PSYCHOLOGY is a science that has been studied (not without acrimony) from many angles; and in recent times applied in many directions. We have now books on physiological, abnormal, social, vocational and behavioristic psychology and others. Some technical knowledge of psychology is very useful for the understanding and management of the patient and his disease, and in certain lines of practice such knowledge is imperative; yet I find it rather generally lacking. Perhaps for this reason various psychological cults which appeal to the imagination find easy absorption here.

Besides this, a good deal of confusion in description, classification, and interpretation has resulted from the differences among writers in their vocabulary and their standpoint. Hence I make no excuse for giving a brief account of some of the different fields of psychological work, with their relative values to the physician.

I especially wish to present certain elementary facts and definitions in the science. If these are not final or even are not all correct, they at least
represent the situation as fairly and as authoritatively as I have found it possible.

Psychology is the science of the mind and it is essentially one science. For while there is an abnormal psychology, a physiological psychology, a descriptive psychology, etc., these all deal with the mechanisms and laws of mental action. Whether the mind is abnormal or diseased or sound, the scientific data of psychology apply just the same. It is all a biological process, to use a word dearly loved by the psychological intelligentsia. The mind has a kind of anatomy or structure of its own i.e. its activity is accompanied with and dependent on the production of certain definite states and processes, such as sensation, perception, reasoning, etc. When the mind functions it does so through the medium of these states, and in accordance with certain laws. The mind cannot act without the formation of ideas, the development of feelings, etc., or without the processes of association, memory, etc. Its activities may be modified, however, and even initiated by the conditions of the nervous system and by the play upon it of the physiological processes of other organs, such as the blood, the internal secretions, and the nutritive and eliminative organs.

We may speak, therefore, of a descriptive psychology which defines and describes; a dynamic psychology which tells of forces and laws; and a physiological psychology which studies the modification and control of mental action through physiological (and pathological) changes. These are all only different methods of attack upon the general problem.

The application of psychology to education and industrial life takes as into the fields of practical activities and human conduct. In abnormal and medical psychology we also apply the terms, methods, and data obtained by the three group-methods mentioned above. The behaviorists deal with conduct, and do not call their science psychology.

Dynamic psychology is a science based on a study of the forces and their interactions which lead to mental activities and human conduct. Dynamic psychology attempts to explain the phenomena of the mind by finding the causes and establishing the laws of mental action. It cannot yet prove the existence of such forces and laws because they are not in the field of observation. But the laws are conceived to be such as will explain the phenomena, and, being applied, do seem to explain them. Hence dynamic may also be called a conceptual psychology. (B. Hart.)

Dynamic psychology gathers data also by observation, and groups and classifies them. But its interpretation of the laws of mental action is obtained by reasoning processes, and is worked out without reference to physical phenomena or to physiology. It does not “mix up brain cells and mental acts.” Its explanatory laws correspond to certain of our conceptions of physical laws such as that of gravitation, of the nature of the atom, and of the ether. Any given state of mind occurs because of the methodical working of supposed mental forces, and in accordance with certain conceived of laws.

These underlying working forces have been called the "drives," the élan vital, the libido, the instincts, etc. As to the nature and unity of this force there is still disagreement. But it seems to be established that mental activity and human conduct have several different "driving" forces. At one time the sexual instinct, i.e. the instinct for the preservation of the race, was assumed to be the main driver;
then there has been added the instinct of self-assertion and advancement; then that of self-preservation; that for herding together (the group instinct); that for religious observance; and that for social betterment.

Associated with these and forming their effective sides, there are described the emotions, of love, desire, vanity, and self-distrust; of anger and fear, and of religious exaltation and devotion. There may be also something in the nature of a "pull" which incites to mental action and human conduct. This is shown in the influence of an ideal towards which one strives.

These instinctive forces work both consciously and unconsciously and one may be quite conscious of the emotion or of a driving force and not quite aware of the kind of compelling instinct that arouses it.

