. 462.

[3] Watson, *op. cit.*, p. 242.

On the one hundred and twenty second day, the candy was grasped for the first time and put into her mouth. On the one hundred and twenty-ninth day, the candy was "worried" into her mouth. On the one hundred and fiftieth day, the whole process required three seconds. On the one hundred and sixty-fourth day, the last five tests took two seconds each.

We thus see that such a simple kinetic unit as grasping an article of food and conveying it to the mouth requires a definite stage of development. It is hard to elicit the first performance, which seems to be followed by rather rapid improvement after the first success, and finally, the slight gain in time and dexterity requisite for perfection demands a relatively long period of exercise.

However, once such a unit is acquired, it has a generic value. It may be used, of course, not only for one article of food but for anything at all and is used, as is well known, not for food only but also for everything that attracts the interest of the child.

The fact that a coordination appears some time after birth does not mean that it is entirely an acquisition by trial and error. The development of walking is partly, perhaps fundamentally and essentially, the unfolding of a kinetic unit of man's native endowment. This is witnessed by the sudden acquisition on the part of some children of the power of walking. Kirkpatrick gives the following account from a father who was unnecessarily worried because his child of seventeen months persisted in crawling, and refused to make any attempt at walking.

> At last we referred the matter to a physician, who said: "It is a peculiar case, and I can hardly tell whether the difficulty is physical or mental. If there is no improvement in a short time, call me again." Shortly afterwards I came home one day at noon, and placing my cuffs on a table in the sitting-room, threw myself on a lounge to rest. Katherine happened to notice the cuffs from where she sat on the floor, and crawling across the room, pulled herself up by the leg of the table, and reaching out with one hand while she held on to the table with the other, took a cuff from the table and slipped it on, over her wrist. Of course, to do this she had to stand alone. I noticed it at once, and was surprised when she reached out her other hand for the other cuff and slipped that on, and then stood looking in a very interested way at the cuffs on both wrists. Then, to our great surprise, she turned towards me with a very pleased expression on her face and walked as confidently and as easily as any child could. Not only this, but she immediately ran across the room, through another room and around through the hallway, not simply walking, but running as rapidly as a child of four or five years would.[4]

The child continued to walk and run after this, provided she was allowed to wear cuffs, otherwise she would make no attempt.

[4] "The Development of Voluntary Movement," *Psychol. Rev.*, VI; 76–7, 1899.

Trettien[5] has collected a number of instances of children who acquired the power to walk suddenly. The habit depends, to a large *extent*, on the myelinization of the fibers of the motor tract. Were children not urged to walk by their parents, the power would more often appear suddenly. Such a sudden appearance is not, after all, more remarkable than the coordination of eye movements at birth or the scampering of the colt just after it is born.

The adult individual possesses a large number of these kinetic units, some the result of the mere unfolding of native endowment, though perfected later by practice, others the result of the acquisition of coordinations that did not exist in the original constitution of the neuromuscular system.

Carmichael (*Psychol. Rev.*, XXXIII, 1926, pp. 51–58) has shown that the embryos of *Rana sylvatica* and *Amblyostoma punctatum*, which he allowed to develop in a solution of chloretone, very rapidly (i. e., in less than forty-five minutes) manifested coordinated swimming movements when transferred to tap water, even though prior to this time they had been "absolutely inert," and unable to respond to stimulation. He takes the position that swimming movements are due only in part to the maturation of a neural mechanism. Heredity, however, provides the essentials of such a mechanism in the ordinary process of growth. This is then rapidly perfected when the animal comes into an appropriate environment.

We may now approach the problem from the standpoint of pathology, which has made us familiar with a number of disturbances of voluntary action to which it has given the name "apraxia." These apraxic disturbances may be conceived of as due to pathological influences which have in some manner destroyed the kinetic units. The kinetic units that are most frequently destroyed are those that were acquired by learning, such as the ability to make, on request, gestures such as beckoning, threatening, to make use of the arm in the movements habitual in one's trade, to dress and undress, etc. Those kinetic units which are more fundamental, such as breathing, swallowing, eating, turning the eyes in the direction of a stimulus, are usually preserved in apraxic conditions.

Apraxia may affect one hand and leave the other free. This type is frequently associated with a lesion in the precentral or postcentral gyrus of the cerebral cortex and seems to be due mainly to a disturbance of the motor elements in the kinetic unit in the former case and of the sensory in the latter. It may also be bilateral and may then be due to an inability rightly to interpret an object to be used and to relate the sensation of perception to the act to be performed. As when a man, when attempting

[5] *Am. J. Psychol.*, XII; 1–57, 1900.

to put on his trousers "first flattens them out, then picks them up at the wrong end, turns them this way and that, finally lays them down, shaking his head because this once familiar act will not succeed, and then attacks the problem again."[6]

At other times it seems as if the "kinetic melody," as Monakow terms it, were forgotten. The individual elements are preserved but they cannot be put together in the right order, and when the patient wants to smoke he puts the match in his mouth and strikes the cigar on the match box.

There must, therefore, be a number of delicate motor coordinations established in the brain which can be disturbed by the causes that bring on apraxia: cerebral hemorrhage, tumors, sclerosis of cerebral arteries, tubercles, etc.

It is very likely, however that *there is no circumscribed area of the cortex which is alone involved in the mechanism of the kinetic units, but that the neurological mechanism of these units involves the whole cortex.*

"In all my cases," says Monakow, "where apraxia appeared as the result of a local cerebral injury and persisted as a lasting symptom until death, it involved, as we have seen, very large or multiple foci of injury. These were usually situated in the left hemisphere. Sometimes they were scattered through both hemispheres. Sometimes they were associated with diffuse, though irregularly scattered, pathological changes such as cerebral atrophy, perivascular sclerosis, severe circulatory disorders of the cerebrum, brain tumors, causing general pressure, cerebral oedema, hydrocephalus, etc. In other words, in all the positive cases it was a question of a local disease or lesion of a brain that had suffered a general pathological disturbance either previously or at the onset of the local injury."[7]

[6] Monakow, *Die Lokalisation im Grosshirn*, Wiesbaden, 1914, p. 498.
[7] *Op. cit.*, p. 548.

## Chapter 31

# THE PATHOLOGY OF VOLUNTARY ACTION

Pathology is a scientific study of the abnormal conditions of the organism underlying specific forms of disease. If, therefore, we are to study the pathology of voluntary action, we must assume that in the individual there may be definite abnormal conditions more or less constant in character that have something to do with the deviation of his behavior from the standard of normal conduct. That this may be the case will be evident on a little reflection. Voluntary action, as we have seen in our previous analysis, involves more than the fiat of the will. Even in a simple piece of voluntary action, such as the willing of a movement, we must suppose, besides the fiat, the integrity of muscle, nerve, and central nervous system. When we come to consider the complex behavior of a human being in the practical affairs of life, and pause to consider the numerous psychological mechanisms that are involved in conduct, we can readily conceive of a very extensive field for psychopathological study.

The utility of such an investigation is at once apparent. Any thing that gives us a clearer insight into just what is going on in a patient's mind in the course of his pathological conduct may help us not only to understand him, but may also, in many cases, enable us to modify his behavior.

With this problem in view,[1] I turned to the material in the files of my clinic and tried to study out the various conditions that present a kind of static background for abnormal behavior. To study all the conditions underlying pathological behavior would involve going over much of the ground we have already covered in the study of the unconscious, the conflict, and mental adjustments. Leaving these things aside, we may investigate certain other factors which, as more or less static or abiding conditions, profoundly influence conduct.

Thus, for instance, we may ask whether or not abnormal behavior may be due to the fact that a person has inherited a constitution that is more difficult to manage than is usual or which breaks down more readily under the stress and strain of life. A little experience with human nature will very quickly convince us that many individuals seem to have inherited something abnormal or have failed to inherit traits that pertain to normal human beings and, in consequence, find the management of life and its problems much more difficult than others who have been blessed with a better hereditary endowment.

[1] I found helpful, as a preliminary orientation in this field, Birnbaum's article referred to below.

On the other hand, pathological behavior seems, at times, to be due mainly to lack of proper training. At all events, it is conceivable that an individual may have an adequate hereditary endowment, but may, nevertheless, get into trouble because he has not been taught how to manage himself and has not been shown the possibilities that life holds out for him. Again, pathological behavior might be due to a pure defect of volitional control or to abnormalities of the intellectual or emotional life, etc.

Let us commence the study by first investigating cases which seem to be due to defects of training or heredity.

### Defect Present with Lack of Training

In February, 1922, a woman came to see me about her son, Francis, the complaint being that he was lazy and could not be interested in anything. As a matter of fact, the principal of the school he attended said that, though the boy was respectful and well behaved, he was a shirker and failed in every study. He had threatened to dismiss him in the mid-year, but the boy asked to be retained, and so he was allowed to drag through the first year of high school.

Mental examination showed that he was indeed dull but not sufficiently so to explain his complete failure in everything. He was 16 years and 11 months old, with a mental age, by the "Stanford Revision" of 13 years and 5 months, and an intelligence quotient of 84.

Light is thrown on the young man's condition by his early history, and particularly by the character of his mother.

She obtained a divorce from her husband, and when Francis was 9 years old went into the moving pictures. Francis was himself put on the stage while still a child and had some success as a singer and dancer. His schooling was irregular, obtained first in one place, then in another, according to circumstances.

An insight into his home life is given by the following report of a social worker who called on his mother.

Francis is living with his mother in his grandmother's apartment—two bedrooms, dining room, kitchen. It is cheaply furnished and dirty. Francis' mother came to the door in an old bathrobe and slippers, dirty and untidy. She was garrulous in her gratitude for the visit and vituperative to her mother with whom she had to live, calling her frequently "this brainless woman," blaming her for her present condition in life and her early marriage, boasting that she is much finer than her family, and that they have continually dragged her down, etc., etc. She and her mother would both speak at once on the same or different topics. When the daughter became particularly abusive, the mother called her and all her children a lot of "bullheads"—said she "never could teach them anything," etc.

Francis walked down the street with the social worker. He told her that his

**mother got on his nerves. He has some affection, but no respect for his mother. There is some evidence that Francis' mother is openly immoral.**

Francis gave the impression to several who have studied him that he is by no means hopeless in himself, but only in his present surroundings.

It is very difficult to say in any case that a condition is wholly environmental or wholly hereditary. In fact, in all abnormal human conditions, we must take three things into consideration: (1) heredity, (2) environment, (3) activity or will itself.

The case of Francis appears on the surface as one in which the young man's environment was inadequate, and he did not get the training that would have enabled him to develop into a normal human being. He himself may be, in part, responsible for his own condition, and there may also be an hereditary factor. But cases such as this point out the possibility of human lives being wrecked merely by inadequate surroundings.

### Defect Present in Spite of Training

When a young man, well above the upper limit of feeble-minded intelligence, cannot be interested in making something out of himself, is lazy, and shirks work, it cannot be doubted that there is some kind of defect in the voluntary control of his life. There is present a defect of the will or of voluntary action. In the case just studied, the defect is due perhaps to lack of discipline exercised by the boy's mother and not to himself.

A man may inherit a wonderful violin of the best make of the old masters, but unless he is taught how to use it he will never draw forth from it a single melody.

A child may have fairly good native volitional ability, but unless someone trains him and implants ideals of conduct, it is not surprising if later on he does not manage himself and his affairs with ordinary prudence.

On the other hand, some children have no lack of training and, nevertheless, develop later on an habitually incorrigible character. They do not merely slip occasionally into some delinquency but are constitutional psychopaths. I have in mind a young man who was probably fairly bright. He did some of the 18 year old tests, and then refused to do anything more. His father is a man of good character and has tried to be severe with the boy. His mother, who has been perhaps too kind, but seems a reasonable, refined lady, tells me that the boy is lazy, has a vile tongue, and will neither study nor work. He desires only to have a good time, plays pool, smokes cigarettes, and loiters on the street corners all day. When refused money he borrows it from dealers with whom his parents trade. When he cannot obtain it in this way, he tries to steal it at home. He has given his mother

fair warning that he will steal any money she leaves around. My attempts to reason with him only met with a smiling defiance.

Here is clearly a defect in the management of one's personal affairs. Something is wrong with the steering mechanism in this young man's mental life.

It is hard to say whether this defect is due to an hereditary cerebral defect or is one that was acquired early in life by some infectious disease, or that the mental condition was developed by repeated voluntary delinquencies. In his previous history, however, it is worth while noting that he had an infectious disease in infancy (15 months), diagnosed as whooping cough[2] just about the time he was learning to walk and talk. After this disease he stopped walking and talking, and at 2 years and 3 months could only say a few words and did not really commence to talk again until about 3 years of age. His father, though he never drank to excess, was a constant drinker. His mother's father was a drunkard.

It is perfectly true, however, that every attempt was made from childhood up to make this young man what he should be. He was sent to good schools; his father and mother were well above the ordinary mental and social level; his training was not neglected, though there may have been mistakes in it (an overtender mother and a father who was perhaps inclined to be too severe); but on the whole, the young man has had a far better opportunity to succeed than most boys, in spite of which at present, he presents to us a complete failure.

He has not responded to his training. It may be that he himself is at fault, but there is definite indication in his history of organic defect, due to bad heredity and disease in infancy. His is perhaps a type of volitional defect that develops in spite of training.

### Pathology of Voluntary Action Due to Impairment of the Will Itself

Ribot, in his *Diseases of the Will*, classifies impairments of the will as due to defect of impulse and excess of impulse. If one studies the impairments he speaks of under "Excess of Impulse," one will see that in the terminology of this book they are not defects of the will itself but are automatic actions, not truly volitional in character, or impulsive drives probably due to what we have termed above pathological associations. There is no such thing as a will that is pathologically strong. A man can no more have a will that is pathologically strong than a mind that is pathologically bright. Thus, for example, a man's muscles can never be too strong to manage the horses he is driving. He may not know how to use his muscles, but the fault would not be in the strength of the muscles but in the way he makes use of them.

[2] Pertussis does at times leave disorders of the nervous system as serious complications.

Will is a mental force by means of which we control and regulate the impulsive drives of our nature. Impulse may sometimes be pathologically strong, but the will never. As a matter of fact, the impulses themselves are seldom too strong but are merely poorly balanced. It is possible, however, that the will may be pathologically weak, and yet, when I come to study over my material, I can find no case of a pure defect of will without any other accompanying symptoms. It is very difficult to be sure that weakness of will is the only thing involved in abnormal volitional activity; nevertheless, I think, the type of character that Birnbaum[3] speaks of really exists and is perhaps not so very rare. He refers to natures passive, but not dull, who, "in opposition to the indifferent, harbor lively desires; they really want what they desire to come about; but without their being obliged to do anything themselves, and because, as a general rule, this is not possible, they never get any further than wishing, and perhaps only a step further—to propose and resolve; but as far as carrying anything out that involves personal activity, the inner drive is lacking." The following case suggests, however, a will that was pathologically weak even though it had emotional difficulty to contend with.

On May 16, 1916, a man of 40, a hotel waiter by trade, visited the clinic complaining of weak spells accompanied by dizziness and a feeling of flushing in the head. He had been troubled with these spells for about six years and attributed their origin to a mild drinking spree during which he became dizzy and had a pain in his heart. These spells had recently worried him so much that he had given up work. His savings bank account had dwindled to seventy-nine cents. His wife was supporting the family by working as a washwoman. The home was neglected, the children improperly clothed, and he spent the greater part of the day in bed brooding over what might happen to him in one of his spells.

Physical and mental examinations were negative. He had good muscles, and no reason could be found why he should not work.

He was reassured as to his health, and the Social Service Department obtained employment for him in a hotel where he went to work in a borrowed suit of clothes. His wife was spoken to and urged to cease scolding him and treat him affectionately and cooperate in the policy of reassurance. He continued to have occasional pains in the heart region, and about ten days after he had commenced work resigned his job in one of these spells and came to the clinic to have his heart examined. He was again reassured and given a note to his employer, and urged to start a savings account. He did not, however, present the note and returned on the next clinic day com-

[3] Birnbaum, Karl. "Die krankhafte Willensschwäche und ihre Erscheinungsformen," 1, *Grenzfragen des Nerven- und Seelenlebens*, Wiesbaden, XII (No. 79): 75, 1911.

plaining of bladder pains. He was again reassured and urged to go back to work. This he did a few days later only to give up his job less than a week later, complaining of the same old dizziness, and also of a heavy feeling in his throat.

He was again reassured and his wife urged to be patient a little longer and not to scold. This time our efforts were crowned with success, and he remained at work, and in July, 1919, he came and proudly showed me his bankbook, in which the last deposit had raised his savings to a round one thousand dollars.

And here the story might have happily ended. But in the course of the winter of 1919–20, during my absence from Washington, he commenced again to vacillate between his bed and his job. A physician urged him to have his teeth pulled, which he did. He was very much frightened at the loss of blood and conceived the idea that his system was depleted beyond recovery. I was unable, in the fall of 1920, to persuade him again to go to work. He said it was too late, and only after much persuasion was his wife able to get him to visit the clinic in the automobile of a friend. He came and sat before me with a worried, anxious face, holding his pulse all during the interview and assuring me that his heart had been seriously affected by the loss of blood experienced in the extraction of his teeth. I insisted that he go back in the streetcar, which feat he accomplished, but could not again be persuaded to visit the clinic. A complete collapse was prevented by a novel readjustment. His wife did not want the savings bank account to dwindle so she went out to work and he did the cooking and looked after the house.

Here is a patient in whom one may say that there was a weakness of voluntary control. It was associated, however, with an abnormal anxiety about his physical condition, behind which, considering the final readjustment, there probably lurked a desire to be cared for by his wife.

A man with normal volitional control would have been able to cope with the conflict. He was able to do so when bolstered up by assurances and his wife's petting for about three years, only to crumble again and accept a situation in which he became the dependent party and his wife became his supporter and protector.

Such cases as this suggest, at least, that the will is itself weak in some individuals. Perhaps such weakness derives merely from disease. This patient did not have a serious conflict as compared with those of other men. Apparently his wife had a strong will. Whether or not this is so, or her weak will was effectively reinforced by the human impulse to save money, it is hard to say. It is likely, however, that a woman who was capable, in the first place, of restraining the very strong feminine tendency to scold a good-for-nothing husband and then take things in her hands and save the

family life by herself going out to work had a power of will that was as much above normal as her husband's was below.

It is likely, therefore, that strength of will is subject to considerable variations in the many individuals that go to make up the species, *homo sapiens*.

## Pathology of Voluntary Action Due to Abnormality of the Intellectual Life

Voluntary action has not only to do with isolated pieces of action but also with the management of the individual's whole life. Normal volitional activity means, therefore, a normal life. A life cannot be normal unless it is useful and happy. A life, furthermore, cannot be happy unless it is useful. We cannot stop to demonstrate the truth of these statements, for they would lead us too far outside the sphere of psychology. But if the reader will pause to consider the lives of men he knows in history or in his own experience, he will find that those who accomplish something worth while are happy and those who waste life are unhappy. The converse in this case is also true—that those who are happy are those who accomplish something worth while.

Life, therefore, must have a goal or an end that the individual realizes and strives to attain. The end, too, must be worthy of a man. If it is not, pathological disturbances will be sure to make themselves manifest and lead, finally, to shipwreck and failure.

If this is true, an adequate plan of life is necessary for normal volitional activity. Seeing that such a plan of life is often missing, pathological volitional activity is a most common disorder. I may give one example as a representative of a class whose name is legion.

A man of 31 came to the clinic at the request of the Red Cross, who reported that he did not work and did not support his wife. The patient himself complained that he was delicate and suffering a general nervous breakdown.

He had spinal meningitis when 9 years of age and some kind of sickness that he termed, "walking typhoid," three or four years previous, during which he did not go to bed, but walked about out of his head and finally cured himself by drinking whiskey and Peruvian bark.

He went only to the fourth grade in school but claims to have gotten, after that, "a good home education in engineering and chemistry." His mental age was 11 years and 6 months, with an intelligence quotient of 72.

He married at 22 and has three children. His first job was "jumping" on a bread wagon. He was then messenger boy for the Pennsylvania, and later in various telegraph offices, then clerk in the freight division, then call boy for the Pennsylvania Railroad, then helper in R.'s bakery, then in C.'s bakery, then in W.'s bakery, then in H.'s, then C.'s again, then G.'s. He

then went to North Carolina as a mail clerk; then took a fish wagon. Then he was in various bakeries and breweries. He gave up his jobs often because he wanted to move around, often because he would get in a quarrel and "smash" some fellow; but claims that he never acted so they would not take him back. At the time of his examination he was looking forward to being a brakeman on the Pennsylvania Railroad.

In the meantime, his wife complains that he beats her, sits around the house, refuses to go out and work and eats up what she gets by work and charity for herself and the children.

That this man has never conceived of a plan of life there can be no doubt. At the same time, it will be admitted that if he had been capable of such a conception and had held it before his mind it would greatly have reduced his pathological tendency to wander from job to job and would have made his behavior more normal in every respect.

His life is certainly useless, but in spite of my theory of happiness and usefulness he maintains that he is happy. This claim is probably to be taken with a "grain of salt," or rather we should say, that a man who "smashes" his fellow workers, beats his wife, and eats up his children's food, does not know what happiness is. He may have a naturally cheerful disposition, but happy he certainly is not. His borderline mentality really spares him the misery that a normal mind would experience that had to look back on a failure such as his.

Unfortunately, there are many normal minds who, having wasted their youth and accomplished nothing, become cynical, sour, discontented, or perhaps sink into a depression as their half century of life draws to a close.

Abnormalities of voluntary action may result from something less fundamental than the absolute lack of any plan or aim or ideal in life. It often happens that people afflicted with some form of mental disorder falsely interpret the behavior of other men, or even animals, or of inanimate objects. They then feel violently impelled to do something about what they think they see, and so result the grossest abnormalities of behavior.

Such false interpretations have their roots in normal mental life. Human nature is prone to be suspicious. To suspect that others may try to circumvent or overreach you is a normal, human impulse, intimately connected with the instinct of self-preservation. To feel sure that you yourself in particular are the object of particular scorn, the one person whom some one individual or a group is persecuting, this is already definitely abnormal. The larger the group to which your suspicion extends the more pathological it is likely to be. You must put it down as a general rule that suspicions are either exaggerated or wholly unfounded.

When a young lady suspects that a gentleman who works at a table near her in the office is continually watching her she is very likely to be mistaken. I remember one case of dementia praecox whose first pathological manifesta-

tions came in this way: She suddenly broke out before everyone in the office and told a young man that his behavior was ungentlemanly and unkind, that she would not stand him continually watching her, etc. The young man was really very much surprised and later humbly begged her pardon. The girl afterwards realized that her suspicions were unfounded, felt very much ashamed of herself, resigned her position, and later was taken to an asylum as a well developed case of dementia praecox.

Faulty interpretations are not always so plausible in their appearance. I remember one young man who came to me because he had heard that I was a psychologist and would probably be able to illuminate him so that he could better understand the complicated action of the minds of other people on his own. I asked him how they acted on him; he said by concentration. "And how do you know they concentrate?" "Why," he said, "it is just this way: As soon as I enter the streetcar on my way to work, every man in the car holds his newspaper in a particular way, and then I know they are concentrating. Before very long one of them coughs. A cough you know is a call for help from other minds. He feels that my concentration is overpowering him; and then a number of people in the car cough, thereby sending out calls for help, because they see that otherwise I will be too strong for them." The same thing happens at the office. He is not there long before someone coughs. He felt that this way of persecuting him should cease, and he was going to take the matter up, if necessary, with his congressman.

A lady once complained to me about a fly that used to come and plant itself on the table before her. It would then take its front legs and rub them over its head exactly three times, and then its hind legs and rub them over its wings exactly five times and would then come back and do the same thing over, only the next time the number of rubbings would be different because it was communicating a different kind of message.

These faulty interpretations lead, at times, to all kinds of misbehavior, violent scenes in public, visits to the White House, murder, etc. The actions committed are in a sense voluntary, but the individuals are not responsible. The locus of their psychic lesion is not in the will but in their thought processes. That a perfectly normal human act may take place, the individual must not only be able to choose but also to understand. Given the premises of the insane, their actions are perfectly logical, and frequently calculated, rather than the result of blind drives to unspeakable crimes.

### Pathology of Voluntary Action Due to Abnormalities of the Affective Life

Abnormalities of the affective life may be due to the lack or dullness of emotion in situations where a normal human being would be deeply moved,

or to the fact that some emotion is present in excess and so interferes with normal behavior.

A girl of 17 once came to the clinic at the request of a friend. When I asked her what was the matter, she said, (1) that she was indifferent about everything; (2) that she had spells of worry about the ordinary actions of her daily life, but never about her sins; (3) that she was restless and never satisfied.

Her mentality was good. She did all of the Stanford 14 year old tests, all of the 16 year old, till I came to the digit-span, and then refused to cooperate further. She had been though the second year of high school. She left home about a year previous to her visit to the clinic and lived with her aunt. She had been sending thirty dollars a month to her old and dependent father, but now felt that she ought to have the money for herself, and saw no reason why she should be burdened with the "old man's" support. She boasted of her flirtations and declared that she took great delight in "vamping" a man and then running away and leaving him.

She used to rob the mailboxes in apartment houses just to see what was in the letters. Often, when on a visit, she would steal money or valuables, just to be doing something wicked, feeling sure that her friends would not suspect her. She tried to kill her uncle because he was interfering with her free life. She got some rat poison from a cupboard and put it in his tea. She was afraid he would taste it and so put in too little. When he did not die, but only got sick, she felt very angry.

She says that she has made a league with the devil that if she gets something, she will always do his will. But still she has a hazy idea that she will fool him and end her life as a Magdalen. In fact, she is writing a novel in which the heroine is a prostitute who dies a Magdalen. She claims that she has never felt sorry for any bad act that she has ever done.

I tried to get some information about the extent of her emotional resonance.

Seeing people injured in an auto accident awakened in her curiosity, but no uncomfortable feelings, nor sympathy. She is often cruel to animals and used to kick the little kittens about at home, just to see them suffer. She is proud that she has not got what she termed "soft, sloppy feelings." She visited the clinic but twice and then left town. I later received a letter from her from New Orleans, thanking me for trying to help her when she was in Washington.

A case of this kind approaches as closely to the psychiatric phantom, "moral insanity," as anything I have ever met: normal intelligence and apparently no moral perception. But what we find is not a lack of perception of the difference between right and wrong, but a deficiency of the emotional life. She knows perfectly well that her life is wrong; she believes in God,

the devil, and hell. But there is no emotional resonance in the presence of human or animal suffering. She lacks a factor in the control of her conduct that is perhaps more potent in maintaining morality than the world in general realizes. What a tremendous change would be wrought in human behavior if, all of a sudden, sympathy and its emotional resonance could be blotted out from our mental life!

This case is very instructive, inasmuch as it shows how abnormal behavior may be due, in part, to a lack of inhibitions. This lack of inhibitions was due in its turn to the lack of the emotional resonance of sympathy.

On the other hand, an emotion may be so intense that it will awaken inhibitions that the will is more or less powerless to overcome.

In October, 1920, a man came to me complaining that he did not know what to do with time. He would awaken in the morning and would wonder how he would be able to live through the day. What could he do with the hours before him? He was, at the same time, sad and depressed. He had thoughts of suicide. He got rid of his pistol for fear he would not be able to resist the impulse to kill himself so as to get rid of time. But then he had to fight against the impulse to jump out of the window. He can no longer keep on at his business. If he goes to his office, in spite of the fact that his correspondence is before him, he still does not know what to do with time. If he goes to the moving pictures, he thinks that it will be so many minutes before it is over and feels that he cannot possibly sit through the whole thing. Mere existence seemed interminably slow and he was unable to carry on his former occupation.

His condition was due to a paralytic stroke from which he had practically recovered as far as movement was concerned, but it had worked a complete transformation of his character. His systolic blood pressure was 195.

Here, then, we see a pathological condition due, psychologically, to the slowing down of the stream of thought and a sadness that took the zest out of normal mental activity. Though some improvement was obtained by regulating his diet and administering nitroglycerin, reducing his blood pressure, and enabling him to attend to some of his correspondence, nevertheless, he remained unable to break through his depression and assume his normal duties.

Excitement, also, may interfere with voluntary action by the acceleration of the stream of thought so that normal insight into conduct, its purpose, and its consequences is impaired and the will has not the opportunity to control the patient's behavior.

Anxiety, also, may limit or even destroy responsibility. The following letter indicates a state of mind in which the patient may readily be led to a course of action that will not be reasonable and not in accord with her own best interests.

I think my trouble was brought about by overfatigue, overanxiety, and apprehension about my brother; not allowing myself to rest in the morning. I think that just as one force can be changed into another, so one anxiety can be changed into another. I feared for him and that fear has changed into the well-worn groove of another fear, namely, that I should see something sexual. Everything has become something that I must run away from. I don't know how to handle myself at all. I can't look out the window, go into the garden or look at the servant maid. My head is filled with rushing sounds and pulling feelings at my neck, and my spine is in pain, particularly underneath the shoulders, and I ache all over. At night I can't go to sleep with the thought that I will be rested in the morning, because I fear the suffering that the next day will bring, and I notice that my thinking has become confused. Unless something occurs immediately to centre all my attention upon it, I know I shall lose my mind. Two years of freedom from this fear have given me such an increased horror of going through the same thing again, that I am worse than ever. My money is tied up here. My future is a blank. I cannot look to my mother for anything. I have so many physical symptoms that I am going through a complete breakdown. Feel that I should give up my position, sell my home, leave town and go far away where no one will know me.

## Pathology of Voluntary Action Due to Abnormality of Impulses and Desires

When emotional and intellectual life are normal, I doubt that the will is ever inadequate to the task of controlling impulsive drives and blind desires. At least, I can remember no case in my own experience where excess or defect of impulses and desires is the sole difficulty. Impulses are tendencies to exercise human abilities in the presence of stimuli; desires are cravings to make use of these abilities when the opportunity is lacking. Given normal abilities, there is very likely to be a normal balance between them, and hence native excess or defect of impulse and desire is not likely to be the sole cause of pathological behavior.

Something akin to a purely conative disorder of will takes place in girls—less often, I believe, in boys—when sexual maturity ripens several years before the normal age of puberty. Healy records a number of these cases and I have had several in the clinic at Providence Hospital. When this happens, the drive of the sex impulse is out of all proportion stronger than the balancing factor of intellectual insight into the meaning of life and its ideals. Volitional control, too, has probably not attained the full strength of adult development. No adequate control, therefore, is possible. It frequently happens, however, that under good custodial care, the balancing factors develop, and develop sufficiently to enable such patients to manage their future lives with prudence and success.

In one of my patients I have suspected that the craving to treasure up the good things of this world was so abnormally developed that it was a factor in his pathological behavior.

The patient is a Hebrew, 42 years of age. He has had several spells of

depression. Each one of these had come on when he had gone into business for himself. He commences his enterprises with great enthusiasm and high hopes that he will soon be among the wealthier classes. But after a few weeks he becomes anxious and depressed, and finally, incapacitated to carry on his work, and sells out at a loss. He then goes back to his trade as a cutter, becomes cheerful again as his wages roll in regularly. He saves money only to be driven on to amass more money by going into business for himself.

The drive to make money is not in itself a unit impulse. But money satisfies many human impulses. This man's craving is so strong that he can never long endure to contemplate the possibility of failure, and so he becomes depressed and tries to save what he can by sacrificing something of what he still possesses. Nor does reason exercise a control over his conduct even in the face of the object lesson of past failure.

### Pathology of Voluntary Action Due to Organic Cerebral Defect

Let us consider now the simile of an ocean liner with its pilot and the mechanism of its steering gear. The pilot may be perfectly normal and thoroughly acquainted with his business, but if the steering gear breaks, he will not be able to bring the ship into harbor. So, also in man. The management of human life is dependent not only on normal piloting, but also on the intactness of the mechanism of the steering gear itself, which, in this case, is the central nervous system. Whatever one may think of this distinction in human psychology between the pilot and the mechanism of the steering gear, one will have to admit that the psychological disorders of the will that we have just considered are very different from the organic ones we are about to review.

We have already seen that the use of the voluntary muscles depends on the intactness of the nerves going to the muscles and coming away from them. Voluntary movement, therefore, can become impossible because of defects in the peripheral nerves. Broadly speaking, pure nerve injuries pertain to the pathology of voluntary action. Nevertheless, we have been more or less accustomed to looking upon those things that affect the peripheral nervous system as not pertaining to our mental life,

The effects of various toxins that are frequently taken into our system is to impair volitional activity. Thus alcohol very quickly does away with normal voluntary action. The same is true of morphine. The after-effects of alcoholism on normal volitional activity are by no means so disastrous as are those of morphine. Morphine is said by psychiatrists to paralyze the will. The morphine addict never again becomes a normal man; he is a weakling. And should any difficulty arise, instead of attempting to put up with it, as most people do, it seems to him unbearable, and he

must take his drug. Just how it is that morphine affects the cerebral mechanism so as to impair so seriously voluntary activity, we do not know.

Then there is the condition known as apraxia. All of its forms pertain, ordinarily speaking, to impairments of the will. But what Monakow terms the agnostic form of parapraxia is a defect of voluntary movement which is due to the inability of certain patients clearly to understand and put together the various elements of a voluntary action. Thus dressing is a daily performance whose elemental parts must be carried out in a certain order. One of my patients with a brain tumor manifested this form of apraxia, and it was this that first disturbed his wife about his condition. He tried to put his shirt on his legs and seemed to be very much worried because this feat was impossible. Here we have a form of disturbance of voluntary control dependent not on the will but on correct apprehension. According to Monakow, when it occurs as a permanent mental defect it is never due to a local injury but always points to a cortex that has suffered general impairment.

The disease termed *encephalitis lethargica* sometimes leads to abnormalities of behavior. One of my cases manifested a peculiar transformation of personality after the onset of this disease.[4] The patient, prior to his disease, was a quiet, bashful young man, who had never caused any trouble; he was a good workman, reliable and trustworthy. After his disease, every symptom of bashfulness disappeared. For instance, in going into the Social Service Department one day he knelt down before the lady in charge and opened his arms and begged her to go with him to the moving pictures. He would walk up to girls in the street and speak to them. He was discharged several times because of his attempts to engage ladies in conversation at the places where he worked. He ruined valuable plumbing materials that were given him to put up—something that he had never done before his illness. He seemed abnormally cheerful. He was thoroughly satisfied with himself. He addressed a public audience without any show of fear whatsoever. His behavior, in short, was completely different from what it had been before. *Encephalitis lethargica* is a disease which affects the gray matter of the brain and sometimes of the spinal cord. It is, therefore, certain that this peculiar transformation of character was preceded by injury to the cerebral mechanism. His abnormalities of conduct, therefore, were due to an impaired cerebral mechanism. McNeil thus summarizes the changes that appeared and attempts to reduce them to one unit explanation of loss of control.

Although many character traits have been noticed as having undergone transformation, it is not impossible that all of these may be reduced to one and the same factor, *i.e.*, a paralysis of inhibitions. This paralysis of inhibitions was due, to a

[4] This case is reported by Donald McNeil in the Am. J. Psychol., January 1923.

great extent, to the loss of intellectual insights into relations. He is not tactful because he does not see the relation of his conduct to ends that would be more readily perceived by a normal individual; he is forward and bold because he has lost due appreciation of the meaning of conduct. Those things that have been built up by education, that act as a restraining influence upon conduct, have been paralyzed. His behavior resembles very much that of a man slightly under the influence of alcohol. He is clumsy with his tools; he is awkward in his manner; he is talkative; he is cheerful; he has lost all feeling of shame and restraint; he comes late for his job, and has no appreciation of what this may mean; he does not care; he has no bashfulness; he has none of the finer sensibilities. The loss of all of these things and the appearance of others does not mean that his *encephalitis lethargica* has produced a change in many attributes of character, but only in one, *i.e.*, control. This control demands for its perfect exercise the perfect functioning of a very elaborate cerebral mechanism. It is this cerebral mechanism that has been injured by the *encephalitis lethargica*, and because of its injury this peculiar transformation of character has taken place. Such an injury may happen in other ways, and frequently does appear as a transitory disturbance in alcoholism and epilepsy. Unfortunately, with *encephalitis lethargica* the injury is permanent. It is not likely that this patient's character will ever again return to what it was before his sickness.

# PART VII

# PROBLEMS OF VOLITIONAL ADJUSTMENT

## CHAPTER 32

## THE TECHNIQUE OF ADJUSTING THE INDIVIDUAL

IT IS quite the fashion in child guidance centers in the United States to regard the behavior problems of children as emotional difficulties arising from a faulty parent-child relationship. The attempt is made to remedy the difficulty to a very great extent by treating the parent. The "parent" usually means the mother, for it is seldom that the father has time or opportunity to visit the child guidance center regularly. In the modern child guidance clinic, great stress is laid—and rightly—on treating the mother when the child presents any behavior difficulty. One does not tell her plainly and directly, "This behavior problem is your fault, for you have been mishandling the child." One should not do this for two reasons: The first is that from the outset the psychiatrist does not know in just what particular way the mother has been mistreating the child, if at all, and it would not help to tell her that her manner of dealing with the child has been wrong without enabling her to see just how it was wrong in order that she might correct it. In the second place, most parents do not realize and are not willing to admit that their conduct towards a child has been in any way to blame for the child's misconduct. And so what one should attempt to do is to talk with the parent while the child is being seen by another member of the staff. In talking over the child's behavior one asks a question from time to time which raises the problem of whether or not the mother handled an incident in the best possible way and one asks for suggestions as to what other methods might have been tried. The objective of the interview is to find out in what way the parent's attitude or treatment may have developed or contributed to the child's abnormality of conduct and to lead the parent to discover for herself (or himself, if one can talk with the father) the part the parent has played in the development of the difficulty.

In all this we are really making an attempt at volitional adjustmenl. For volitional action, as we have pointed out, is rooted in intellectuat understanding. We are trying to get the mother to understand herself, to become focally aware of a faulty attitude towards the child, and to lay that attitude aside and adopt a new attitude. But to lay aside an old attitude and adopt a new one, in virtue of an insight into the inadequacy of the old

and the remedial character of the new, is a volitional act, and sometimes it demands a great deal of personal effort.

We must remember, however, that if it is impossible for us to get cooperation from either parent and we are able to treat the child only, it is nevertheless quite possible for us to bring about a satisfactory adjustment of the child without parental cooperation.

Let us now consider a problem of readjustment in the family and in the school and in relation to outside social contacts.

Sometime ago a father phoned about his 16 year old son. He was very much concerned about his negative, resentful, truant behavior. The boy had been in a parochial high school. He said plainly to the nun who was teaching him, "I can't see sisters." He did not want to be under women teachers. He did not like the school. And so he was transferred to a brother's school.

The father said that from kindergarten on the boy had resented school. He was not interested in school work. He resented all authority at home and in school. He was sent to a Benedictine School in the West. He did not get along. He came home and went to a vocational school and hated it. He was transferred to a public high school, but played truant and got low marks. He was constantly in hot water with his father. He belonged to a gang in the neighborhood. He was taken to a private psychiatrist who told the father he ought to let the boy do anything he wanted to do. The father tried this, but the boy still got low marks in school and continued to play truant. At times he stayed out all night, sleeping in the corridors of a neighboring apartment house. The father's knowledge of this seems to have terminated the attempt to humor the boy; and the father gave him a good beating when he came home one day after being out all night.

And so, at his wits' end, the father sought help at our Child Guidance Center.

The father, and also the mother, were seen a few times by a social worker but the main problem was a volitional readjustment of the boy made possible by the development of ideals and principles of importance in the control of conduct.

*First Interview.* In my first interview with the boy, whose name was Jim, I got off to a bad start. I had been detained and he waited almost an hour to see me. Naturally he was a bit grouchy when I came but he seemed to warm up when I apologized and spoke to him in a kindly manner. We had a brief talk about his plans for the future and at first he said he had no plans. He said he was disgusted with school but had quit playing truant. Nevertheless, he did not study.

A little later in the interview, to my great surprise, he said he wanted to become a Benedictine lay brother. I asked him how he got this idea and he said, "I haven't got the stuff in me to be a priest, so I'd like to be the next best thing: a lay brother." He said he liked the family life of the Benedictines, which is somewhat different from that of the Jesuits. He had learned to know the Benedictines at one of their boarding schools. But he got in bad at the school and had to leave. I neither encouraged nor discouraged the aspirations of this new convert to Benedictine ideals. Certainly it would have been a major blunder to tell him that the "likes of him" could never be a Benedictine.

*Second Interview.* Jim came in with a bit of a "don't care" attitude. We discussed at first what he was doing in school. He told me he was really going every day and they were commencing to study square root.

I concluded to try a technique that I have often found helpful with adolescents. In school and street contacts boys meet some companions who are worth while imitating: boys who work hard, do what they should do and are getting ahead. These I term *ideals.* There are other boys who are not worth while imitating but who nevertheless are quite often imitated, perhaps because they are older or have a gift of leadership and are gang leaders. They do many things they should not do, such as playing truant, stealing, breaking windows, and so on through the gamut of juvenile delinquencies. They are evidently not making for any worth-while objecive These I term *phantoms.* I explained to our patient the concepts of ideals and phantoms.

I then asked, "Is there anybody who had a good influence on you, anyone you have known whom it would be good to be like?" He said "Yes," and I asked, "Who?" He replied: "A fellow studying to be a priest at the Benedictine School, Frater Peter." "What's good about him?"

"He's an all-around fellow. He wanted to help you. He is easy to get along with. He's lots of fun, but when the time comes and he should be serious, he is serious. He is a good fellow."

Jim has not analyzed his ideal, but merely named things that attracted him in this ideal. I asked: "Can you remember trying to be like him?" "Yes, for several months after I came back from the Benedictine School I went to Communion every morning."

I asked if there were anyone else he knew who was worth while imitating. He could think of no one.

I then asked: "Have you been like any bad fellows?" He laughed and said: "If I wrote out their names it would be a mile long." "Is there anybody now who is bad and whom you are imitating?" The question peeved him somewhat and he answered rather forcibly: "I do things on my

own. When I do wrong, its my own fault." As we shall see, this was not so. He was unconsciously imitating a phantom and the realization of this unconscious imitation was a step in attaining freedom and a transformation of behavior.

The conversation was continued by my asking, "What things have you done wrong in the last few months?" "Whew!!!" he exclaimed. "I neck, I play cards, I skipped school a couple of afternoons. I spent the night out last Saturday, the whole night, and two weeks ago I had something to drink."