It is to secure the proper interpretation of these forces that there have developed the methods of psychological analysis. And efforts have been made to explain in a mechanistic way those morbid mental states called the psychoses and psychoneuroses. Some explain these on the basis of disturbances in the "driving" force of the sexual instinct; others on the basis of a compelling sense of inferiority; others on the dominance of fear, and on disturbances of and antagonisms to the herding instinct. All these "drives" may be modified by abnormalities in mental make-up and development, as for example when the adult life continues to be a juvenile one. These various instinctive urges, when thwarted or deviated, are assumed to lead to emotional perturbations and psychoses. There have been conceived various laws or mechanisms of mental action which go under the names of dissociations, complexes, conflicts, and repressions. It is believed that the minds shows resistances and has a kind of censorship. There is an activity of the mind called projection by which it is assumed that the individual's complex is passed on to another person. Symbolism, phantasy, day-dreaming, and subconscious wishes, defenses, and attempts at readjustment are further agencies in the psychological mechanism. The conceptions of the wish, of dissociation, and of conflict are very important in explaining normal and abnormal phenomena. The existence of a well-organized subconsciousness that acts on the conscious is assumed, or perhaps demonstrated.

The definitions and details belonging to this phase of psychological science must be sought in the works of Freud, Jung, Adler, Trotter, and other interpreters.

This conceptual psychology is plainly a sound method of scientific attack. It has worked out various hypothetical laws which may be wholly and are certainly partly true. In fact to a large extent, this psychology tells us in scientific or technical language what students of human nature and ordinary psychology already know. Since the beginning of neurology at least, we have known for example that a woman's headaches and hysteria were her methods of defense and self-exploitation. Its essential merit has been to show most emphatically the high organization, influence, and importance of the subconscious activities.

However, the laws of a conceptual psychology do not work in the production of mental phenomena, without some correlated activity of the brain and body. One can not explain morbid mental phenomena by conceptual psychology alone. There is al-
ways some defect of structure or function. Healthy brains have no delusions or obsessions, no morbid fears, abulia or melancholia. No matter how deeply fixed is the subconscious disturbance, the delusions of general paresis in a man with a luetic encephalitis are not due to activities and forces altogether psychological. When a person has an injury of his angular gyrus or parietal lobe and has alexia or agnosia, this psychological state is not due to complexes or repressions or any purely conceptually conceived mental law. When a man gets a blow on the head and has a dissociation leading to a hysterical mental state, there are physical changes as well as mental. Physical changes, toxemias, infections, internal secretions may lead directly to association disturbances and directly to consequent morbid mental phenomena.

Strong emotions, such as anger and fear, arouse definite physical changes in the body which in turn contribute to the content of the mind and its direction of bodily action. Such emotions show themselves largely through the sympathetic nervous system. On the other hand, morbid states of the sympathetic act as direct exciting forces in producing mental states. A study of these facts may not be a part of a conceptual psychology, but it is a part of physiological psychology.

We may say that mental phenomena and bodily phenomena are both biological activities, representing two different phases of life activity, each to be studied separately. They may indeed be studied separately, but in medicine it is necessary to know their relations and interactions in order to enable us fully to recognize the causes and cure of diseases. Nothing is more important now than to show these relationships. Mental defects and disturbances may be relieved by interpreting to the patient the misdeeds of the mind, the misuse of its resources, its misfits, and repressions and conflicts, but the fact that a defect in the body is often more fundamentally the cause of badly worked machinery of the mind, is quite absolutely established to-day.

In connection with the study of the psychology of trauma the presentation of the relationship between injuries to the central nervous system and mental states, has been discussed by me in an article on the Somatic Origin of the Psychoneuroses (Journal of the American Med. Assoc., May, 1920). Basing my statements on experiments made during the war on the effect of direct, indirect, and remote concussion, I showed what is at times the relationship of physical cause and psychical effect. In other words, it seemed proved by experiment, that the production by physical means of certain definite molecular or wave changes in the arrangements of the brain structure may cause definite morbid or special normal mental states.