"What fellows do as you do?"

"Most all the boys I go around with, the whole crowd. The gang I used to go with broke into three parts. Some like women better than sports, others wanted sports, and others wanted both sports and women, and that's my crowd."

"Do you admire anyone in the gang?"

"I admired one fellow by the name of John. He turned out to be pretty much of a mole."

"What's a mole?"

"Somebody that noses you out. If you go to a girl's house and there is only one girl, he leaves you out and goes with the girl. I don't figure that way."

"What did you admire in John?"

"He was lots of fun, witty."

"Now did you happen to take after him?"

"He was one of the bigger boys and I was one of the younger. It was only natural for me to take after him."

"You might have picked a better model." I then pointed out that Frater Peter was an ideal and John was a phantom. "The phantom leads you to bad and then disappears. Which will you follow?"

"I would like to follow the ideal," he replied.

"Is it really so tough?"

"I don't know. It's a long time since I wrote Frater Peter. I only do writing when I come home at night."

I suggested that he might sometime come home a little earlier and write the letter, and then asked, "What are you going to be eventually?"

"I know what I want to be, but what you want to be and what you are going to be are two different things."

I suggested that the first thing to do would be to get through high school; and so the interview ended.

*Third Interview.* When Jim came in for this interview, I asked him whether or not he had been thinking about the ideal and the phantom.

He said: "Yes, I've been thinking about it a whole lot." He told me how he would like to take after the ideal and drop his association with the phantom, and he said, "I did drop him."

He still, however, goes with the gang. He went to Glen Echo with the gang on Sunday afternoon and on Saturday he had a date with a girl. He then assured me that he didn't go steady and so didn't go out with any girl in particular. He mentioned that he stays home now and studies almost every evening. He has dropped association with the phantom. He says, "Hello," but doesn't play sports with him. I asked: "What things did he lead you to that were not good?"

"If he wanted something to be done, he'd ask you to do it."

"What?"

"Well he wanted an ash can thrown off the roof of an apartment building, seven stories high, and he asked me to do it."

"How did you strive to follow the ideal?"

"I went to Mass and Communion on Ascension Thursday and last Sunday. I tried to obey my parents more."

"Have you in mind what you are working toward?"

"Only to enter the Benedictine order."

"You will have to get away from the phantom."

"Very much so."

"What kind of work would you like to do as a lay brother?"

"Work in the fields. When I came back from the Abbey I went to Mass and Communion daily for two and a half months."

"Why not start again?"

"It's awfully hard after you have fallen off that way."

"If you don't become a lay brother what then?"

"I'd be S.O.L."

"What's that?"

"Safely out of luck. I wouldn't have a chance for anything else. That's all I have in mind."

"The gang won't lead you to be a lay brother."

"I think it will. Not the gang but the majority of boys in the gang. There are two in it who go to Mass every morning. [Perhaps our discussion of the concept of ideals and phantoms has made him sensitive to the presence of ideals.] A boy quit school and they tried to talk him back into school."

"What good influences has the present gang on you?"

"I get home early when I go out with them. They know my parents and my parents know them. It's clean sports, cooperation. We all get along. We'd always stand up for a smaller boy. Lots of times at the Ice Palace guys pick on and shove one of our smaller boys, and we make 'em stop."

"It's really important for you not to stay out at night. Have you done so?"

"Yes, father. One night we were down at the park. It was late and I didn't want to go home for fear Daddy would be mad and so I stayed out in the park all night."

I said that it seemed that the gang wasn't leading him to good and he replied that that was the phantom's crowd. It seems, therefore, that there are two kinds of gangs with which he is mixed up. I suggested that it might be well to stay away finally and for good from the phantom and his gang; and then asked if he said his prayers every morning and evening. He replied: "Silent ones, but I say the Rosary at night till I fall asleep." I remarked: "If you're going to be a lay brother, you have got to pray to God for guidance." And so the interview ended.

*Fourth Interview.* I opened the interview with the question: "What has been happening?"

"Not much," he replied. "The same old routine. I go to school, and I don't stay out late at night."

"Are you still thinking about being a lay brother?"

"Yes, father."

"Do you write to anyone at the Abbey?"

"I wrote to Brother Peter about three weeks ago. I said I was still thinking of asking to enter as a lay brother."

"You will have to give up the girls."

"I know that."

"Are you going out with any girls now?"

"Not a date since my last visit."

"Can you get along forever without any dates?"

"Yes. Why do you ask?"

"If you are going to be a lay brother you can't go out with girls."

"Having a girl is like having money. If you have it, it's O.K. If you don't, it's just too bad. It don't worry me."

"What happened to the phantom?"

"I saw him at church about two weeks ago."

"How about the other phantoms, the gangs?"

"I am going around with the same crowd."

"Every night?"

"No, only Friday and Saturday—except last night."

"What do you do with the gang?"

"Go to shows or play miniature golf on Wisconsin Avenue, or go swimming and so on."

"What good things have you learned from the gang?"

"I learned to repair a car. One of the boys we go with bought a car.

A '33 coupe. It had to have a lot of work done on it. He knew how and showed us. It's in perfect condition now. We boys spend our money together. It's like having them as brothers."[1]

"Has the gang ever done anything it shouldn't have done?"

"Sure!"

"What?"

"We sneak into the swimming pool at the Wardman. We raise Cain with people we don't like, and we caused a big rumpus in a drugstore."

"Is life an opportunity to do something good?"

"Sure, but it's also an opportunity to do something bad."

"Would you like to be remembered for something good?"

"Yes, father."

"Or perhaps," I added, "not remembered at all?"

"Well, I don't want to be remembered for anything bad."

"What good are you going to be remembered for?"

"What good! I can't say that. I don't believe anyone else can either."

"That's what you want to think out."

"I don't think that fast."

"But in the next few weeks."

"Yes, father."

"Would you like to read a book?"

"If it interests me."

So I loaned him *Call of the Mountain* by Cornelia Meigs.[2] And with this introduction of the patient to bibliotherapy, the interview ended.

*Fifth Interview.* Our conversation opened by my asking him to give me an account of the *Call of the Mountain.*

He told me that the story was about a boy about nineteen years of age who went off into the hills and made a living for himself. He really settled down to his job and did it.

"How did he manage to succeed?"

"By helping others. He took up for those two women. He helped out his friend who was working on the magnet."

"Did he have any troubles?"

"Oh, yes! It was hard for him to get food. He was accused of murder. He had all sorts of difficulties in getting seeds and planting and running his farm."

"Did it ever occur to you: 'I might be like Nathan?' "

"No."

"Think about it a little."

[1] If one would talk with a few boys like Jim, one could learn how to organize a boys' club that would do a great deal of good.

[2] Boston, Little, Brown & Co., 1940. Pp. 258.

"Well, he was a right good boy."

"You could be like Nathan."

"If I really tried, I might work the way he worked and treat other people the way he did and be kind to animals as he was. I could help others also who are worthy of it and who need it and want it."

"Could you resolve on any special thing to do yourself?"

"I could do things the way he did and be nice to other people. I have always tried to act like that."

"Is there anything you have not tried?"

"I haven't tried to settle down and make my own way I haven't tried any of that."

"Why not try it?"

"That's true, Father. I guess I could."

"How could you go about it?"

"I would not have to leave home and get out on my own. I could make money and help pay for my schooling and clothes. I could take a different attitude towards people."

And so the interview closed and I loaned him *Man of Molokai* by Ann Roos.[3]

*Sixth Interview.* Jim said he did not learn much from the *Man of Molokai.* But from reading the book he did crystallize the principle, *You have to fight for what you want,* and he went on to tell me how the hero had to fight for a place among the boys where he went to school. If he had not fought, they would not have had respect for him. He was more or less gifted with energy and fought for his lepers. The lepers were used to lying around all day and he got them to build things. And he had patience.

This was to be almost our last interview. I had found an opening for him in a Benedictine boarding school. So we chatted about his present manner of life. He maintained that he stayed home and studied about three nights out of the week and never stayed out all night any longer. I asked if he were making any special friends. He took my question as meaning do you follow phantoms any more, though I had not thought of that in putting the question, and he answered: "I don't imitate anyone anymore. I want to be myself."

He had been going to summer school to make up certain deficiencies so that he could make his class in high school in the autumn. He had taken his examinations and passed in all subjects.

He went to boarding school in the autumn and the following Christmas I phoned his home for a report. He was doing very well in all his subjects except Latin in which he had a low passing mark.

He was a great success in athletics, having made the varsity football

[3] Philadelphia, J. B. Lippincott Co., 1943. Pp. 254.

team. He liked the boys and the boys liked him. He also liked the teachers and so was well adjusted both with the students and the faculty. He was on the altar and served Mass.

A year later, having heard nothing from him in the meantime, I phoned his home and asked him to come to the Conventual Mass at the Priory. He came and, without my having given him any suggestion to do so, received Holy Communion. I took him into the monastic dining room afterwards for a good breakfast and later we had a chat. To my great surprise he had made up his mind to go to college. The following June he would have all the credits necessary for college entrance except two; and these he intended to get by going to school again in the summer. However, he was the same lackadaisical fellow, maintaining that he was not working and did not know just what he really wanted to be. He had not given up the lay-brother concept but it did not seem so all important. He had, however, definitely determined to go to college and sometime in the course of his college years to shape his future destiny.

I have taken this case as an example of volitional adjustment. Our study of volitional action and the history of this boy point out that volitional adjustment does not consist merely in resolving to take a certain course of action. Volitional action demands an intellectual foundation. This foundation consists of an intellectual evaluation of mental attitudes and principles of conduct, and their relation to worth-while objectives in life.

To talk and urge a change of conduct is not sufficient. One must also supply the intellectual foundation. This we attempted to do by the analysis of the concept of phantoms and ideals and by our bibliotherapy by means of which, without knowing it, the patient picks out sound ideals and principles. Our patient changed himself. But he had little realization of the fact that he was doing so. There was no display of effort in the process. To my surprise he asked me in the last interview, "What did you get out of seeing me and what did I get out of seeing you?" I told him that I was amply rewarded if I had helped him to change himself; and then when I pointed out the unhappy state of his school life when I first saw him and his present satisfaction with his school and his determination to go to college, he realized that in some way a change had really taken place in his whole manner of life and that this change was accompanied by a resolve to go on for a higher education and a laying aside of many unwholesome activities, even though there had been on his part no violent effort in the expenditure of mental energy.

## Chapter 33

# ADJUSTMENT IN THE HOME AND IN THE FAMILY OF NATIONS

We have just pointed out that volitional adjustment depends upon the harboring by the mind of intellectual ideals and principles of conduct.

The problem before us now is to outline the intellectual ideals and principles which will serve as a basis for volitional adjustment in the home and in the family of nations. Truly human adjustment is something different from the relief of tension by giving vent to an emotional outburst—abreacting in the psychoanalytic sense. It is not domination by aggression—success, that is, in carrying out our own ideas by making our opponents afraid of what we might do if they should seriously undertake to oppose us. It is not merely an understanding of the hidden sources of our emotional reactions. It is not sitting on the lid to keep it from blowing off—that is repression, repression, repression, day in and day out. That the concept of human adjustment as violence done to our natural emotions is false was illustrated in the case presented in the last chapter. Here there was no violent display of repression, but a gradual changing of ideals, and apparently without effort there resulted a profound change in conduct.

Volitional adjustment is rational conduct free and responsible in the light of principles and ideals. Without these principles and ideals there is no intellectual knowledge of the good, there is no adequate object of volitional choice. It becomes then a matter of prime importance to outline the ideals and principles whenever there is a problem of volitional adjustment.

What then are the ideals and principles within whose orbits the individual must move if his conduct in home life is to be truly rational and which the state must respect in its dealings with other states if its actions are to be just and reasonable?

### A. The Fundamental Principles in the Ethics of the Home

1. *The home is a social unit governed by principles of reason which give expression to the natural law.*

The fundamental relations that should exist between all men, and which, if established, will lead to their highest perfection, their perfect peace, and supreme happiness, derive from God's eternal concept of man in accordance with which the foundations of human society were laid. This eternal concept is an expression of the very nature of God Himself, and God's will that it should be realized is the Eternal Law. Since God does not have qualify-

ing characteristics as finite beings have but simply *is* whatever can be said of Him, the Eternal Law *is* the Divine Nature.

God gives expression to the Eternal Law in the mind of man by making it possible for him to attain by his intellect to a knowledge of what is good, and so the expression of the Eternal Law in the human mind, sitting in judgment on conduct, becomes the Natural Law by which all human minds are directed to the true good and turned away from all that is evil.

What then does reason sitting in judgment on human conduct say about the home that has its origin in matrimony?

2. *The formal and essential nature of matrimony is a pact of perfect friendship between husband and wife.*

The true friend does not seek selfishly to get something for himself out of his friend, but desires to bestow some good on his friend because of the love he bears him. And so in the true love of a perfect matrimonial union each spouse is earnestly bent upon the welfare of the other, trying to bestow rather than to get. The love of true matrimonial friendship is begotten by admiration for a personality, by the perception of a beauty of character which can be known by the intellect but can never be seen by the eye. True friendship is eternal and therefore marriage is indissoluble.

3. *The law of perfect friendship extends from husband and wife to all the children, so that all interpersonal relationships in the family are dominated by charity.*

Every child therefore becomes a being to whom something is to be given, and given out of love. This something is not merely health and strength and wealth but also the religious, moral, intellectual, and aesthetic culture of the past.

Children are desired that they may be loved and, because loved, showered with all the blessings of culture in all its aspects.

In such a family there can be no such thing as a rejected child, that is to say, a child that is shoved aside and not given all that the family can possibly give or less than is given other children, because the child was not wanted in the first place or is looked down upon because it is inferior in looks or intelligence to the other children.

4. *Friendship puts up with and pardons the imperfections of the friend.*

Ideals do not exist in the fullness of perfection, but only in approximations. And though a human character may call forth our admiration and awaken our love, we should beware of the natural tendency to idealize what is loved and so at first be oblivious to imperfections. When this tendency is yielded to, there is likely to be a rude awakening when one comes finally face to face with some glaring, annoying manifestation of personal defect. The appearance of such a defect is the test of true love. One who loves because of a deep knowledge of the beauty of a personality

may be saddened by the appearance of a defect in the one he loves, but that does not lead to the supplanting of love by hatred. Love bears with the imperfections of the beloved.

5. *The friend brings out the hidden possibilities of the friend.*

In this sense Christ only can be the true friend. But human friendship can approximate the friendship of Christ. The love of true friendship can never lead the friend into any evil. He who leads to evil really hates rather than loves. The true friend gives his friend whatever of good he has. He shares his knowledge and communicates his ideals, and so husband and wife work together, each aiming at the religious, moral, intellectual, and aesthetic development of the other.

Cardinal Newman, who was himself a violinist, said that just as the master violinist takes his violin and brings forth from it its hidden melodies, so a friend plays upon the soul of his friend and awakens all the latent beauties of his character.

6. *The home is a social unit and as such must have a center of authority. The center of authority in the home is the father. The father may be likened to the abbot of a monastery and the mother to the brother cellarer.*

It is clear that no social unit can function smoothly and react with necessary promptness in various critical moments unless there is a co-ordinating center of authority. The home is no exception; and ordinarily the father will be the center of authority in the home, because he is the one who as a rule has more contact with the world about and is better able to manage the microcosm of the family in the great macrocosm of society.

When two people love each other and each really wants to serve the other, there is no practical difficulty that arises over who is going to be boss. Should, however, husband and wife, after having discussed some important matter, be unable to agree, the wife should in general say to her husband, "All right, you take the responsibility for the decision in this matter and I will do all I can to help you carry out your plans." Perhaps such an answer would make the husband pause and think and if he were not very sure of his position he might say to his wife, a little later, "Let us try your plan first and after all it might work better than mine." But if no place is given for any bitterness and both work harmoniously at some plan, the family will live on in peace and happiness and will no doubt succeed fairly well in all they undertake.

The husband must not become vain and domineering but realize in himself St. Benedict's concept of the Father Abbot who understands that it behooves him to be of use to the family rather than to rule over it. And when he corrects a child "let him act with prudence and not go too far, lest while he seeketh eagerly to scrape off the rust, the vessel be broken." Let him keep his own frailty before his mind and remember that the

bruised reed must not be broken and the smoking flax must not be quenched. Let him understand that he is to teach more by what he is and what he does than by the empty sound of words and so "he should show forth goodness and holiness by his deeds rather than by his words."

And the mother, bearing all these things in mind, must be a good housekeeper, keeping all things in the home in good order, having the meals well prepared and on time and doing all she possibly can to make everyone in the home happy and contented. This she will never accomplish without a great deal of self-sacrifice. The mother will have charge of everything but will do nothing of importance without the knowledge and consent of the father. In any family the life and doings of each member must be an open book to every other member of the family. The mother does nothing of importance without consulting the father and the father consults the mother and perhaps all the children, when they have grown older, about anything he contemplates which might be of vital importance to the family, just as the abbot, according to St. Benedict, should consult the community whenever anything is contemplated which is of major importance to the monastery.

When a child makes an unreasonable request the mother does not refuse with angry words but she is mindful of the admonition of St. Benedict and to him on whom she has nothing to bestow she gives at least a kindly answer remembering the words of scripture, "a good word is above the best of gifts."[1]

7. *The home, like the monastery, is a school of the service of God.*

Man as an individual owes a service to God, his Lord, his Master, and his Creator. And society as a social organism owes as a corporate body a public service to Almighty God. The family as a social unit owes a family service to Almighty God and so the family has morning and evening prayers together, adoring God as a corporate unit and asking His aid and direction in the problems of the home.

The religious teaching of the centuries that have elapsed is contained in the enactments of the Sovereign Pontifs, the decrees of councils, the writings of the fathers, and the great theologians, but the child does not derive his knowledge of religious truths directly from those primary sources but from the example and teaching of his parents, and later by taking part year after year in the liturgical functions of the Church. It is, therefore, a matter of supreme importance that parents should know their religion, live it out in their family life, and be able to explain to children the liturgy of the Church.

The home is the channel through which is transmitted to the child the religious, moral, intellectual and aesthetic culture of past ages. Parents,

[1] Cf. Eccles. 18: 17.

therefore, must develop in themselves and understand these cultures in order that they may transmit them in their home to the children of their marriage.

One who has not yet appreciated the nature of volitional action is likely to ask, "Well, what has all that to do with the will? These are intellectual concepts." But in our discussion of the will and voluntary action, we have tried to point out that the intellect is the root of freedom. Volitional action involves the acceptance and the attempt to bring to their realization ideals presented by the intellect and accepted by the will. Without ideals of family life, there can be no well coordinated sphere of volitional action in the problems of the home. When these ideals are known and accepted with enthusiasm it is possible to carry them out in an intelligent manner. This is then done with a relative amount of ease. Volitional action is not blind determination and repression. It is rational coordination of human abilities in the attainment of an end.

Suppose, instead of these principles of family life, one would adopt very different ones and say, as has often been said,

"Marriage is nothing more than an outlet for sexuality. In matrimony one should not have any more children than one can regard as financially advantageous to the parents. There is no such thing as a love of friendship. One gives affection only for what one can get. In marriage we don't put up with what we don't want to endure. When difficulties arise parents separate and take other partners. In all social contacts one must be aggressive and by aggression subject others to his way of thinking and doing. The parents do not impose any religious concepts on their children, but let them pick their own religion, if they want to, when they come of age."

Let us ask in the first place which set of principles would be more likely to lead to a happy home and provide for the welfare of the children and of mankind in general. There can scarcely be any doubt in a moderately unprejudiced mind that, tested by this criterion, the second set of principles is false and the first true.

Let us now suppose that without realizing it some of the false principles have entered some person's mind, and because he has been told that he ought to, or out of general deference to those with whom he lives, he attempts to carry out the first set of principles. This attempt is going to demand blind determination and repression, repression, repression day after day and will probably end in failure.

If, however, he has honestly rejected the false principles and enthusiastically adopted the true, he can be faithful to his principles with a minimum of effort. Principles do not, however, carry themselves out independently of volitional control. There are moments when the mind must resurrect them from oblivion, and hold them up so that they can be

seen, and maintain ideals in consciousness till an emotional storm has passed away. The mental function which makes this possible is what we term the will. But the entire course of volitional action is not one that involves the will alone but a stream that has its origin in the intellectual presentation of a good, which is accepted or rejected by the will, and is followed by will and intellect cooperating in the selection and utilization of the proper ways and means which may be adopted and adapted to the attainment of the end.

It is seldom that any mind harbors only good ideals and principles and is entirely free from the influence of false ones.

Some time ago a girl was brought to me because she had practically quit eating and was twenty and a quarter pounds underweight, a pale skeleton-like creature. Her first appointment I learned was to be on her twelfth birthday. So I undertook to establish rapport and to initiate eating by planning a little birthday party. I sent out for a little cake and twelve candles and a pint of milk. When she came in I told her that I had heard that today was her birthday and I had planned a little party for her. On entering my office there was the cake with the twelve candles burning away, the pitcher of milk, and the glasses on the little children's play table. And she, her mother and I sat down to the table. She cut the cake and of course had to eat some. She did not, however, take very much of the cake but drank a whole glass of milk.

Our little party initiated eating and for a few weeks she gained a pound or two a week. Progress, however, was not steady, but in the course of some weeks she had gained ten pounds.

When I tried to get some insight into why the child quit eating, she attributed it to the following factors. She did not like school and did not have many friends. Her big sister would not play with her and her little sister was too little to be any fun. "There were no 'kids' around home to play with me. My big sister was nice and fat and I wanted to get fat and couldn't. I tried to eat more and it didn't help. And then there was something I felt so sad about that I just wanted to fade away and die." And so she quit going to school, quit going to church, ate almost nothing and lay in bed most of the time or sat around and moped.

She would not tell me what it was that she felt so bad about that she wanted to fade away and die. But I could gather it pretty well from what the mother told me. She had loved her father very much but had recently been shocked and horrified by seeing him drunk, angry, and unreasonable.

The child's difficulty was, therefore, rooted in the disturbance of the interpersonal relationship in the family.

A further study of the background revealed that difficulties had arisen between the father and mother. The mother reacted to these difficulties by

refusing marital relations; and the father reacted to the refusal by staying aloof from the family and drinking in his room at home until he was drunk. There was a bit of an analogy between the father's reaction and that of his daughter. The child reacted by refusing to go out to school or to church and by not eating. The father reacted by keeping away from the family and drinking till he was drunk.

A remark to his wife showed that he was lacking in that true love of perfect friendship towards his wife, which as we have pointed out, is fundamental in family peace and happiness. One day he said to her, "I loved you for what you were. I don't love you for what you are with your gray hair and wrinkles." However, one must discount such remarks, even though they suggest that the primary source of attraction in this marriage was pure sexual charm without that higher love of friendship which flows from insight into the beauty of a personality.

When the mother dropped her revengeful tactics and, neglecting insults, commenced to show a true interest in her husband's welfare and happiness, he came out from his isolation and ceased to drink himself drunk in the solitude of his room. There were later relapses but conditions were vastly improved. He commenced to show affection for his wife in spite of her gray hair and an interest in the children, which for a long time had completely disappeared. He took his family on picnics and it is scarcely possible for a child not to eat when she goes on a picnic. The mother lost her careworn expression and commenced to look much younger than when she brought her problem child to the clinic. The child fluctuated somewhat in her eating at first, but soon commenced to increase steadily in weight. A trip to the mountains in the summer and a bicycle completed the cure. In the autumn she returned to school without any unwillingness and was allowed to go on with her class. She did well in her studies and by Christmas weighed thirty pounds more than when she first came to the child center.

Of the principles above enunciated, it is evident that the following were lost sight of by the parents of our patient.

The formal and essential nature of matrimony is a pact of perfect friendship between husband and wife.

Friendship puts up with and pardons the imperfections of the friend.

Instead of putting up with and pardoning, each tried to punish the other by a type of behavior that was likely to cause unhappiness and resentment. The resulting tense situation made the 12 year old girl very unhappy, until she yielded to a native tendency to shrink into herself and keep away from all contacts in the world, and losing her desire for food, as a natural physiological reaction to a deep abiding unhappiness, she experienced a drive to quit eating entirely and to pine away and die.

Many cases might be cited where the root of a problem child's difficulties is to be sought in the practical rejection of one or more of the fundamental principles of family life we have outlined.

In our treatment of the case we tried to bring about a volitional readjustment of the child and also of the mother. The child had a reading ability beyond her years and she was given various novels bearing on vocational careers and the value of school and illustrating the difficulties in attempting to float oneself in life without an adequate education. I have no direct evidence that the reading of these books influenced her conduct. But when she got over her difficulty about eating she was very willing to go back to school; and after she returned to school she remarked one day to her mother, "Now I understand all that they were trying to do for me at the Child Center."

The father could not be treated except through the mother, for he was too busy to come to the clinic. With the mother we pointed out the importance of putting up with and pardoning the imperfections of her husband and the necessity of dropping all punitive measures. This was really treating the husband indirectly, for as soon as she acted on this advice, the husband's behavior improved vastly and he commenced to show a real interest in the welfare and happiness of the mother and the children and this indirectly affected the child, because the *something* which made her feel so sad that she wanted to fade away and die commenced itself to fade away and disappear from the family life.

A false idea of volitional adjustment would have been to tell the child she would have to use her will and force herself to eat and to tell the mother to see to it that she did. This was really the type of volitional adjustment that the mother had been attempting when she brought the child to the center.

It is important for us to realize that without ideals and principles there can be no true volitional adjustment; and it is very important that one who attempts to help the members of a family to readjust themselves should have clearly before his mind the true ideals and principles of the family and then to find some way of leading the persons under treatment to know, understand, and make thoroughly their own these ideals and principles.

### B. The Fundamental Principles of the Family of Nations

Just as reason, sitting in judgment on conduct, gives us the fundamental principles of family life, so reason, analyzing the concept of human welfare and the relations of the individual to the state and of the states to one another, gives us the fundamental moral principles of the social order within the individual state and in the great family of nations.

And as the ultimate metaphysical basis of the moral law is Divine Wisdom directing man to his true end, so the metaphysical basis of the moral principles of the state and the family of nations is the same Divine Wisdom leading all mankind to the end of the whole social order established by the Will of God.

The dictates of human reason analyzing that which constitutes the true good of the citizen in the state, and of the states in their relations to one another, is the natural law of nations. The formulated principles of international law have validity of themselves when they give true expression to the natural law of nations, for this natural law is merely man's knowledge of the Divine Wisdom, the true and Eternal Law.

In 1944 there was presented to the American government a document entitled "Reaffirmation of Fundamental Principles of International Law."[2] It was the result of the deliberations of the foreign ministers of the American states meeting in consultation in Rio de Janeiro. In this document there are to be found the following principles.

1. "It is a basic principle of international law that there are certain general standards of conduct which take priority over the will of the individual state.

"These standards are derived from the moral law which is the inheritance of Christian States and which came during the nineteenth century to be accepted also by non-Christian states as the rule of international conduct."

Even one who accepts the true good of man, as an individual and of human society in general, as the standard of right action, without rising to the concept of the Eternal Law must admit that reason must set limits to the wills of individual men and to the ruling power in any nation. But the principle is a self-evident conclusion to one who knows God as the Eternal Wisdom directing men and nations to an end whose attainment will of necessity constitute their true happiness.

The draft then draws the following important conclusion.

"Hence no state may claim to be exempt from the observance of the moral law on the ground of political, economic or racial supremacy, or of a particular national culture which it believes to be inherently superior to that of other states."[3]

A study of the moral law of nations gives rise to the concept of the juridical person and just as there are moral obligations in relation of man to man, so also there are moral obligations in the relation of state to state. The fundamental principles of the morality of individuals apply to the

[2] See Charles G. Fenwick, "Reaffirmation of Fundamental Principles of International Law." *Bulletin of the Pan American Union.* December 1944, vol. 78, no. 12, pp. 661–670.

[3] *Loc. cit.*, p. 669.

conduct of states. The individual may not take to himself the property of another individual, nor may he murder another individual. In like manner no state has a right to take over the land or goods of another state, nor to overrun it and destroy it. The document cited expresses this in the following words.

"*No difference exists* between the moral law as applied to individual citizens and to states. There is but one single standard of conduct between nation and nation and between man and man. The development of international law should be marked by the gradual extension to nations of the obligations recognized as binding between individual citizens."[3a]

When we adopt the principle of state dealing with state as one gentleman deals with another, we arrive at the following principles.

2. "Respect by each State for the personality, sovereignty and independence of every other State constitutes the basis of international order, just as in the relations of individuals mutual respect constitutes the basis of the *democratic social order*.

"Hence no State may intervene in the internal or external affairs of another State."[4]

One gentleman is not going to tell another gentleman to discharge his housekeeper or his butler or his cook. Nor can any state be faithful to the principles of sound morality and gentlemanly conduct and say to another state, "You must make changes in your government to bring it more into line with that of my country."

There are naturally extreme conditions which might make a neighbor intervene in his neighbor's conduct; if for instance, he became insane and was murdering his wife and children. So, too, there might be a condition of anarchy in one state that would call for charitable interference by neighboring states. But if any nation ever undertakes to interfere in the internal affairs of another nation, it should first make very sure that its conduct is neither immoral nor ungentlemanly.

From the concept of the relation between state and state being essentially that between man and man, we derive another principle.

3. "States are juridically equal in the sense that they have the same fundamental rights."[5]

This is the application to the law of nations of the fundamental principle of the Declaration of Independence.

"We hold these truths to be self evident—that all men are created equal; that they are endowed by their creator with certain inalienable rights: that among these are life, liberty, and the pursuit of happiness."

[3a] *Loc. cit.*, p. 669.
[4] *Loc. cit.*, pp. 669–670.
[5] *Loc. cit.*, p. 670.

It will mean much for the peace and happiness of the world if the principles of the Declaration of Independence can become the law of nations and it is recognized that all nations have an equal right to secure for their citizens life, liberty, and the pursuit of happiness.

The document we have been citing goes on to say that "This equality derives from the existence of the State as a person of international law and not from the power which the individual State may possess to defend or maintain it."[6]

Metaphysically, fundamental rights flow from the essential nature of man, and ultimately from God, who directs each man to his final end and wills that he should attain it. No right depends on physical power to maintain it or demand it and secure it.

When individuals have a difference of opinion about important rights, the proper method of solution is not a duel but a discussion, arbitration, or final recourse to the civil law; and so if the law of individuals is the law of nations, "no state may take the law into its own hands or seek to enforce its claim by violence."[7]

Turning now to our principles of the family, we may by analogy lay down for the family of nations the following principles:

4. A family of nations must be organized by a pact whose formal and essential nature must be a pact of perfect friendship between every nation and every other nation in virtue of which each nation will do all in its power to be helpful to every other nation.

5. One state will always attempt to put up with the imperfections of another state, doing whatever is possible to maintain friendship.

6. One state will honestly help another state to develop its latent possibilities. This will exclude the possibility of one state allowing another state to be exploited by big business for its own aggrandizement.

7. And finally, as in every social unit, there must be a center of authority so there will be a central authority in the family of nations of such a character that war between nations will be an impossibility. The working out of this problem practically is the great problem that confronts the family of nations at the present moment.

But it is an ideal that was expressed as long ago as May 23, 1920, when Benedict XV wrote in his encyclical on "International Reconciliation":

"It would be truly desirable, Venerable Brethren, that all states should put aside mutual suspicion and unite in one sole society or rather family of peoples to guarantee their own independence and safeguard order in the civil concert of the peoples."

And centuries ago St. Augustine in his *City of God* spoke of this one

[6] *Loc. cit.*, p. 670.
[7] *Loc. cit.*, p. 670.

supranational society as the society of intelligent beings who love one another and love also and adore the Supreme Intelligence, the source and origin of all that is.

It is the law of charity that runs through our principles of the family and the society of nations. Deny these principles and you forsake charity and chaos results. Adopt these principles and live according to them and there will be peace and happiness all over the world.

After all, because God is the creator of all that is, there can be but one society of human beings, a universal family of nations. When this society becomes what it should be, wars will cease, and men as a unit social body will adore God, not only as individuals but also as a social unit embracing all mankind in its vast extent.

But as St. Augustine said, the home is the seed from which the state develops. It is therefore all important that with the aid of fundamental guiding principles, by a volitional adjustment, we should make the home a school of the service of God, that society itself may become a protecting body, warding off evils, adoring God, and pleading to Him for help in making the law of charity the law of man and the social order.

## Chapter 34

# THE ADJUSTMENT OF MAN TO GOD IN THE SUPREME SOCIAL ORDER

In this seventh part of this volume, we are treating of the various problems of volitional adjustment. We have touched on the technique of adjusting the individual. We then passed to the concept of adjustment in the home and transferred the principles of the home to the family of nations.

To one who knows that God is and that man stands in a personal relation to Him, and that society as a whole should form a social unit in which God reigns supreme, it would be like editing *Hamlet* and eliminating the Prince of Denmark to omit discussing the adjustment of man to God.

How far should one go in the treatment of this problem of the spiritual life in a work on psychology? Should one merely touch upon it, or present it in its highest form of development?

Following a principle of Beuron art that every element in a picture should be a perfect object of its kind, we have decided to present the relationship of man to God in its highest form of expression, the mystical experience.

If man is a member not only of a family and of a state, and perhaps too of a supranational society of peoples, but also a citizen of the universal society in which God is the supreme intelligence in a world of intelligible beings, he must not only be adjusted to and live in harmonious relations with his family, his state and the supranational society, but also be adjusted to and live in harmonious relation with God, the Supreme Intelligence, in this world of intelligible beings. This latter adjustment is one that is not considered in modern psychological attempts to bring about a harmonious organization of human life. In fact, some psychologists and psychiatrists could be found who would not only say nothing about man's adjustment to God but would look upon anyone who believes it possible to come into personal relations with a really existent Divine Being as suffering from a more or less serious mental disorder. But he who harbors the concept that all religious experience derives from some kind of mental pathology should ask himself whether his own ideas have a solid scientific foundation or whether he has merely imbibed them, without critical evaluation, from the environment in which he moves.

Religious experience is an important part of normal human life and as such merits serious attention in this volume, which attempts to investigate the driving forces of human nature and their adjustment. In spite, therefore, of current concepts of the pathological character of all religious ex-

perience and the neglect of religion in the classic treatises on psychology, we have decided to consider the adjustment of man to God and to describe certain stages of development of the spiritual life which make their appearance when a soul makes a serious attempt to serve and enter into personal relationship with God.

Can a reasonable human being attempt this without fear of a subjectivism which seeks the nonexistent and enters into communion with mere concepts of the mind and not with an independent self-existent Intelligence that is the source of all that is? Can we really know that self-existent Intelligence is and must be? "The invisible things of Him are clearly seen, being known by the things that are."

The very perception of change leads the honest mind to the conception of the source and origin of all change, a Being Who always was and from Whom there proceeded in some way all that is.

Spring follows upon winter and then the summer and the autumn and the winter and then the spring again. We have experienced the sequence so often ourselves and we know that it has gone on thus for centuries beyond our experience, but at some time in the past we know that there must have been a first spring, the predecessor of all others and preceded by none.

One generation of men follows another, and we know that this too has been going on for centuries beyond our experience, but there must have been a time when the first man opened his eyes and beheld the beauty of the earth. For records written in the very rocks themselves, that have not crumbled and been made into soil, tell us that the earth was not always fit for the habitation of man, for there was a time when nothing could live in that molten mass whose cooling and gradual changing made it possible to support the living things that we now see.

And if we look at the universe as a whole and consider the total mass of matter and its motion, science indeed tells us that neither matter nor energy ever ceases to be; but it also tells us that in the process of the transformation of energy all its forms tend to be degraded to heat and heat tends to diffuse itself so that all bodies will assume the same temperature, and when that takes place we shall have what is termed the heat death of the universe and all activity dependent on matter and energy must then finally cease to be.

Modern physics has found vast sources of energy unknown to the older physicists and so various ways in which the heat death of the universe may be postponed. Neither matter nor energy can be created by the universe and so the sum total of energy must be constant. Energy is equal to one half the mass times the square of the velocity. Mass must enter into the concept because motion is involved in the concept of velocity. There can be no motion unless there is something moving. Mass is that which moves and though it may be fragmented it can neither destroy nor create itself. The universe knows no infinite masses and all velocities are finite or else all

matter would promptly be lost in infinity. The clock, therefore, must run down. If, therefore, its energy is finite and it must run down, then at a finite period in the past, there must have been such an impetus to the then-existing inert universe that the present order with its vast complexities has evolved by natural necessity or the universe commenced to be at this time by the creative act of Supreme Intelligence. By revelation we know that the latter took place. But in either case, what must have been the Intelligence from whose act the vast beauty and complicated regularity of the present resulted? Scientists have been studying for centuries the structure of inorganic nature and living organisms and the known still remains but a tiny fraction of all that may be known. But the Supreme Intelligence to whose act was due the origin and development of all that is must have envisaged the whole and so has left in man and nature some faint image of Himself and the vastness of His knowledge. "The invisible things of Him are clearly seen, being known by the things that are."

Not only does inorganic nature point to the necessity of a power outside of nature itself, but we see the necessity of Intelligence as the author of living things. Many little things point in this direction. No animal could exist without many reflexes necessary to life. No animal could therefore develop reflexes without which it could not live. In some way an Intelligent Being, the author of nature, provided that animals should have all necessary reflexes, such as those involved in swallowing, digesting, and assimilating food. For, unless provided with what is necessary, organisms could not exist in order to supply themselves with all they need.

Insects lacking all experience attain by instinct ends of which they have no knowledge by perceptions and complicated motor adjustments in which the organism as a whole is involved. But only intelligence can organize activity to provide for an end which is to be realized in the future. How did insects originally become possessed of these instincts necessary for their existence and propagation? This can be understood if an Intelligent Being is the original source to which all living things ultimately owe their existence.

All nature cooperates in a mysterious manner to provide for the origin and continuation of life upon the earth. The organziation of causes demands an Organizer and that, too, One whose intelligence and power transcends our human powers of conception.

It is customary to define a person as an intelligent, substantial being subsisting in itself. In this sense, then, the eternal, independent, self-existing Intelligence is a personal being.[1] In virtue of His supreme intel-

[1] Some conceive of a person as a being with a shape and form like a man. This is a false concept that exists in a certain few who lack all philosophical training, and, in order to understand the discussion that follows, must be laid aside by anyone who harbors it.

lectual power He is capable of knowing me and understanding all my thoughts and desires. And it would be strange indeed if He designed the eye and fashioned the ear and planned and brought into being the whole structure of the human body and could not speak and make known to the mind of man the ideals and the end for which he was brought into being. Strange, too, would it be if the Supreme Intelligence brought into existence human beings capable of knowing the sublimest of ends and attaining them under divine guidance and then left these beings without any end whatsoever to attain. If we look about the world and arrange men in the order of their intelligence, we shall see the ward of idiots playing with their toys but having no concept of nor ability to direct their activities to the attainment of any useful purpose. And if we then go to the streets of the cities and the various gathering places of the idle, we shall see a group of human beings of relatively low grade intelligence idling away their lives in the bewitchment of trifling. If now we seek out human beings of the highest level of intelligence, we shall find them as a group busily intent upon and earnestly striving to bring to realization various projects of value. Can we think that the Supreme Intelligence idly whittles away at creation and throws away the whittlings? No. The Infinite Personality of God respects, and in respecting directs, the human persons He has brought into being. Every person demands an individual interest from the Infinite Personality of God. And there must be a sublime end towards which all creation moves under the guidance and direction of God. That this end should be the highest conceivable end, and only such could be the end established by Infinite Intelligence, it must be essentially different from any order or harmony possible to beings that are not endowed with intelligence and freedom but that are moved by the inexorable necessary laws of nature to pass from state to state and develop by necessity to that final condition they were destined to attain. Hence though all men are destined to enter a social order in which God is the Supreme Intelligence in a world of intelligent beings and work in harmonious concord for the attainment of the final end of this supreme social order, no man is forced to enter this social order but does so by his own free choice and election, though aided and directed in making this choice by an illumination of his mind, and an inspiration of his will, that comes from *that true light which enlighteneth every man that cometh into the world.*

Philosophically, religion is the recognition and thereby the adoration of God as the Supreme Intelligence and the Author of all that is and a humble and obedient cooperation with Him in the supreme social order which He has established in the universe. It is natural to suppose and it can be proved that God has established one positive religion directing and aiding man in the attainment of his end. For there is but one supreme social

order over which the one God reigns in majesty in the Eucharistic Kingdom of Christ. And O, how wonderful is the real union between God and the soul that participates in the Eucharistic banquet!

But the end of man is to know his Creator, the Supreme Intelligence, and work silently and humbly with Him fulfilling the little duties of the moment in the harmonious development of God's supreme social order. To recognize God's absolute supremacy and attempt to do all in one's power to carry out the will of God is to love God. And whoever sets about doing this to the best of his ability enters upon the way that leads to the mystical union of the soul with God.

But as we look at men, as a whole, how many degrees there are of the love of God! Leaving aside the group who actually hate God and do all they can to oppose religion and the group who in their indifference regard religion as a delusion of the past to be neglected in the present, there are many who, knowing God and recognizing His supreme authority, nevertheless frequently, with full deliberation and in serious matters, act contrary to what they know is His solemnly expressed will.

But there comes a time in the lives of many when the soul, whether living in the world in the midst of family ties and faithful to all the obligations of the home or having renounced the world and devoted all energies to the service of God in the religious life, commences to do its utmost to love God with all its heart and soul and all its mind and strength and so to live on earth a life of perfect friendship with God. And thus there commences to take place the development of which we are now to speak.

The essence of the love of God is an act of the will freely flowing from the individual who (a) has an intellectual knowledge of God, as the source and origin of all that is and, therefore, the Supreme Good on Whom we depend and to Whom we owe absolute allegiance; and who (b) resolves to will only what God wills and to reject all that God rejects. This intellectual knowledge and determination of the will may and does exist in many simple minds without any power on their part to express it in words. It is not, therefore, an attainment or condition open to the intellectually gifted only.

A strong and beautiful love of God may exist which is dominantly a desire to offer service, whereas the wish to see God as He is in Himself fades into the background, or at least, does not come ordinarily to the focus point of consciousness. But we cannot long serve and lack a desire to see the one whom we serve. And having attained the concept of God as the independent source of all that is, curiosity alone would make us desire to see Him. But no one attains to God by curiosity.