A table in which the matter is presented schematically, is given here, showing the results of tremendous detonations on animals and men in zones at definitely removed distances, there being no element of fear.

X is the center of detonating force; Zone A, of a man receiving a direct concussion; Zone B, of indirect concussion; Zone C, of indirect concussion by high frequency waves.

The patient in Zone A is killed. The patient in B or C receives and feels:
1. Concussion waves on the brain; and hears
2. The detonation.
3. Physical changes occur in the nervous system due to concussion with gross, or fine, or molecular waves.
4. Emotion follows, e.g. of fear, leading to Nos. 6 and 7.

5. Subconscious desires, defense activities, adjustment activities, leading to No. 7.

6. Organic or biochemical disturbances in the nervous system (toxic or endocrinic, leading to No. 7.

7. Psychoneurotic phenomena.

Under the head of physiological psychology then we study all the physical and physiological changes which excite or lead to changes in the mental state. The action of poisons, autotoxemias, and internal secretory disturbances, form one line of inquiry. Others are the effect of changes in the sympathetic and autonomic nervous systems; the effect of physical injury and disease; the modification of physiological activities of the viscera through the forces of mental action; the study of reflexes, and particularly of that phenomenon known as "the conditioned reflex" by which many abnormal mental and nervous phenomena are explained.

We have then a static, a dynamic, and a physiological psychology. In medical practice psychology must include some knowledge of all three groups and even needs an acquaintance with applied or vocational psychology, and psychometric methods.

Of these three fields of psychology, I shall go into some detail only as regards one, viz., descriptive or static psychology. This is the elementary and introductory phase. A knowledge of it is necessary in order to understand the vocabulary of the science. I am presenting it, however, largely in the form of definitions which are based on consultation of standard works by James, Marshall, Warren, Baldwin, Pilsbury, McDougall, Woodworth, and I have used as far as it goes the report of the committee on Definitions of the American Psychological Association. The works of Morton Prince, Janet, and others have been consulted, and I have had the personal advice on some points from Prof. J. McK. Cattell and Prof. Woodworth.

Consciousness is the name given to that quality of the mental state through which a person becomes aware of himself as one distinguished from the rest of the world. It is the distinctive characteristic of mental life in actual process. This conscious state, or state of "awareness," constantly changes, and each state represents but a moment of time. It accompanies all our volitional acts, but there is a large amount of mental activity that goes on unconsciously.*

Consciousness has its focus where awareness is most marked, and its marginal part where awareness is more dim. And consciousness can exist in varying degrees of clearness in connection with more than one mental process. Thus a person can play the piano, reading the notes of the music, and talk or think on another subject. In behavioristic psychology the existence or at least the study of consciousness is ignored.

Subconsciousness: Mental phenomena which in degree of vividness or clearness are below the threshold of distinct consciousness are said to be subconscious. Consciousness and unconsciousness are terms used by some writers.

The subconscious "represents a detached phase of mental life of which the individual is not directly aware. It is a subordinate or co-ordinate consciousness," (Com. A. P. A.) and is considered

*"Consciousness is not equivalent to mind, self, soul, or psyche, but is characteristic of them." Com. A. Psyche Assn.
by one school to be very highly organized and detached to the point of being called anthropomorphic, i.e. a separate mind within the conscious mind.

Unconscious is a term often used to characterize reflex and autonomic activity; it is also used to characterize certain modes of instinctive activity, somnambulism, and perfectly formed habits. (Com. A. P. A.)

Sensation is the simplest unit of human consciousness. All afferent nerve impulses which reach consciousness arouse sensation. A pure sensation has no associated images. We have a sensation of a light, a color, a sound but it connotes nothing. When it does associate itself with previous experiences, we get a percept.

Perception: On seeing or feeling an object we instantly associate the sensation with previously recorded impressions. In doing this we perform the act of perceiving, and the result is called a percept. Thus we see a round, yellow object, and immediately associate it with previous experiences, which tell us that it is rather rough to touch and of peculiar odor and taste, and we perceive that it is an orange. Thus the process of perception is the grouping of a sensation with previously recorded impressions, the result being that we recognize a particular object which, in perception, is always outside of us in space.