If, however, we study the minds of those who have loved God intensely, we find that the love of God, like all other love, acquires a certain exclusive-

ness, in virtue of which there is a strong personal consecration of the one who loves to the one whom he loves, which excludes any such consecration to any other individual whatsoever. And when this arises, there develops a craving to be with the one who is loved and herein is involved the yearning to see God and to know Him as He is in Himself.

Can one human being love another and at the same time love God? Yes, but the love of God demands that should a conflict arise between the will of a creature and the Divine Will, then God's lover will always choose the divine and reject the human. In the bosom of the family no such conflict need arise and tender personal attachments exist which do not involve any conflict whatsoever with the will of God. On the contrary, all such attachments are sanctified and intensified and made more stable by the love of God. "*Little children, love one another as I have loved you*" is a command whose fulfillment will imply that all the tenderness of Christ's love for us will dominate interpersonal relationships within the family and outside the family. But when one has consecrated himself to Christ in the religious life, the personal consecration which excludes any such consecration to any but husband or wife no longer exists between the soul and anyone else except God Himself.

But let us now lay aside the theoretical difficulties that might arise out of lawful human attachments, for there are no real difficulties here. And let us consider the mind of one who has consecrated himself and all that he has to God, though not necessarily in the religious life.

Can one really do this and not have a yearning to see God? Apparently not. This yearning is to some extent a resultant of complete renunciation. Though Our Lord's words, "*Unless you renounce all things whatsoever you possess, you cannot be my disciple,*" must be understood in the light of one's moral obligations to others, still they do mean that in some way unless we give up all things we cannot attain to perfect union with God. And when one has really made this renunciation and is blind to all that God would not have him see, there results a void in the soul from the loss of creatures which leads to a yearning to see God.

Various passages in the Psalms speak of the craving of the soul to see God. And such is the intensity of the yearning expressed that we must suppose that the words are not hollow phrases only but represent the living experience of the writer.

*My soul hath thirsted for the strong living God. When shall I come and appear before the face of God?*[2]

*As the hart panteth after the fountains of water, so my soul panteth after Thee, O God.*[3]

[2] Psalm 41:3.
[3] Psalm 41:2.

Sometimes the soul yearns for something, but knows not what it is and then finally realizes that it has been yearning for God for years and had never known it. Thus St. Augustine cried out, "Too late have I known Thee, too late have I loved Thee"[4] when finally he came to himself and commenced to seek God. This makes us think that all mankind craves God, for whose enjoyment the mind is fashioned; and the mind not knowing what it craves seeks satisfaction in that which can never satisfy, until perhaps it turns to the true Good, and then commences to thirst for the strong living God.

But we cannot naturally love anything except that which we perceive by our natural powers of cognition. But God cannot be perceived by our natural powers of cognition. Therefore, He cannot naturally be loved.

In treating this objection we must realize that God has dealings with the mind of man which transcend his natural powers of cognition. There is a true light which enlighteneth every man who cometh into the world; and over and above natural knowledge, there is a supernatural knowledge which gives us a true basis on which is built the structure of divine love.

This supernatural knowledge comes to us (a) from revelations confided to the Church of Christ and (b) the special illuminating graces received by every soul.

In the course of a good Catholic life, we meditate often and deeply on the revealed doctrine of God concerning Himself and His Christ. During these meditations and at other times, God illumines the mind by grace, so that it knows far more than that which is given by the natural powers of perception.

One learns of the love of God for man. God gave His only begotten Son that the world might not perish but be saved by His passion and death. He loved me and delivered Himself up for me. His whole life from His incarnation to His death speaks to me of His love for me and reveals the beauty of His being. That beauty is not merely in His humanity, but also and above all in the ineffable wonders of His divinity.

I learn, too, that Christ is the destined spouse of the human soul: "My son, give me thy heart,"[5] He says to me, and O, how can I refuse! He asks me to suffer with Him as one wholly consecrated to another. "My heart hath expected reproach and misery. And I looked for one who would grieve together with me, and there was none, and for one who would comfort me, and I found none."[6]

How can I not love Him of whom I know so much, but Whom I have never seen? And not having seen Him, I must of necessity yearn for Him.

[4] *Confessions*, Bk. 10, Chap. XXVII, p. 236.
[5] Proverbs 23: 26.
[6] Psalm 68: 21.

Perhaps He makes Himself known and hides Himself that I may be sanctified in my yearning. And so it is that my soul panteth for Him as the heart after the living waters; and my soul thirsteth for the strong living God, and I cry out with the psalmist, "When shall I come and stand before the face of the living God and see Him as He is, and be sanctified by the gaze that He casts upon my soul?"

But I seek Him and find Him not.

It was this that St. John of the Cross experienced when he wrote the first verse of his Spiritual Canticle:

> Where hast Thou hidden Thyself,
> O my beloved!
> Like to the stag Thou hast fled away
> Leaving me wounded behind Thee.
> I lept up to follow Thee, crying for Thee
> And Thou wert gone.[7]

And so I ask; "Where is my spouse the Eternal Word hidden?" and the answer comes: "In 'The bosom of the (Eternal) Father, that is to say, in the Divine Essence which can never be seen by mortal eye and is hidden from every human intellect.' "[8]

How then shall I find Thee, O my beloved? St John of the Cross has given the answer in the words of theology:

> The word, the Son of God, along with the Father and the Holy Spirit is hidden by essence and by presence in the inmost being of the soul. Wherefore the soul that would find Him must go forth from all things, both by affection and by will and enter into an abstraction from all worldly concerns within its own self, all things being to it as if they were not. . . .[9]
>
> O then thou soul, most beautiful among all creatures who yearnest so intensely to know the place where thy Beloved abides, that thou mayest seek Him and unite thyself with Him, now it is told thee that thou thyself art the dwelling place in which He abides, the retreat and the hiding place where He lies hidden.[10]

And so the soul finds God by actual experience, not by going here or there or by doing this or that, but in the silence of contemplative prayer. "Be still and see that I am God"[11] is the instruction on prayer that comes to us from God Himself. And though we may and must go hither and thither in doing what God imposes upon us, it is not in external activities themselves that the soul attains to God but in that silence and hush of the

[7] St. John of the Cross, *Spiritual Canticle* in *Obras Completas*. Mexico, Laberinto Editorial Seneca, 1942, p. 577.

[8] *Loc. cit.*, p. 588.

[9] *Loc. cit.*, p. 590.

[10] *Loc. cit.*, p. 590.

[11] Psalm 45: 11.

mind that only arises when the soul is in the presence of God, a silence which is permeated by the silent activity of the love of God, which may even come over the mind in the midst of external activity, but is never experienced until the will is free from every attachment to anything whatsoever that is incompatible with the perfect love of God.

One must take quite literally the words of St. John of the Cross when he speaks of the soul *yearning* to see God and be with God and really feeling the pangs of sorrow because it is separated from God. The love of God is impossible unless one keeps oneself free from grievous sin. But the love of God in its perfection is something more than freedom from sin. It is a positive turning to God with all one's heart and soul and mind and strength, that is to say, with all one's mental being, intellect, will, feelings, emotions, yearnings, and cravings.

On the ordinary plane of a good, holy useful life, one works hard for God, and hopes for one's final reward in eternal life. But one is interested in one's work and would be loath to leave it, though one would do so willingly if it were clearly made known that God wanted one to do something else. And should God by some messenger such as a fatal disease make known to His servant that He would soon call him to eternal life, the faithful servant would utter no word of complaint, but be perfectly resigned to his fate and perhaps look forward with a certain amount of satisfaction to closing his earthly career and realizing at last the enjoyment of his final end, the vision of God face to face.

But there is another plane of the spiritual life, clearly demarcated by spiritual writers, on which the soul feels keenly its separation from God, and commences to yearn with intense longing to have everything removed that in any way keeps the soul back from God whom it desires to see without any veil and to be united to without anything whatsoever between the soul and the Divine Being, whom it loves above all things and to attain whom it has stripped itself of everything whatsoever.

This intense yearning for an invisible being whom the soul has never seen does not follow the ordinary laws of psychology, as we have pointed out, according to which we really love only what we know by actual perception. Psychoanalysts will attempt to explain it in devious ways, but it is not something that can be explained by any analysis of the unconscious or by referring to forgotten cravings for what was known and loved in past experience and not attained. In the beginning of this chapter we have attempted to point out the reality of the Divine Being and the fact that He can and does act upon the mind of man. Hence any attempt to analyze religious experience without due attention to the divine action of God upon the soul is to omit from the analysis that which is of greatest importance.

God is capable of acting on the soul and producing a craving which bears some resemblance in character and intensity to the yearning which would be produced were the soul given a momentary glimpse of the Divine Essence as it is in itself and will be seen when the soul enjoys the beatific vision. The fullness of Catholicity is the highest mysticism. The soul of man is destined to see God face to face. God loves the soul with a personal love and desires to establish between Himself and the soul a life of intimate spiritual union, a loving intercommunication of Mind with mind. Between every just man and God, there is some degree of this intercommunication, which results in the just man leading a good moral life in accordance with Divine Law. But as justice approaches the perfection of sanctity, the soul is invited to a more intimate life of union and there take place certain sudden transitory intense yearnings for God which are not to be explained by intellectual insights on a merely natural plane into the nature and attributes of Divine Being. These yearnings come without being sought and are not the result of philosophical speculation. We are told that as a result of these divine touches, for such they are in reality, the soul feels its separation from God as one who loves intensely feels the absence of the beloved.

St. John of the Cross speaks thus: "To the soul that God wounds and lifts to the heights of love, He is wont to give certain hidden touches of love, which after the manner of an arrow of fire wound and pierce the soul and leave it all aflame with the fire of love. . . . These inflame will and affection to such a degree that the soul burns with the fire and flame of love, to such an extent that it seems to be consumed in that flame, so that it is made to go out of itself and be completely renewed, and pass to a new mode of being, like unto the phoenix which is consumed in the flame and born again."[12]

In the *Sixth Mansions*, St. Teresa of Jesus speaks of God awakening the soul "as if a comet passed all of a sudden, or a clap of thunder, though it hears no noise. But the soul understands very well that God has called it. And it realizes this so well that sometimes, especially in the beginning, it trembles and even complains without there being anything that hurts it. It feels itself deeply wounded in a most sweet manner, but does not discover how or who it was that wounded it. But it well knows that it is a precious thing and never would it desire to be healed of that wound."[13]

The history of any person who loves God involves many awakenings of the soul, illuminations of the mind, and inspirations of the will. They may come as the touches spoken of by St. John of the Cross that wound

[12] *Loc. cit.*, Stanza I, p. 597.

[13] Santa Teresa de Jesus, "The Interior Castle," in *Sixth Mansions*. Chap. II. *Obras Completas*. Madrid, M. Aguilar, 1940, p. 428.

the soul and leave a painful yearning to see Him, with Whom the soul has in some manner come in contact, or the awakenings of St. Teresa, which resound like a clap of thunder and then there is nothing but the silence of the night. Or there may be periods in which the soul, like Henoch, "walks with God" in the conscious enjoyment of His presence. But then, there comes the parting of friends and the soul is left by God, to go on blindly and find its way in darkness. The soul has finally attained to a true love of God. It now trusts Him absolutely and never for a moment complains or in a doubting manner asks the reason why. Deep down in its depths it knows why. Virtue must be tried. Faith must be tried. Hope must be tried. Charity must be tried. The soul is now patient and silent, in a silence which is begotten by God's very presence in the depths of its being. But the soul having learned what it is to be with God and live with Him in conscious union now suffers keenly, being deprived of the conscious experience of the divine union.

"And so the soul desiring to see itself in possession of this great God of whose love it feels itself robbed and its heart wounded, being unable to suffer longer asks . . . that He reveal and make manifest His beauty, which is the Divine Essence and that the vision may kill it and free it from the flesh, for in the flesh it cannot see Him and enjoy Him as it would."[14]

Let us now cast a glance at the chief stages of the spiritual life according to St. John of the Cross. In a passage in the *Spiritual Canticle* he outlines briefly the stages of the spiritual life and indicates just where he has described them. The passage runs as follows:

> In order to set forth the order of these stanzas more clearly and to give an understanding of the stages through which the soul ordinarily goes until it arrives at this state of spiritual matrimony which is the highest of which we are now to speak, by the grace of God, it is to be noted that before the soul arrives at this state, it is first exercised in the toil and bitterness of self-denial, and in meditation on spiritual things of which the soul spoke in the beginning, from the first stanza up to the place where the words occur: *a thousand graces diffusing.*
>
> And then it enters into the contemplative life in which it passes along the ways and through the narrow passes of love which have been related in the series of stanzas up to the words: *"Turn away Thy eyes, O my Beloved"* at which point the spiritual espousals take place.
>
> And from there on it goes by the unitive way in which it receives many and very great communications and visits and gifts and jewels from the spouse, in the same way as a human bride. And it goes on increasing in understanding and perfection and in the love of Him from the stanza in which the spiritual espousals take place where it says: "Turn away Thy eyes, O my Beloved," up to this stanza which commences: "The Spouse has entered," where it finally remains for the spiritual matrimony to be effected between the said soul and the Son of God.[15]

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[14] St. John of the Cross, *Spiritual Canticle.* Stanza XI, *loc. cit.*, p. 639.

[15] St. John of the Cross. *Spiritual Canticle.* Stanza XXII, *loc. cit.*, p. 718.

St. John of the Cross therefore distinguishes the following four stages of the spiritual life.

*First:* A period of toil and the bitterness of self denial in which the state of prayer is dominantly meditation on spiritual things.

*Second:* A period of contemplative prayer in which the soul's yearning to see God is on the increase.

*Third:* A period of special graces often of a very highly supernatural character in which Christ visits the soul many times, but then leaves it: the state of spiritual espousals.

*Fourth:* The state of spiritual matrimony in which the soul lives always in the divine presence without any interruption.

This growth and development is in its essential nature an increase in the virtue of charity in its specific aspect of the love of God, though indirectly and concomitantly there is a corresponding increase in the love of one's neighbor. There can be no true increase in the love of God without a corresponding growth in charity towards all. "If any man say: I love God, and hateth his brother; he is a liar."[16]

Now it is important to understand that charity is not a mere natural moral virtue but a theological virtue. The meaning of this is that it is a virtue produced in us and increased in us by God's action on the soul and and not a habit acquired by practice, like learning the piano.[17] We may prepare ourselves by cooperating with the graces God gives us for the time when God by His action will increase our charity, but we can never by our own efforts bring about such an increase. One can never, therefore, by his own efforts pass to the state of spiritual espousals or spiritual matrimony.

We must realize that the terms "spiritual espousals" and "spiritual matrimony" are terms used by St. John of the Cross and St. Teresa to describe certain definite stages of charity, or planes of the spiritual life, which can be recognized by characteristics which they point out.

Furthermore, we learn from St. Teresa rather than St. John of the Cross that it is possible to advance very far in the love of God, without visions or locutions or raptures or any extraordinary mystical experiences. Thus she writes in the *Fifth Mansions* in which she has been describing the prayer of quiet:

It appears to me that this mansion remains somewhat obscure in spite of all I have said. Since there is such an advantage from entering it, it will be well that it should not appear that those remain without hope to whom the Saviour does not grant things of such a supernatural character. For true union can very well be attained with the

[16] I John 4: 20.

[17] Cf. St. Thomas, *Summa theologica.* 2.2 Q. XXIV, *ii.*

favor of our Saviour, if we force ourselves to procure it, by having no will except that which is bound up with the will of God.[18]

She then goes on to speak of two types of union with God which she terms the union of delights (unión regalada) and the union without delights (unión no regalada). The union of delights is a short cut to perfection, but less meritorious. In the union of delights one is enabled by the fervor of love granted him to make easily the complete renunciation that is necessary to attain to God. In the union without delights the burden of renunciation is not lightened and we must set about the task of complete self-conquest with only the ordinary aids of divine grace and a heavy burden is thrown upon the will:

Therefore, there will be a greater reward if you come off with the victory. But of its being possible there is no doubt, for it is of a truth the union with the will of God. This is the union that all my life I have desired, this it is that I always ask from our Lord and which is most brilliant and secure.[19]

It would seem that St. Teresa means that one could attain to a perfection of charity in this way that would be the equivalent even of the perfection of spiritual marriage without the intermediation of any extraordinary mystical experiences. One might even say that the final stage of perfect charity, however attained, could be aptly though analogously termed spiritual marriage. For in perfect charity the will of the creature is identified with the will of the Creator in the sense that the creature wills only what God wills and delivers itself up without reserve to the Creator. And God reciprocates the creature's love and gives Himself to the creature not only sacramentally in Holy Communion but by an abiding union of minds. "If any man love me, he will keep my word and my Father will love him, and we will come to him and make our abode with him."[20]

One who has consecrated himself to God by the Benedictine oblation, or by a private vow, or by simple or solemn vows is officially the spouse of Christ. But one can be officially the bride of Christ without having made in reality a complete sacrifice of himself in which his will has been identified with and absorbed in the will of God, or without having attained to that psychological state that St. Teresa and St. John of the Cross designate by the phrase "spiritual matrimony." This state, as we shall see, is by its very nature an extraordinary mystical experience. Though it is never attained to without arriving at the perfect love of God, it would seem that the perfect love of God may be attained without this specific mystical experience.

[18] "Interior Castle." *Fifth Mansions*. Chap. III, *loc. cit.*, p. 416.
[19] *Loc. cit.*, p. 417.
[20] John 14: 23.

Let us now attempt to outline the state that St. John of the Cross terms "spiritual espousals."

When this state arises as an extraordinary mystical experience, it apparently commences suddenly with a "flight of the spirit" in which "God communicates to the soul great things concerning Himself and beautifies it with grandeur and majesty, bestowing on it a dowry of gifts and virtues, clothing it with knowledge of and reverence for God, much as if she were a bride on the day of her espousals."[21]

The result is a cessation of all anxiety and a mental state of peace and delight and the sweetness of love.

> The soul sees and enjoys in the divine union an abundance of inestimable riches and finds all the repose and recreation that it desires and understands hidden things and attains to an extraordinary knowledge of God . . . and enjoys in this condition wonderful sweetness and joy of spirit, and finds true tranquillity and a divine light. It enjoys in a lofty manner the wisdom of God which shines resplendent in the harmony of creatures and the works of God. And the soul feels itself filled with good things and separated from and empty of all that is evil. Above all, it understands and enjoys the inestimable banquet of love, which confirms it in love.[22]

This peace, however, is in the higher inner self. It is only in the state of spiritual marriage that the lower nature is completely subjected to the higher. And so the soul is still disturbed at times by the movements of the lower self. The higher self of intellect and will is at peace, but from time to time there come emotional disturbances such as anger, rebellion, and sensuality that impede the activity of intellect and will in the contemplation and love of God.[23]

Furthermore, Christ does not remain always with the soul but departs and leaves it alone. The yearning for His presence when He departs contitutes the greatest trial of this state.

If we should ask for definite signs in virtue of which one could recognize this state when it is present, one might say that the love of God in this state is such that it excludes any fully deliberate venial sin or imperfection. One in the religious life, therefore, would not only avoid all trivial transgressions of the Ten Commandments but also every infraction of the rule of the community under which he lives.

It would seem too that in some way and at a definite time Christ must manifest to the soul that He is to take her as His spouse and the soul must pledge itself at that moment to Christ. From the descriptions of this state it seems to be something of such a definite character that it must have its beginning in a point of time in which there takes place a mutual pledge

[21] *Spiritual Canticle.* Annotation to Stanzas XIV & XV, *loc. cit.*, p. 662.
[22] *Loc. cit.*, pp. 663–4.
[23] Cf. Stanza XVIII, 696 ff.

between Christ and the soul. St. John of the Cross preludes his description of this state by the following remark, which was no doubt based on his knowledge of the inner life of many souls that had enjoyed various mystical experiences.

> It is to be noted that these stanzas contain the most that God is wont to communicate to the soul at this time; but it must not be understood that He communicates to all who arrive at this state all those things set forth in these two stanzas, nor in one and the same manner of knowledge and affection. For to some souls He gives more and to others less, to some in one manner, to others in another, although one and the other can be in the same state of spiritual espousals. But there is set forth here the most that can be, for in that is included all.[24]

It would seem, however, that it would be necessary for the soul to receive from Christ in some manner and at a definite time the knowledge that He invites her to the spiritual espousals, and in response to this invitation the soul must pledge herself to Christ in order to enter upon the state that is here spoken of, but that rapture or ecstasy need not necessarily accompany the espousals.

Once having entered this state it would seem that at least during the visits of the Spouse mental prayer would be practised without distractions for a half an hour or longer at a time; and throughout the day during the period of these visits there should be an abiding recollection, so that the soul would carry on the ordinary activities more or less consciously aware of the divine presence.

One might say also that the soul would pass the stage of a logical preference of sufferings to delights, because it knows that it is more like Christ to carry the cross than not, and would commence to love Christ so much that without effort and spontaneously it would really prefer the crown of thorns to the royal diadem of this world's goods and praises.

In this state the soul may spend many years. Very often the peace in the state of spiritual espousals and spiritual matrimony is like that of Christ dying on the cross: suffering intensely though in great peace and happiness, knowing that He was now accomplishing the work that His Father had given Him to do.

Ordinarily one's call to the marriage feast of the Lamb is the call to eternal life with God in heaven. But not always. With a certain few souls there comes a time when Christ goes out to seek the soul and unite it finally and perfectly with Himself. The soul has still been struggling with the drives of inferior nature and trials of various kinds that impede the fullness of joy in a state of spiritual matrimony, and in the midst of all has pleaded often and earnestly for the assistance of the Holy Spirit.