Some psychologists put their views in physiological terms, and define perceptions as mental states in which many nerve impulses coming in separately from external receptors are combined to form a single complex experience.

Ideation: An idea is the reproduction, with a more or less adequate image, of an object that is not present to the senses. A percept, on the other hand, is a representation in the mind of an object that is present before us in space. We perceive the orange; we have an idea of what an orange is.

In the building up of an idea we group together or associate our various sensory and perceptive experiences until we finally get this special notion or idea, which comes to our mind without having the object itself before us.

A concept is an abstract or universal idea, recognized apart from any special or particular qualities; the word is used with various meanings, however.

By associating various ideas together in a certain regular way so that there comes from them something new, we reach a judgment, and this process of associating ideas to an effective end is called reasoning.

Reasoning, then, is a process which leads to some new fact and differs from a casual association of ideas, such as occurs in reverie (autistic thinking), or in the ordinary play of association by suggestion, as when a gray horse suggests the presence of a red-haired girl, or when the smell of gas suggests a leak in the pipe. Sometimes in the association of ideas in speech we proceed from one inference to another, or one thing is suggested by another, until we reach a point in the discussion which may be simply the climax of a story, or the exposition of a point of view, or description of some past event. When the associations thus lead to some definite point or idea, we speak of it as the “goal idea,” and in most rational speech or description there is this goal idea.

Judgments are conclusions reached by the processes of association. These may be elaborate and conscious, or simple and very largely subconscious processes. Thus many conclusions and opin-
ions develop in the mind almost unconsciously or through slight suggestion.

Memory and Orientation: The activities of the mind are dependent on the power it possesses to retain and revive impressions; that is to say, its power to remember and recollect. This faculty of the psychic cells is called memory. It means that all stimuli sent to the brain make some kind of impression on the central nerve-tissue, which impression can be revived at future times by other suggestions and stimuli. This process of record and revival is a form of association, and memory revival means the re-establishing of an association (Marshall). Memory forms part in most-conscious psychic life. The mind cannot work without its constant help, though the memory may be good, and yet the mind works badly. The feeling of identity or personality is dependent on memory. Memory is usually divided into the power of learning or memorizing and the power of reviving or recollecting.

The knowledge of our relation to the external world, our appreciation of time and space—in other words, our sense of orientation—is dependent on the memory.

Cognition is association by similarity.

Recognition is association by contiguity.

There is no sharp line between the two.

Imagination is the associative combination of concepts and percepts into new ideas.

Instinct is the faculty of acting in such a way as to produce certain ends, without foresight of the ends, and without previous education in the performance.—(James.)

Put in another way, it is that form of behavior which involves a series of consecutive reflexes which are dependent on inherited structure and lead to a purposeful end. They may be grouped mainly as reproductive, defensive, aggressive, and social or herd instincts. Some writers enumerate as many as twenty-six. Instincts are built up by evolution in the race and transmitted by inheritance; they develop at various periods of life.

The expression of instinct is usually associated with a percept or idea, and an emotion; and emotion is said to be the affective phase of instinct. The instinctive feeling is automatic, but the conduct and feeling that follow are modified often by training and experience or by artificial motives. So that instructive acts may finally represent the consolidation of habit and instinct.

Feeling or affect is not a separate function of the mind, but is a quality of the different mental states; that is to say, every mental state is accompanied by some kind of feeling, either pleasurable or painful, or has some quality that can be regarded as indifference. The affect may not necessarily be distinctly disagreeable, but may pertain to some subjective sensation, like hunger or thirst, or some simple desire of action. In all cases feeling only qualifies or gives a certain character to the mental state.—(Marshall.)

Other psychologists say that feeling or affect is something only associated with a sensation. It is pleasurable, painful, or indifferent. Certain pleasurable and painful feelings have their seat in the thalamus.