[24] St. John of the Cross, *Spiritual Canticle*. Stanzas XIV & XV, *op. cit.*, p. 663.

Finally, Christ comes to the soul to conclude the eternal pact of perfect friendship, the spiritual marriage, and there is brought about a complete transformation of the soul of such a character that the soul as far as is possible in this life participates in the divine nature. Christ and the soul are two in one spirit and in one love. The soul gives itself to Christ and Christ gives Himself to the soul. "He who is joined to the Lord is one spirit," says St. Paul. (I Cor. 6: 17)

To this transformation "No one comes," says St. John of the Cross, "unless he first pass through the spiritual espousals."[25]

And we might add that no one comes to the spiritual espousals until he has conquered all fully voluntary venial sin and imperfection and no longer gives way to murmuring and complaining or to the manifestation of any antagonisms. In such a soul, says St. John of the Cross, is verified what St. Paul said, "I live now not I but Christ liveth in me." (Gal. 2: 20)

God "will not enter into a malicious soul, nor dwell in a body subject to sins."[26] The ordinary man has no idea of the full depth of meaning that is to be found in this passage. God will never grant the fullness of the mystic union to the soul that is in any way attached to even the faintest shadow of a sin. It must forsake all creatures that stand between it and God, it must develop all virtues and attain to peace of mind before the fullness of the mystic union is possible. At the same time it is not capable of doing all this by any natural effort, however intense, or by the power of its own will no matter what may be its purely natural gifts.

And so God comes to the aid of the struggling soul in a special manner and even as He rose in the midst of the storm on Lake Genesereth and said to the waves, "Peace, be still," so "the spouse, the Son of God, places the soul in possession of peace and tranquillity, bringing about a harmony between lower sensual nature and the higher spiritual powers, purifying the soul from all imperfections, establishing an equilibrium between mental functions and the light of reason in the soul, and calming the storm of desire."[27]

It is not necessary, as we have seen, to enjoy extraordinary mystical experiences to attain to the perfect love of God. And one's perfection of charity may reach any height without the actual experience of what St. John of the Cross and St. Teresa describe under the term "spiritual marriage." Nevertheless, the state which they describe by this term is an extraordinary mystical experience utterly transcending anything that is

[25] *Spiritual Canticle.* Stanza XXII, *op cit.*, p. 720. No se viene sin pasar primero por el desposorio espiritual.

[26] Wisdom of Solomon 1: 4.

[27] *Spiritual Canticle.* Stanzas XX & XXI, *op. cit.*, pp. 705–6.

possible to natural mental effort even though assisted by the ordinary grace of God.

Let us point out some essential characteristics of the state of spiritual marriage.

In spiritual marriage there is a permanent abiding realization of the divine presence which does not merely last for longer or shorter periods of time but is maintained indefinitely without any interruption.

This abiding consciousness of the divine presence is of such a character that it would seem that it was something that took place in the essence of the soul itself and so left the faculties of the mind free to carry on their work unimpeded by the soul's enjoyment of its intimate union with God.

St. Teresa speaks of a splitting of the current of consciousness so that one flows into the channel of the love of God and the realization of His presence and the other turns the mill wheel which grinds out the duties of the day. Contemplation and work, therefore, go hand in hand.

St. Teresa, who is rich in figures and illustrations to explain her meaning, says that when God is about to establish the soul in the state of spiritual marriage, He leads her as it were to a room in the interior castle of the soul. And therein the soul is given an intellectual vision of the Blessed Trinity.

> Here all three Persons of the Blessed Trinity communicate themselves to her and speak to her and grant her to understand those words which the Evangelist says that Our Lord said: that He and the Father and the Holy Spirit would come and dwell with the soul that loved Him and kept His commandments.[28]

And then speaking evidently of her own personal experience she writes:

> And so it was that in all things she found herself improved. And it seemed to her that for the works and business affairs imposed upon her, that which was the essence of the soul never moved from that room. In such a manner that it seemed to her that there was a division in her soul. And going on with the heavy burdens she had, a little after God bestowed this favor upon her, she complained of herself, after the manner of Martha when she complained of Mary, and sometimes said to herself that she was standing there always enjoying the quiet at His pleasure and that she left herself in such works and occupations. This will seem to you, my daughters, nonsense; but it is actually just what took place. . . . It seems to me that the soul is a different thing from its faculties and they are not all one and the same thing.[29]

And so the soul attains to the fulfilment of Our Lord's promise: "If any man love me, he will keep my word and my Father will love him, and we will come to him and make our abode with him."[30]

[28] "Interior Castle", in *Seventh Mansions*. Chap. I, *loc. cit.*, p. 467.
[29] *Loc. cit.*, p. 468.
[30] John 14: 23.

Such then are the heights; where must *we* start who would fain take the narrow path that leads to the summit?

St. John of the Cross has charted the whole region and given explicit instructions. The starting point is in a life of renunciation. Let us read the following instructions, realizing that they will have a different concrete meaning for each and every individual. But to understand them we must know that God has given to each human being an end worthy of the dignity of the human personality. We must work in harmony with God's direction in the attainment of that end and lay aside all that interferes with its attainment. Life is not a time to enjoy creatures but to do a work of value in that supreme social order over which Our God reigns in majesty in the Eucharistic Kingdom of Christ.

*Rules of St. John of the Cross for One Who Would Enter the Dark Night and so Proceed on His Way to God*

*First:* To bring to the task an habitual desire to imitate Christ in all one's affairs, conforming himself with His life which we should ponder on in order to know how to imitate it and conduct ourselves in all things as He would have acted.

*Second:* In order to do this well, whatever pleasure may be offered to the senses which may not be purely to the honor and glory of God to renounce it and have nothing to do with it for the love of Jesus Christ, Who in this life had no other pleasure and sought none other, but to do the will of His Father which He called His food and refection. I will take an example. If you are offered the pleasure of hearing things which contribute nothing to the service and glory of God, do not seek to enjoy it nor to hear these things; and if it would give you pleasure to look at things which would not help you on to God, seek not that pleasure and look not at those things; and if in talking or in any other matter whatsoever pleasure is offered you, act in the same manner. And in all the things of sense, neither more nor less, in so far as you are able to shun them promptly; but if you are not able to do so, it suffices that you do not seek to enjoy such a thing even when these things pass before you. . . .

Try always to tend, not to what is most easy but to that which is most difficult; not to that which is most palatable but to that which is most tasteless; not to that which is most pleasurable, but to that which is least pleasant; not to that where there is repose, but to that where there is labor; not to that where there is comfort, but to that where there is discomfort; not to the more, but to the less; not to that which is lofty and precious, but to that which is lowly and of no value; not to seeking something, but to seeking nothing; not to go about looking for that which is better in temporal affairs, but that which is worse and to desire to enter into all nakedness and emptiness and poverty of all that there is in the world for Christ's sake.

Great wisdom and strength of purpose and honesty with self and above all an insight granted by God and a power of action that He alone can give will be necessary for anyone to understand these things aright and carry them into effect.

O, Lord, direct me in Thy truth and teach me, for Thou art God my Saviour and on Thee have I waited all the day long.

## Chapter 35

# FORMAL CAUSALITY AND THE PHILOSOPHY OF NATURE

We have been discussing intellect and will in the adjustment of human conduct, and have seen how it is possible to reorganize behavior in the light of new ideals with the expenditure of relatively little personal effort. This reorganization of behavior by volitional effort in the light of new intellectual concepts is an example of the cooperation of formal and efficient causes: the concepts constituting the formal, and volitional activity the efficient, cause. But will and intellect are functions or faculties of the soul, the vital principle of the human organism, which as a formal cause organized growth in the beginning and still functions in the building up of tissue by metabolic processes.

Let us conclude the discussion by attempting to get a deeper insight into the workings of formal causality, a concept which is understood by few psychologists or biologists of the present day.

Descartes was a philosopher and a scientist. From him modern philosophy took its rise and from him the natural sciences of our day derived their fundamental assumption on the basis of which they have proceeded until the present day.

What is that fundamental assumption? It is this. All the qualities of material things and "even all the forms of inanimate bodies can be explained without the necessity of supposing for this purpose anything else in their matter than movement, size, figure and arrangement of their parts."[1]

When Descartes made this statement, it was one of revolutionary character. Today, with certain modifications, it may be taken as the basic assumption of the natural sciences.

But in the days of Descartes the concept of formative forces or Aristotelian substantial forms was familiar to philosophy and science. It was, however, a degenerate Aristotelianism which confronted Descartes. And, as Gilson points out, Descartes in some way conceived of the Aristotelian-scholastic substantial form as an immaterial substance, complete in itself, which resided in matter in some obscure way and directed the movements of its particles, and by this union of the material and the immaterial there resulted a purely corporeal substance.[2]

Descartes rejected the concept of substantial form as he understood it and attempted to develop a natural science of particles in motion. He

[1] *Le monde, Traité de la lumière.* Chap. 5, Adam and Tannery, Vol. XI, p. 26.

[2] Étienne Gilson, *Études sur le rôle de la pensée médiévale dans la formation du système cartésien.* Paris, 1930, p. 163.

envisaged the modern generalization of the conservation of mass and energy, though his formula for energy ($mv$) had to be corrected by Leibnitz ($1/2\ mv^2$).[3]

Since then natural science has gone its way, seeking purely mechanical explanations in terms of mass and velocity and manifesting a marked unwillingness to revive and consider the ancient concept of formal causes.

However, in spite of this unwillingness to consider the concept, it has adopted it unwittingly in two important instances.

The first instance was when Newton laid down the principle that every particle of matter attracts every other particle inversely as the square of the distance between them. As the enunciation of a fact, Newton's principle has its basis in experiment and its confirmation in the prediction of the movements of the heavenly bodies. But one may ask: How is it that a particle of matter can attract another? If one tells us that this is an ultimate fact of nature, one really states that matter is configured in such a way that the law of gravitation results. But in making the Newtonian assumption, one has added something to the Cartesian concept of particles in motion. The particles are configured so that they have an activity over and above that due to the velocity imparted to them. They are not merely passive entities; they are endowed with a specific activity which belongs to them by their very nature. In the terminology of scholasticism, they have a specific *forma substantialis*. It is this *forma substantialis* which gives to the field of force of our solar system its specific characteristics. This does not mean that the force of attraction is capable of independent being, as a kind of immaterial substance residing in an inert particle. There can no more be attraction without something attracting than motion without something moving.

But is this quality of attraction which we attribute to material substance capable of explaining all the phenomena of nature and the mental life of man? Science did not go very far without observing a new type of activity.

When one rubs an ebonite rod with cat's fur, one obtains what is called negative electricity. When one rubs a glass rod with silk, one obtains positive electricity. Bodies charged with these two kinds of electricity behave in a peculiar manner. They obey a law enunciated by de Coulomb in 1785. Like charged bodies repel each other; unlike charged bodies attract each other with a force directed along a line between them which varies inversely as the square of the distance when the distance is large in relation to the dimensions of the bodies.[4]

[3] See T. V. Moore, *Cognitive Psychology*, Philadelphia, J. B. Lippincott Co., 1939, p. 135.

[4] Max Mason and Warren Weaver, *The Electromagnetic Field*. University of Chicago Press, 1929, pp. 3–4.

But just as in the enunciation of the law of gravity the concept of the formal cause is implicit, so in de Coulomb's law a new property is added to matter, and this implies the activity under certain conditions of a formal principle that, so far as we see now, cannot be identified with that implied in the law of gravity.

But can even this principle be applied not only to nature but to all that is, so as to explain the mental life of man? According to the psychologist Weiss, all nature, man included, is a "physical continuum composed of nothing but electron-proton aggregates and the movements that take place among them."[5]

In 1872 Emil du Bois-Reymond gave an address to the *Versammlung Deutscher Naturforscher und Ärtze.* He pictured the dream of the scientists of his day to formulate all explanations as the integration of a differential equation by which a phenomenon of any kind would find its explanation in terms of matter and energy.

"Scientific knowledge," he said, "is the reduction of changes in the corporeal world to the movements of atoms."[6] The explanation of all phenomena in terms of matter and energy is the goal of natural science. But, as he pointed out, the dream is doomed to remain incapable of realization. Granted, he says, matter in motion, a mind like the demon of La Place might be able to write an equation covering the movements of every particle of matter and predicting its whereabouts at any instant of time.

But, he said, the equation would never tell how motion arose in the first place and, furthermore, it could never be applied to the mental life of man.

Granted that we knew the orbit of every material particle in the brain, the most that this astronomical knowledge of the nervous system could reveal would be "nothing but matter in motion. Through no conceivable arrangement or movement of material parts can we throw a bridge across into the realm of consciousness. A movement can only cause movement or be changed back into potential energy."[7]

> What conceivable connection consists between certain movements of certain atoms in my brain on the one hand, and on the other for those facts original for me, not further definable, not to be denied away: I feel pain, feel pleasure, feel warm, feel cold; I taste something sweet, I smell a rose, I hear an organ tone, I see red, and the certainty which likewise flows immediately from these facts: Therefore, I am.[8]

Nor is there any hope that science will ever transcend its present limitations.

[5] Albert P. Weiss, "Behaviorism and Behavior," *Psychol. Rev.*, **31**: 37, 1924.

[6] Emil du Bois-Reymond, *Über die Grenzen des Naturerkennens.* Edited by James Howard Gore in *Tierische Bewegung.* Boston, 1896, pp. 35–36.

[7] Emil du Bois-Reymond, *Über die Grenzen des Naturerkennens.* Cited from James Howard Gore, *Tierische Bewegung.* Boston, 1896, pp. 61–62.

[8] *Op. cit.*, pp. 62–63.

Faced with the riddle of the world of corporeal things the investigator of nature has long been accustomed with manly restraint to give expression to his *Ignoramus*.

Faced however with the riddle of what matter and energy may be and how they are able to think, he must once and for all make up his mind to the statement much harder to utter

*Ignorabimus*.[9]

The Cartesian principle in science has run its course and been found wanting, even as in philosophy it initiated an active building up of systems and ended in the bankruptcy of metaphysics.

Descartes' moving particles could of themselves alone never give structures of any kind. There is no mathematical reason nor any ground whatever to state that a swarm of particles moving at random will assemble themselves into a structure or system of any kind. But once you impose laws of action based on the ultimate nature of matter, you have postulated formal causality and specified its particular type by the laws that have been imposed.

Newton found it necessary to impose upon the Cartesian particles the law of gravity, and so every particle of matter was really supposed to be informed by a formal principle from which it results that "the force of attraction between two small bodies or between two spherical bodies of any size is proportional to the product of their masses and inversely proportional to the square of the distance between their centers."[10]

When one came to know the facts of electrification and later on to study the disintegration of the atom, one developed the concept of particles informed by a principle, or principles, in virtue of which electrons repel electrons and attract protons. The gravitational field of force does not suffice to explain the inner structure of the atom, and so one came to the electromagnetic field of force with new properties.

At the present time one cannot say that the structure of the atom has been adequately explained by the known properties of an electromagnetic field of force.[11] It seems that something must be added.

This failure to explain the atom suggests that one must add new properties to the field of force in the living embryo and that mere Cartesian particles, or a gravitational system, or an electromagnetic field of force will be quite inadequate when called upon to account for the phenomena of growth in the plant and animal worlds.

To realize the problem before us we must take a look at some of the phenomena which are manifested in the embryonic field of force.

[9] *Op. cit.*, pp. 71–72.

[10] Formulation of the law of gravity by Alpheus W. Smith, *The Elements of Physics*. New York, McGraw-Hill, 1932, p. 29.

[11] See T. V. Moore, *Cognitive Psychology*. Philadelphia, J. B. Lippincott Co., 1939, 565 ff.

## The Embryonic Field of Force

### 1. elementary concepts and terms

The fertilized ovum and the resulting embryo may be conceived of as a field of force. The single fertilized cell divides into two cells and that into four until one has a little mulberry mass which soon expands into a hollow sphere filled with fluid known as the *blastula* (fig. 21).

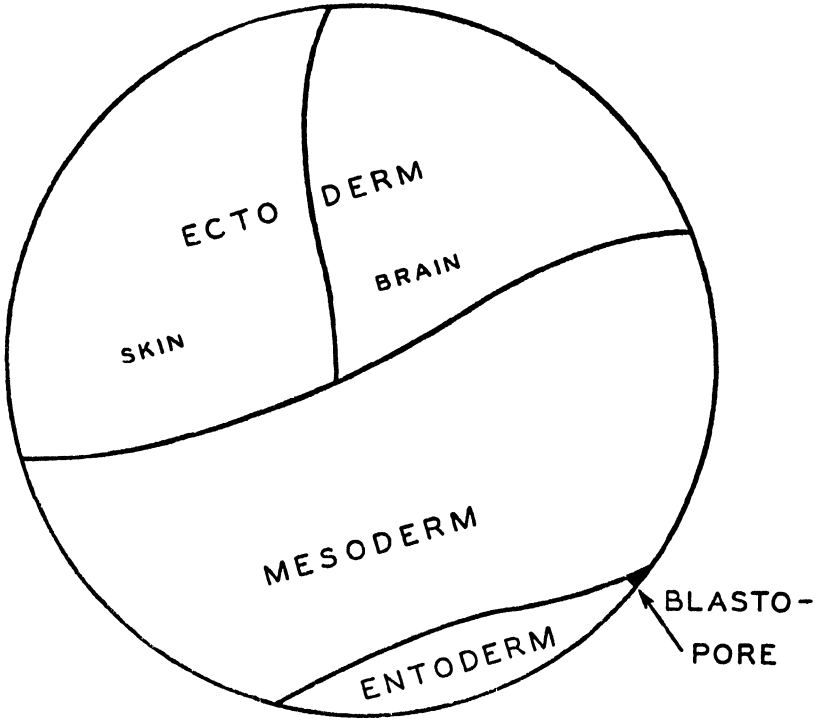



Fig. 21. Vogt's divisions of the regions of the blastula.

When embryologists commenced to study the blastula they found that its surface may be divided into three areas which by a series of apparently spontaneous movements are going to distribute themselves so as to form the outer, middle, and inner layers of the embryo. These layers are known as the ectoderm, the mesoderm and the entoderm respectively.

The layer which is going to form the ectoderm is the ventral region of the blastula, and that which is going to form the other two layers is known as the dorsal region.

In the ectoderm two regions may be distinguished.

a) One which is going to spread over the whole embryo and become skin.

*b*) One which will move to the mid-line, be covered up, and eventually constitute the nervous system.

At a certain period of development the mesoderm is going to execute a flowing movement. A little opening is going to appear in the presumptive entoderm near where it borders on the mesoderm. This opening is known as the blastopore. Through it the mesoderm is going to flow to the interior of the blastula and spread out underneath the ectoderm. It will carry with it the entoderm, which it will eventually surround completely. From the mesoderm will develop the muscles and bones of the body, and the entoderm will line the interior of the intestines and other viscera and the blood vessels. There are a number of ways in which this process of invagination takes place in various animals. When, however, it has been finally accomplished the *blastula* has become a *gastrula*.

And here at once the problem of formal causality makes its appearance. The movements by which the distributions of the areas of the blastula take place are known as formative movements. Each one of these has a certain independence, and all are coordinated as if by a presiding genius—the architect of the organism.

This independence has been demonstrated by the delicate technique of experimental embryology. One skilled in this technique will dissect out tiny regions of a tiny embryo and transplant them to another. When this is done, one finds that the ectoderm is not merely pulled apart by the expanding embryo but even when isolated will at a certain stage of development stretch autonomously by forces and mechanisms inherent within itself; and the presumptive mesoderm, when transplanted to the surface of another embryo, will sink into the interior and not expand on the surface.

In order, however, that a normal animal may develop, the various movements of the three layers must be timed and regulated. As the presumptive skin stretches, the presumptive neural tissue swings into the mid-line to form the brain and the spinal cord, and the presumptive mesoderm flows inward through the blastopore, so as to form eventually the sturdy structure of muscle and bone.[12]

Unless we are to have all manner of excrescences and protuberances and a hopeless mass of knots and folds, all must be in some way determined as to time and amount, and so the separate independent activities must be regulated by a supercoordinating cause of some kind, or the major phenomena of development will remain without any adequate explanation.

Here we meet with a remarkable fact that appears again and again in embryonic development: *the supercoordination of more or less independent coordinating causes.* The gastrula is a mosaic of parts. Each part contains

[12] Cf. Hans Spemann, *Embryonic Development and Induction.* New Haven, Yale University Press, 1938. Chap. V, "The Pattern in the Early Gastrula," 98 ff.

a certain type of material capable of growth. Each block of the mosaic, even when isolated from the embryo and in some way provided with nutrient material, is capable of growth and also of executing its own particular type of formative movement. Its material may be utilized by another embryo which receives it as an implant. But if the host is of another species, the implant may nevertheless maintain its own specific characteristics.[13]

But whether a building is constructed with stones from a native quarry or the building materials are brought from afar, an architect must design the building and in some way limit and coordinate the activities of stonemasons, bricklayers, carpenters, plumbers, etc.

## 2. INDETERMINATE AND FORMATIVE FORCES

When we examine the elements of the gastrula mosaic a little more closely, we find in the earlier stages a wide sphere of indetermination and in the later, a peculiar local independence. Both conditions must be accounted for. Let us first take a look at the indetermination of the embryo.

When that which is indeterminate becomes determinate, we must have a real cause for its change of state. It is the old problem of formal causes. According to Aristotle, when the mass of bronze takes on the form of Apollo, the formal cause is the idea in the mind of the artist.

What causes a certain region of an embryo to become this or that structure when it is in potency to either? Is there any one region of the embryo rather than another which is a center of action for formal causality?

Let us look at the facts.

*a*) At a certain stage of development any nucleus of any cell, if separated from the whole, may under favorable circumstances develop into a complete embryo.

This was originally shown as regards the two-cell stage by Driesch with the egg of the sea urchin.[14] When the cells are separated after the first division of the fertilized ovum, each develops into a smaller but complete organism with all its normal parts.

[13] R. G. Harrison, "The Growth and Regeneration of the Tail of the Frog-Larva. Studied with the Aid of Born's Method of Grafting," *Arch. f. Entw. Mech. d. Organismen*, **7**: 430–485, 1898. An early but very excellent study.

"Experimentelle Untersuchungen über die Entwicklung der Sinnesorgane der Seitenlinie bei den Amphibien," *Arch. f. mikr. Anat.*, **63**: 35–149, 1903.

Hans Spemann, "Die Erzeugung tierischer Chimaeren durch heteroplastische embryonale Transplantation zwischen Triton Christatus und Taeniatus," *Arch. f. Entw. Mech. d. Organismen*, **48**: 533–570, 1921.

[14] Hans Driesch, "Entwicklungsmechanische Studien I," *Ztschr. f. wiss. Zoöl.*, **53**: 1891 (see Spemann).

Later Spemann tied a loop around an egg of *Triton* shortly after fertilization, so that the nucleus remained in one side while the other had no nucleus. At first only the side with the nucleus continued to divide and develop. If now, at an earlier or later stage, a nucleus slips into the other side, it also commences to develop and we have two results, according to the plane in which the loop was tied.

(1) If the loop is tied in the median plane so as to separate a right and left side of the embryo, you get twins or a double formation.

(2) If the loop was tied in a frontal plane so as to separate the dorsal and ventral portion of the ovum, you get one small embryo from the dorsal half and a more or less complete fragment of a ventral portion.

Evidently the source of formative influences in the fertilized ovum of *Triton* lies in the cell plasma and not in the nucleus.[15]

The nucleus is evidently a mechanism necessary for cell division. But apparently the formative force which determines the fundamental plan of the embryo had in some manner determined the structure by which development is oriented at the time the protoplasm was constricted.

*b*) At a later stage of development, the locus of formative influences lies in the dorsal half of the gastrula.

This is evidenced by the fact that if you cut through the blastula and rotate the ventral half through 90° or 180°, the portion of the blastula which would normally form the brain is in the tail region. Nevertheless, the brain develops in the head region and must, therefore, have been made out of tissue which would normally have expanded and produced skin.

It seems that the underlying presumptive mesoderm has been able by formative influences resident within itself to determine what is going to become of the tissue with which it lies in contact.[16] Spemann locates it in an even more restricted area—the region of the blastopore.

*c*) At the beginning of gastrulation, a piece of ectoderm taken from a region which would normally produce brain tissue and transplanted into another embryo at the same stage of development but in the region which would normally produce skin will there develop into brain.[17]

In the development of the gastrula from the blastula, two movements are of extreme importance:

[15] See for citations of the literature, Hans Spemann, *Embryonic Development and Induction.* New Haven, Yale University Press, 1938, 25 ff.

[16] Hans Spemann, "Über die Determination der ersten Organanlagen des Amphibienembryo I-VI," *Arch. f. Entw. Mech. d. Organismen.* (Edited by W. Roux), **43**: 448–555, 1918. These facts are not true of all organisms. Some for instance, propagate from a mosaic egg. This term indicates that certain regions of the egg from a very early stage are restricted to the development of a certain organ.

[17] Hans Spemann, *Arch. f. Entw. Mech. d. Organismen*, **43**: 460, 1918.

(1) Stretching of the dorsal surface (ectoderm).
(2) Rolling in of the presumptive mesoderm where it borders on the entoderm.

If now at a certain stage of development we take a piece of presumptive skin and graft it on to another region, it will carry out independently its characteristic movement of stretching.[18]

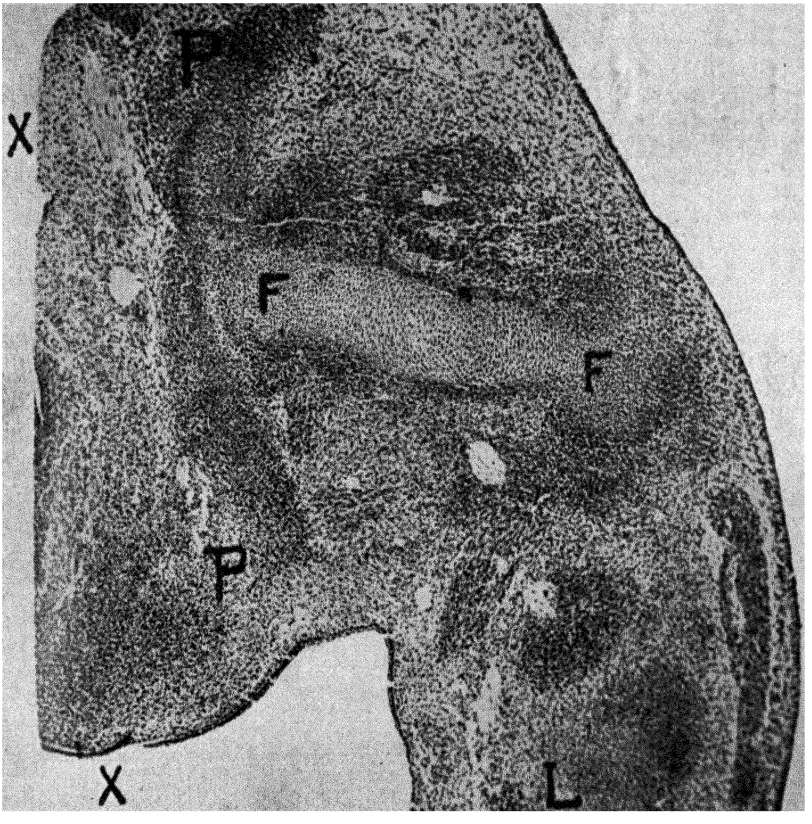



FIG. 22. Section through a rat embryo at the level of the lower limb bud. FF shows the cartilaginous rudiment of the femur. PP, the pelvic rudiment of the acetabulum. (From R. A. Willis, *loc. cit.* in text.)

One might think with the mechanists that the skin is stretched merely by the expansion of the whole. Expansion may be a factor but "stretching" is a movement of such self-sufficiency as to take place independently of expansion.

[18] W. Vogt.

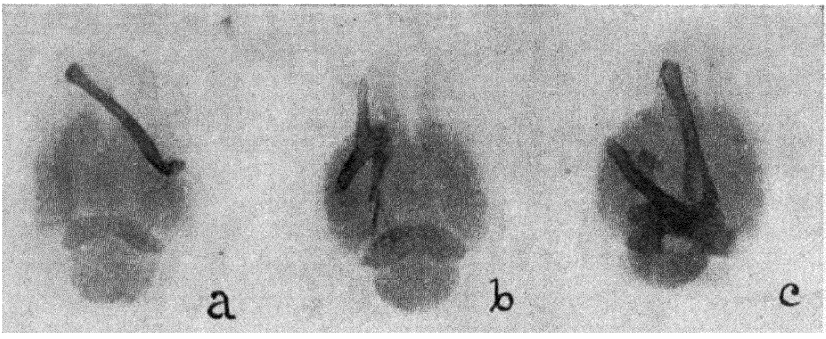



FIG. 23. Skiagrams of the host's brain containing the long bones which had been unplanted when they were cartilaginous rudiments. (R. A. Willis, *loc. cit.* in text.)

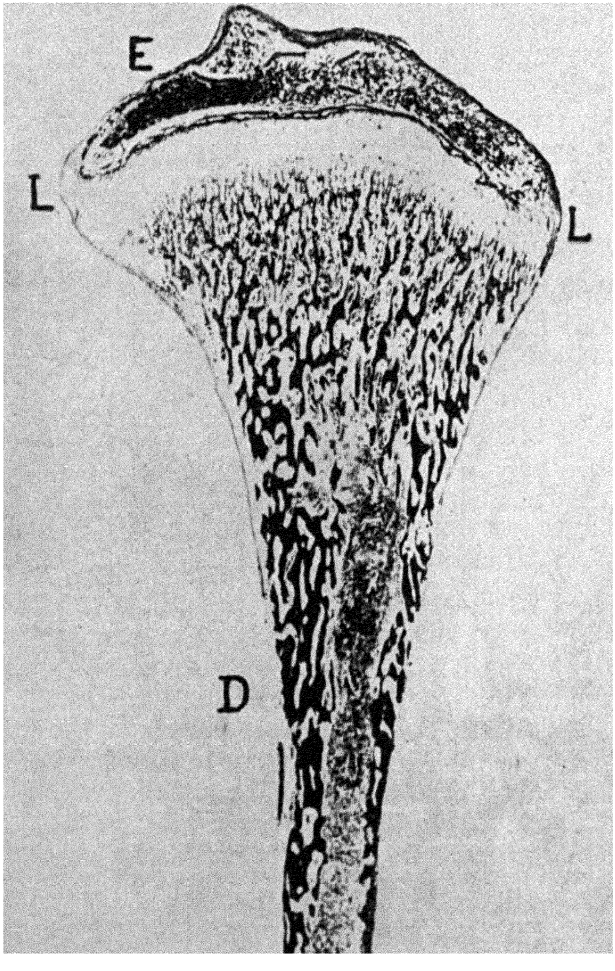



FIG. 24. Microscopic picture showing that the cartilaginous rudiment has really developed into osseous tissue. (From R. A. Willis, *loc. cit.* in text.)

Again let us take a piece of presumptive mesoderm and graft it into another region. Here in this region it will sink in and disappear.[19]

Not only embryonic structures but embryonic movements attain an independence of their own.

*d)* In later stages of development, certain regions have been determined to such an extent that if transplanted elsewhere in the embryo they will progress to their own specific structure in spite of the region in which they may be grafted.

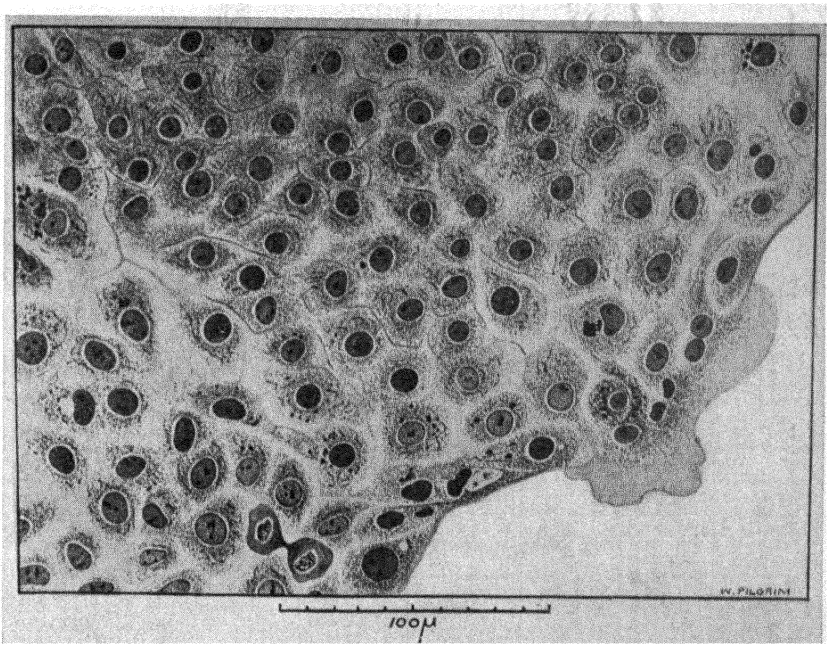



FIG. 25. Embryonic kidney tissue from the mouse, grown for four days in a culture medium, manifesting an undifferentiated sheet of cells. (From A. H. Drew, *loc. cit.* in text.)

Thus Willis dissected out the cartilaginous primordia of the limb buds and thrust them into the right cerebral hemispheres of the host rats. The cartilaginous primordia developed into well formed bones in the midst of the brains of the host[20] (figures 22, 23, and 24).

The development of specific structure is even independent of the organism itself. For example, the microscopic structure of the kidney is a

[19] H. Spemann and Hilde Mangold, "Über Induktion von Embryonalanlagen durch Implantation artfremder Organisatoren," *Arch. f. mikr. Anat. u. Entw. Mech.*, **100:** 599–638, 1924.

[20] R. A. Willis, "The Growth of Embryo Bones Transplanted Whole in the Rat's Brain," *Proc. Roy. Soc.*, London, **120:** 496–498, 1936.

complicated arrangement of tubules and glomeruli. When the cells of kidney epithelium are dissected from an embryo and grown in pure culture in a glass dish, they form at first an undifferentiated mass of cells. But let us now add a little connective tissue to the culture medium. With this addition the kidney epithelium starts to organize itself into tubules and glomeruli[21] (figures 25 and 26).

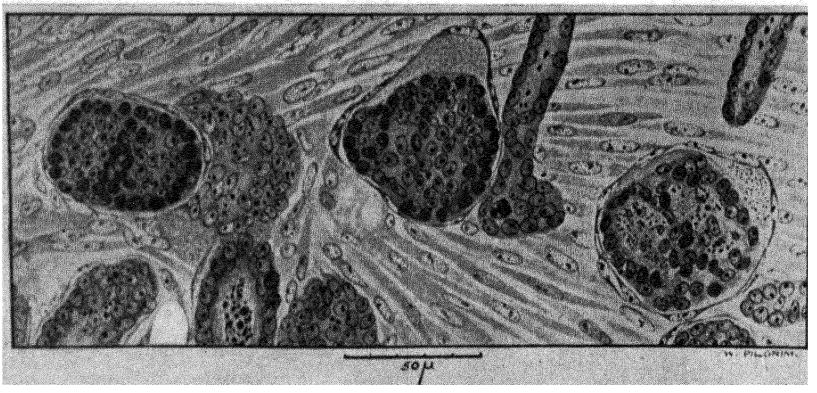



FIG. 26. The same culture as in Figure 25, after connective tissue elements had been added. (From A. H. Drew, *loc. cit.* in text.)

### 3. THE NATURE OF THE ORGANIZER

We have pointed out that the mesoderm is in some manner a region from which radiates the organizing activity of the embryo. Wolfgang Luther found (in harmony with Spemann) that the upper lip of the blastopore, stretching over an angle of 70° to 90° and extending downward to a depth of about two thirds of the radius, is the organization center.

Cut this center out and the organs of the body do not develop. Transplant it to a second embryo and it will induce the development of another embryo resulting in twinning or some kind of double monster.[22]

Is the living organism concentrated in the region of the blastopore, so that when this region is transplanted one really transplants an embryo?

Or is there an enzyme or chemical substance or mechanical something necessary for development which lies in this region but not beyond it?

It seems that the latter alternative is more likely to be the true one, for the "organizer" may be dead tissue, a chemical substance, an alkali, or an

[21] A. H. Drew, "Growth and Differentiation in Tissue-cultures" *Brit. J. Exper. Pathol.*, **4**: 46–52, 1923.

[22] Wolfgang Luther, "Entwicklungsphysiologische Untersuchungen am Forellenkeim," *Biol. Zentralbl.*, **55**: 114–137, 1935.

acid. In general, dead materials induce in tissue of the host not a complete embryonal system but only a medullary plate.[23]

Apparently the tissue that is organized into a neural plate can be a structureless mass of isolated cells. By continuous tearing of the blastula or early gastrula, Umanski formed a mass of uniform consistency. Microscopic examination showed that the mass consisted for the most part of separated but intact individual cells. The region of the blastopore (axolotl) was cut out and the mass laid upon it in a Perti dish filled with Ringer's solution. After fifteen days, various structures had developed, among them a well formed medullary tube.[24]

When a fragment of one embryo is transplanted to another and there arises on the host a head, a trunk, a tail, or a whole secondary organism, the effect of drawing out of the tissues of the host this extra part or twin organism is termed induction.

The embryo in which induction is brought about is a field of force. Is this field of force, with its inherent constituent formal causality, responsible for the production of the new part?

Or is the graft itself a field of force which merely organizes the nutrient material provided by the host, the formal causal action being supplied by the graft?

Or do we have an interplay of two fields of force, so that the graft and the host both contribute to the final effect?

A positive answer to the first question would not give the entire truth, for when a graft from the head region is implanted in the trunk region of the host, one finds in a few days an eye and auditory vesicles in the graft.[25] The graft is not, therefore, simply organized into the proper tissue of the region in which it was implanted, but differentiates its own tissues with the aid of nutrient material supplied by the host. This interpretation is not logically necessary but is rendered very likely from the fact mentioned above that under proper conditions a fragment of an embryo will grow in a nonliving nutrient medium and differentiate its own specific tissue, for example, the glomeruli and tubules of the kidney.[26]

[23] Hans Spemann, *Embryonic Development and Induction*. New Haven, Yale University Press, 1938, p. 232. Also, C. H. Waddington, "Studies on the Nature of the Amphibian Organization Centre," *Proc. Roy. Soc.*, London, **125**: 365–372, 1938. He says, "No hypothesis can yet be made as to the relation between chemical structure and evocator power." (P. 371.)

[24] E. Umanski, "Über die Wirkung des Organisators in destruierten Geweben," *Zool. Anz.* **112**: 205–206, 1935.

[25] Hans Spemann, *Embryonic Development and Induction*. New Haven, 1938, pp. 265–266.

[26] See, e.g., A. H. Drew, "Growth and Differentiation in Tissue Cultures," *Brit. J. Exper. Path.*, **4**: 46–52, 1923 (Cf. Spemann).

But a graft from the trunk region, when planted in the head region of the host, may develop brain, optic cups, and auditory vesicles.[27]

It would seem, therefore, that an interplay of formal causes already resident in the graft with those of the host conspire together in the organization of tissue.

As Spemann says, there is a serious problem as to how a fragment of tissue which has no structure of its own in the morphological sense of the word can nevertheless give rise to complicated morphological structures.[28]

We can conceive of its containing a necessary element without which further development is impossible. But this sine qua non is not an adequate explanation of all that follows.

Can we dispense with the formal cause entirely?

Child has suggested[29] that the rate of metabolism in a certain region of an embryo is the essential cause of the differentiation of an organ. Were this the case, by appropriate regional heating and chilling we should be able to lay the axis of the embryo in any direction we please. But this is not possible.[30]

Furthermore were differential rates of metabolism alone sufficient, why should we not get in every embryo a different grouping of nodes and hollows, an irregular structure of some kind rather than the specific architecture of the species? What times the differential metabolism to bring about the varied structure of all the organs of the body?

SUMMARY

Let us pause to consider what has been happening. A single cell divides and an organism starts to develop. One can determine experimentally a stage in which any single cell can become a whole organism complete in all its parts. A little later one can show, for example, that what normally becomes skin may be forced to grow into brain and vice versa. But later on embryonic fields which were formerly indeterminate have become determinate, even to the extent that given proper conditions, a mass of tissue as

[27] Spemann, *op. cit.*, p. 268.

[28] Hans Spemann, *Embryonic Development and Induction.* New Haven, 1938, p. 245.

[29] C. M. Child, *Physiological Foundations of Behavior.* New York, 1924.

[30] For a searching criticism of Child's theory, see Hans Spemann, *Embryonic Development and Induction.* New Haven, 1938. Chap. XVI, "The Gradient Theory," 318 ff. Recent work by Ancel and Vintemberger has shown that bilateral symmetry is fixed in *Rana fusca* with the appearance of the grey crescent. Prior to this one can determine the axis of symmetry in various ways. See a series of communications by P. Ancel and P. Vintemberger in the *Compt. rend., Soc. de biol.*, **182**: 95, 98, 412, 414, 417, 1212, 1938. See also J. Pasteels, *loc. cit.*, **129**: 59–64, 1938; and A. Dalcq and J. Pasteels, "Potential morphogénétique regulation et 'axial gradients' de Child," *Bull. Acad. Med. Belg.*, VI, **3**: 261–308. 1938.

yet undifferentiated will go on to a highly specific organization when removed from the embryo and grown in a test tube.

Philosophy demands an adequate cause when the indeterminate becomes determinate by a process of self-differentiation. As long as tissue remains connected with an embryo or is organized into the structure of another embryo, one might conceive of the formal principle of the embryo as that which determines the specific structure that emerges. But when specific structure emerges from an undifferentiated mass which has been removed to a culture medium in a glass dish, the formal principle of the embryo from which it was derived cannot be conceived of as active in the differentiation. And the tissue has not been brought into the embryonic field of any other developing organism.

Does the formal principle of the ovum develop mechanisms and secondary formal principles by which various regions and structures are organized into the organs of an adult member of the species?

Something of this kind seems to be taking place. Let us suppose a man, who knows the art of weaving and tailoring, lives on an island far away from civilization. He wants a suit of clothes. He gathers the necessary wool from animals living on the island. He constructs a distaff and spins his warp and woof. He makes a loom with many pedals. He designs a pattern and even puts together a mechanical contrivance, so that the loom will keep on weaving the pattern he designed while he goes about other things in which he is engaged. Finally with his cloth woven, he cuts and sews and adapts the material so that he has his desired suit of clothes.

Something analogous to this is happening in the growth of the organism. It makes its undifferentiated tissue: the warp and woof of the final fabric. It has, however, many organs to develop, each with its characteristic pattern. It constructs the mechanical structures necessary for their development and sets up the pattern in such a way that certain regions when isolated go on to develop their own specific little fragments, which would otherwise have been organized into the unified whole of an individual member of a species.

Is all organized development of fragments of tissue isolated from an organism due to the separation of a mechanical structure, which then goes on to operate as a power loom weaves the pattern that has been imposed upon it?

When protoplasm, deprived of a nucleus, remains an amorphous mass and then goes on to differentiate itself when a nucleus slips into its depth, what does the nucleus bring? Apparently a mechanical contrivance necessary for development. But, as we have seen, formative forces seem to reside in protoplasm. If then a specific structure develops later, the formative

forces contribute the pattern and the nucleus the mechanism needed for its structure.

But if the two-celled embryo is divided into two, and the fragments become two complete individuals, then we must become familiar with the concept of the divisibility of formative forces.

If a formative force is capable of division into two or more complete and independent elements, is it possible for a formative force to divide in the process of development and separate off secondary formative forces which organize the peculiar structure of the various organs of the body?

Or is it only a mechanical structure that is separated after it has been set, in the process of development, and then goes on weaving, let us say, undifferentiated epithelial tissue into the complex structure of tubules and glomeruli?

It seems more consonant with philosophy and all we now know of embryonic development to affirm the first alternative and deny the second.

But one thing seems certain: There must be a formative force which gives a structure to the protoplasm of the fertilized ovum and then differentiates it according to a plan and produces many "biological looms" by which the organs of the body are woven into their final specific form, which allocates each organ to its proper position by a multitude of formative movements timed as to their various appearances and directed in space, which accelerates and retards growth by the production of ferments and enzymes of an almost infinite variety, which constructs organs capable of manufacturing the many enzymes necessary for life and reproduction, and which finally tailors everything into proper shape, fitting part to part by an infinite variety of little modifications, until there emerges an individual unit organism equipped to live, adjust, and reproduce its kind in the world of nature.

It is easily seen that there is no hope of setting up a system of equations based on de Coulomb's law which will adequately account for the facts of embryology. We must evolve a new principle if we are going to account for the embryonic field of force.

## The Nature of Formative Forces

How are we to conceive of these formative forces in nature? Spemann concludes his summary of the literature on embryonic development with the following passage.

> There still remains, however, an explanation which I believe to owe the reader. Again and again terms have been used which point not to physical but to psychical analogies. This was meant to be more than a poetical metaphor. It was meant to express my conviction that the suitable reaction of a germ fragment, endowed with the most diverse potencies, in an embryonic "field," its behavior in a "situation,"

is not a common chemical reaction, but that these processes of development, like all vital processes, are comparable, in the way they are connected, to nothing we know in such a degree as to those vital processes of which we have the most intimate knowledge, v.g., the psychical ones. It was to express my opinion that, even laying aside all philosophical conclusions, merely for the interest of exact research, we ought not to miss the chance given to us by our position between the two worlds. Here and there this intuition is dawning at present. On the way to the new high goal I hope to have made a few steps with these experiments.[31]

The passage need not be conceived of as advocating panpsychism. One might rather say that the "intuition" which is "dawning at present" bears a close resemblance to the concept of the *rationes seminales* which St. Thomas discusses in his *Summa.*

What are these forms in nature? St. Thomas explicitly denies that the formal principle in the animal organism is a substantial being capable of independent existence.[32] The human soul has activities of intellect and will that cannot be attributed to the sense organs and the brain or any corporeal structure. Therefore, when the body is destroyed, these functions continue and man remains a thinking substance. But when the animal organism is destroyed, its functions cease; and a substantial being bereft of all activity is inconceivable.

Is then the formal principle an accident of some kind? Not necessarily. The phenomena of change in the world of nature gave rise in the mind of Aristotle to two concepts:

*a*) That which abides in the process of change and is modified, but neither created nor annihilated. This he conceived of as an incomplete substance. This incomplete substance, the matrix of all change, came to be known in medieval scholastic philosophy as *materia prima.*

*b*) That which guides and directs change, like the concept in the mind of an artist who is fashioning a mass of bronze into a perfect sphere. Seeing that in the growth of seeds the guiding principle is immanent and resides in the seed and not in the mind of an external agent, this inbiding principle of guidance and direction is the natural complement of *materia prima* which is guided and directed. It was termed by Aristotle the *entelecheia;* and by the medieval scholastics, *the substantial form.*

Like *materia prima*, the *forma substantialis* is an incomplete substance, incapable of independent existence when it has no independent activity, as it does in the case of the soul of man.

[31] Hans Spemann, *Embryonic Development and Induction.* New Haven, Yale University Press, 1938, pp. 371–372.

[32] *Summa theologica*, I, Q. LXXV, iii. *Summa contra Gentiles*, II, lxxxii.

But can that which is incapable of independent existence actively organize?

There comes to mind at once the human thought process which in itself is an accidental form, but which organizes mental attitudes and also bodily actions. I hear the sound of a bell. It calls me to my duty. I know what that duty is. I must rise from my seat and go to my place. At once a complicated group of muscles is thrown into action. These muscles are governed by thousands of nerve fibers having their cells of origin in the spinal cord. No living anatomist would ever be able to locate precisely each and every one of these cells. But if I am to rise from my seat, these thousands of cells in the spinal cord must be thrown into activity by many thousands of cells in the motor cortex, and all this takes place without the individual knowing what is going on or how it is accomplished. A concept, therefore, while it has its conscious phase, exerts an unconscious activity of vast complexity.

And so the concept which acts as a whole and can be split into parts which, though a conscious phenomenon, is an unconscious organizer of neural activity, bears a certain resemblance to those formative forces which Spemann says are akin to mental activities and which St. Augustine termed *rationes seminales.*

And if this is the case, the *potency of matter* from which these forces rise and into which they sink is akin to the mind, the τόπος εἰδῶν.

Nature is not a mere swarm of moving particles, but a matrix of *materia prima* in which by laws, known as yet but dimly, formative forces arise, *rationes seminales,* which are akin to concepts, which coordinate development and disappear as ideas flash into consciousness and then cease to be.

Whence do they come? St. Thomas following St. Augustine says that their ideal counterparts "*sunt principaliter et originaliter in ipso verbo Dei*"[33] but they were planted by God in nature at the beginning of time to give expression in due season to this plant or this animal and, having performed their function, to sink back again into the potency of matter.

Modern science is just awakening to the concept of formative forces, the *rationes seminales.* And if we are willing to rise from the dead nature of Descartes to the living world of St. Thomas, we may turn aside from the pessimistic *ignoramus et ignorabimus* of du Bois-Reymond to a new confidence and a new hope.

*Nunc quidem ignoramus sed tempore opportuno multa cognoscemus.*

[33] I, Q. CXV, ii corpus.

# APPENDIX

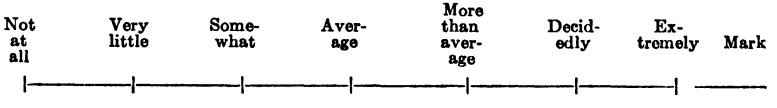
## A GRAPHIC RATING SCALE FOR THE STUDY OF CHARACTER

Name..... School.....
Age..... Date.....
Sex.....

DIRECTIONS

In answering each question asked, compare this child with the average child of the same age. Then make a small cross *somewhere* on the line to show how much of that trait the child possesses. The end of the line represents one extreme; the other end, the opposite extreme. The meanings of other points are explained above the line.

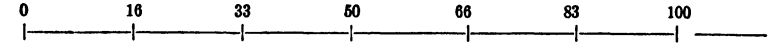
Try to rate each child on each question without reference to his other qualities. Do not rate him high on all traits simply because he is exceptional in some. An R after a question indicates that the mark is to be reversed. This is also indicated by reversal in the order of the percentage marks.



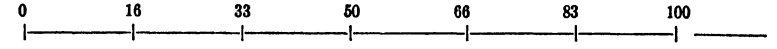

WILL GROUP

I. Has he will power, determination?

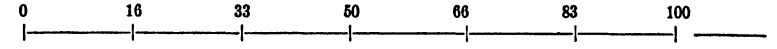
1. Does he keep at a hard task until he succeeds in accomplishing it?



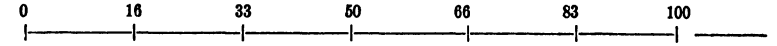

2. Does he persist in trying to correct defects noted?



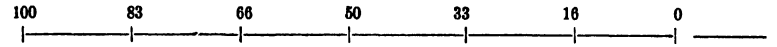

3. Does he keep his resolutions?




4. Does he keep his attention on his lessons in spite of distractions?




5. Does he always act as he feels? R




6. Does he do what everybody else is doing just because they are doing that? R




Total 6 | _____
Average

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

II. Is he reliable, trustworthy?

1. Can he be trusted to do his homework, even if he knows he will not be reproved for not doing it?

0 16 33 50 66 83 100 ———

2. Does he keep his promises?

0 16 33 50 66 83 100 ———

3. Can he be relied upon to study his lessons even if there is no supervision?

0 16 33 50 66 83 100 ———

4. Can he be trusted to perform errands satisfactorily?

0 16 33 50 66 83 100 ———

5. Can he be relied upon to do chores around the school or in the classroom?

0 16 33 50 66 83 100 ———

6. Can he be trusted to return promptly and in good condition an article that has been lent to him?

0 16 33 50 66 83 100 ———

7. Can he be relied upon to do his homework independently?

0 16 33 50 66 83 100 ———

8. Can he be trusted to score his paper honestly?

0 16 33 50 66 83 100 ———

Total 8 | ———
Average

III. Is he generous?

1. Is he always thinking of the needs of others and endeavoring to supply them?

0 16 33 50 66 83 100 ———

2. Is self always his first consideration? R

100 83 66 50 33 16 0 ———

3. Does he share what he has with others less well off?

0 16 33 50 66 83 100 ———

4. Does he expect everyone to be waiting on him all the time? R

100 83 66 50 33 16 0 ———

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

5. Does he offer to help when there is work to be done?

0 16 33 50 66 83 100

6. Does he help willingly when he is asked?

0 16 33 50 66 83 100

7. Does he forgive those who hurt or offend him?

0 16 33 50 66 83 100

8. Is he self-sacrificing in giving up his own ease and comfort to aid in any good work?

0 16 33 50 66 83 100

9. Is he generous in helping when anyone is ill?

0 16 33 50 66 83 100

10. Is he selfish? R

100 83 66 50 33 16 0

Total 10 | _____
Average

IV. Is he stable?

1. Does he tend to change quickly from cheerfulness to depression or from calm to anger? R

100 83 66 50 33 16 0

2. Is he always seeking something new? R

100 83 66 50 33 16 0

3. Is he ready to give up a task which takes a long time to perform, even though it is easy, just to get a change? R

100 83 66 50 33 16 0

4. Is he unduly affected by circumstances? R

100 83 66 50 33 16 0

5. Is he even-tempered, always the same apparently?

0 16 33 50 66 83 100

Total 5 | _____
Average

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

CHEERFULNESS GROUP

I. Is he cheerful?

1. Does he comply cheerfully with directions about discipline, lessons, etc.?

0 16 33 50 66 83 100

2. Is he happy as he goes about his work, whistling, singing, etc.?

0 16 33 50 66 83 100

3. Is he happy in his relationships with other children?

0 16 33 50 66 83 100

4. Is he buoyant, recovering good spirits quickly after failure?

0 16 33 50 66 83 100

5. Is he sunny, good-natured all the time?

0 16 33 50 66 83 100

6. Does he offer and give help cheerfully?

0 16 33 50 66 83 100

7. Does he put others in good humor by his cheerfulness?

0 16 33 50 66 83 100

8. Is he cheerful in his outlook for the future?

0 16 33 50 66 83 100

Total 8 | _____
Average

II. Is he contented?

1. Is he satisfied with materials assigned him, books, crayons, etc.?

0 16 33 50 66 83 100

2. Is he contented with the ventilation, lighting and other conditions of the classroom?

0 16 33 50 66 83 100

3. Is he satisfied with the treatment accorded him by the teacher?

0 16 33 50 66 83 100

4. Is he contented with decisions made as to the winner of a contest, etc.?

0 16 33 50 66 83 100

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

5. Is he always complaining about the way other children treat him? R

100 83 66 50 33 16 0

6. Does he grumble about the amount of homework assigned him, etc.? R

100 83 66 50 33 16 0

7. Is he discontented with everything in general? R

100 83 66 50 33 16 0

8. Is he dissatisfied with school regulations concerning the playground, etc. R

100 83 66 50 33 16 0

9. Does he show displeasure when he is refused a request? R

100 83 66 50 33 16 0

Total 9 |_____
Average

III. Is he sympathetic?

1. Does he sympathize with those who are in trouble, e.g., those who hurt themselves on the playgound, etc.?

0 16 33 50 66 83 100

2. Does he feel for those who are unjustly treated?

0 16 33 50 66 83 100

3. Does he feel sad when he reads such stories as "Little Nell"?

0 16 33 50 66 83 100

4. Does he feel sorry for those who are not so well off as he?

0 16 33 50 66 83 100

5. Is he always making excuses for those who are in trouble?

0 16 33 50 66 83 100

6. Is he easily moved to tears or words of sympathy?

0 16 33 50 66 83 100

Total 6 |_____
Average

IV. Is he refined?

1. Is he refined in speech, using courteous forms of address, avoiding vulgar terms?

0 16 33 50 66 83 100

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

2. Is he refined in his tastes, appreciating the best in art, poetry, music, and the finer values in people?

0 16 33 50 66 83 100 ———

3. Is he refined in his feelings?

0 16 33 50 66 83 100 ———

4. Is he refined in action, not indulging in coarseness, boisterous laughter and rough behavior?

0 16 33 50 66 83 100 ———

5. Do the highest ideals appeal to him?

0 16 33 50 66 83 100 ———

6. Is he entirely free from coarseness of any kind?

0 16 33 50 66 83 100 ———

7. Does he perceive the refined course of action without being told?

0 16 33 50 66 83 100 ———

8. Is he sensitive to the best along all lines?

0 16 33 50 66 83 100 ———

Total 8 |———
Average

SOCIABILITY GROUP

I. Is he sociable?

1. Does he play with a large group rather than with one or two companions?

0 16 33 50 66 83 100 ———

2. Does he make friends easily?

0 16 33 50 66 83 100 ———

3. Is he a good mixer, that is, does he mingle freely with people in a friendly way?

0 16 33 50 66 83 100 ———

4. Does he belong to clubs, formal or informal?

0 16 33 50 66 83 100 ———

5. Does he like to be with people constantly rather than apart by himself?

0 16 33 50 66 83 100 ———

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

6. Does he show interest in people and their doings?

0 16 33 50 66 83 100

7. Does he join in games?

0 16 33 50 66 83 100

8. Does he take active part in conversation with his companions?

0 16 33 50 66 83 100

Total 8 | ___ ___
Average

II. Is he expressive emotionally? Is he one whose reactions during an emotional situation may be easily and definitely observed?

1. Is he easily moved to anger, to grief, to laughter?

0 16 33 50 66 83 100

2. Is he inclined to become excited over what others would consider trifles?

0 16 33 50 66 83 100

3. Does he respond vehemently, with his whole body?

0 16 33 50 66 83 100

4. Is he sedate, stiff, unexpressive? R

100 83 66 50 33 16 0

5. Does he give vent to his feelings without restraint?

0 16 33 50 66 83 100

6. Is there in him an utter lack of spontaneity? R

100 83 66 50 33 16 0

7. Is it easy to tell how he feels, e.g., discouraged or hopeful, etc., from the expression on his face or from his manner?

0 16 33 50 66 83 100

Total 7 | ___
Average

III. Is he active?

1. Does he attack his work with vim and vigor?

0 16 33 50 66 83 100

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

2. Does he play with zest, entering into games with all his might?

0 16 33 50 66 83 100

3. Does he go about his duties in a listless, half-hearted way? R

100 83 66 50 33 16 0

4. Does he prefer out-of-door sports to quiet indoor recreation?

0 16 33 50 66 83 100

5. Do his face and manner indicate that he is lifeless, sluggish and apathetic? R

100 83 66 50 33 16 0

Total 5 | _____
Average

IV. Has he a sense of humor?

1. Does he enjoy a joke?

0 16 33 50 66 83 100

2. Is he interested in a comic moving picture or a funny story in preference to any other?

0 16 33 50 66 83 100

3. Is he quick to see the fun in any situation?

0 16 33 50 66 83 100

4. Does he create fun?

0 16 33 50 66 83 100

Total 4 | _____
Average

V. Is he affectionate?

1. Is he hard-hearted, cold, stolid, indifferent? R

100 83 66 50 33 16 0

2. Is he affectionate?

0 16 33 50 66 83 100

Total 2 | _____
Average

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

EMOTIONALITY GROUP

I. Is he always looking for sympathy?

1. Does he always tell his troubles to get sympathy?

0 16 33 50 66 83 100 _____

2. Does he imagine ills and wrongs to get petted?

0 16 33 50 66 83 100 _____

3. Does he tell of treatment received in such a way as to make himself appear the abused party?

0 16 33 50 66 83 100 _____

4. Does he hide sickness, trouble or anything unusual so he will not be sympathized with or congratulated? R

100 83 66 50 33 16 0 _____

5. Does he reject any show or mark of sympathy? R

100 83 66 50 33 16 0 _____

Total 5 _____
Average

II. Is he quarrelsome?

1. Is he always getting into trouble with other children on the school grounds?

0 16 33 50 66 83 100 _____

2. Is he continually interfering with others in the lines, in the cloak room, etc.?

0 16 33 50 66 83 100

3. Does he often cause trouble to other children on the way to or from school?

0 16 33 50 66 83 100 _____

4. Is he quarrelsome with members of his own family?

0 16 33 50 66 83 100 _____

5. Does he find it hard to get along peaceably with other children?

0 16 33 50 66 83 100 _____

6. Is he quarreling often with those who sit near him in class?

0 16 33 50 66 83 100 _____

| Not at all | Very little | Some-what | Aver-age | More than aver-age | Decid-edly | Ex-tremely | Mark |
|---|---|---|---|---|---|---|---|

7. Has he peace-disturbing tendencies?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

Total 7 ____
Average

III. Is he irritable?

1. Is he easily peeved, angered, made cranky?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

2. Does every little untoward circumstance cause him to become grouchy?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

3. Does he pout and sulk whenever he is crossed?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

4. Is he frequently irritable?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

5. Does he give way to anger without any restraint?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

6. Is he so calm that nothing makes him lose his temper? R

100 — 83 — 66 — 50 — 33 — 16 — 0 ____

Total 6 ____
Average

IV. Is he forward or bold?

1. Is he retiring and modest on all occasions? R

100 — 83 — 66 — 50 — 33 — 16 — 0 ____

2. Is he forward and bold on the street or any place outside of school?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

3. Is he bold to his teachers?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

4. Is he forward and bold to his parents?

0 — 16 — 33 — 50 — 66 — 83 — 100 ____

5. Is he timid and retiring in school? R

100 — 83 — 66 — 50 — 33 — 16 — 0 ____

Total 5 ____
Average

## SCORING

### I. Will Group

| | SCORE | WEIGHT | WEIGHTED SCORE |
|---|---|---|---|
| 1. Will power | | 0.4837 | |
| 2. Reliability | | 0.2924 | |
| 3. Generosity | | 0.1560 | |
| 4. Stability | | 0.1330 | |

| | Total Weighted Score | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| Quartiles | −2.00 to −0.70 | −0.70 to −0.10 | −0.10 to +0.70 | +0.70 to 2.40 |

### II. Cheerfulness Group

| | SCORE | WEIGHT | WEIGHTED SCORE |
|---|---|---|---|
| 1. Cheerfulness | | 0.5057 | |
| 2. Contentment | | 0.2629 | |
| 3. Sympathy | | 0.2094 | |
| 4. Refinement | | 0.1382 | |

| | Total Weighted Score | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| Quartiles | −2.20 to −0.85 | −0.85 to 0.00 | 0.00 to +0.73 | +0.73 to 1.80 |

### III. Sociability Group

| | SCORE | WEIGHT | WEIGHTED SCORE |
|---|---|---|---|
| 1. Sociability | | 0.4231 | |
| 2. Expressiveness | | 0.2331 | |
| 3. Activity | | 0.2066 | |
| 4. Humor | | 0.1461 | |
| 5. Affectionateness | | 0.1062 | |

| | Total Weighted Score | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| Quartiles | −2.20 to −0.63 | −0.63 to −0.20 | −0.20 to +0.58 | +0.58 to 2.20 |

IV. Emotionality Group

| | SCORE | WEIGHT | WEIGHTED SCORE |
|---|---|---|---|
| 1. Looking for sympathy | | 0.1873 | |
| 2. Quarrelsomeness | | 0.3029 | |
| 3. Irritability | | 0.2408 | |
| 4. Forwardness | | 0.3047 | |

| | Total Weighted Score | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| Quartiles | −2.00 to −0.98 | −0.98 to 0.00 | 0.00 to +0.68 | +0.68 to 2.20 |

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