Emotion is an intenser tone of feeling which is usually attached to a percept, idea, or concept in which our primary impulses are opposed or gratified. One perceives the beloved one and feels the emotion of joy. One sees a snake and feels a fear of personal injury.
It may not, however, be exactly or entirely an instinct which is thus satisfied or opposed in the arousal of emotion. There is in the human being a variously named mental force, pressing us on. It is called the \textit{élan vital}, the libido, the instinct, or a “primary impulse, or sentiment” (Shrand). This is derived from instinct, in part, in part from experience, in part it is the urge of living tissue. It is when this force is encouraged or checked that we get emotions. Every primary impulse when opposed arouses anger; when satisfied, joy.

But besides the emotions associated with primary impulses and definite conscious states, there are conditions of painful emotion, \textit{e.g.} in melancholia, not associated always with any conscious and not always with subconscious ideas. There is also the pure causeless emotional exaltation of mania. Here emotion is due to some somatic state that inhibits or stimulates neural activity. These are physiological or pathological emotions.

The list of emotions includes surprise, love, hate, desire, pleasure, displeasure, fear, anger, sorrow, disgust, wonder; and combinations of these also appear. The emotions are less useful and important as the mind becomes more cultivated and man more civilized; and if civilization goes on without a corresponding control and inhibition of emotions the field for psychoneuroses increases. Emotional indulgence is always associated with physical and glandular and circulatory changes, so that somatic injury can be induced by emotional excess.

Esthetic emotion in its milder degrees is really only a feeling such as is aroused by beautiful color combinations, or the simpler musical sounds. In minds highly cultivated or endowed to appreciate the beautiful, there is when a beautiful thing is presented a percept or a recognition of what some call “significant form.” This arouses an esthetic emotion which is associated with the intellectual act of recognition. What primary impulse is favored or opposed here can only be surmised. It differs in the different arts. Often, as in painting, it is possible to have pleasurable feeling at the sight of a picture because it arouses ideas related to our instinct of love, or hate, or social life. In so far as the picture suggests only significant form or a harmonious relation the result is simply esthetic feeling—a vague sensory state. In music, for example, the realization of a significant form in the music is a process of perception, and the hearer may feel the emotion of joy at recognizing this musical form. In poetry the presence of a significant form, \textit{i.e.} the rhythm and rhyme, and assonance, or sonority, arouses esthetic feeling. The ideas of the poem may arouse instinctive feeling or emotion. Thus in poetry we may have both feeling and a wide range of emotion, which in great poetry is strengthened by appeal to our ideals and by its revelations of new concepts tinged with emotions.

The physical facial expression of emotion has a center in the thalamus, at least to a degree. Certain painful and pleasurable cutaneous sensations have also the seat in the thalamus.

Passion is an intense emotion of short duration; and mood a prolonged but moderate emotion.


tt"Emotions are biological psychophysiological instincts, or instructive reactions later organized into systems with ideas of objects.” (Prince)

“An emotion is an hereditary 'pattern-reaction' involving profound changes in the bodily mechanism as a whole, but particularly in the visceral and glandular systems.” (Watson)
Temperament is the instinctive, inherent tendency of the individual to react to particular conditions. — (Ash.)

Character in its best sense is the inhibiting or directing superstructure which is built upon by temperament through experience and habit. It should be the steadying influence upon morbid temperaments.

Personality is the resultant of combining temperament and character. It represents the total response, instinctive and acquired, of the person, to the influences and conditions about him and in him.

The volition or will is technically the conscious realization of the strongest and therefore deciding feeling. It is usually accompanied by a motor act, although a person after consideration may reach a conclusion and not act on it until later. The process of volition may comprehend both the formation of a definite judgment or preference and the expression of it in action. We see an apple and a stone. The idea after comparison comes to us that the apple is more desirable than the stone. The desire for the apple and the intellectual and emotional preference for it over the stone sets to work the impulse to take it, and a volitional act is performed.

The volition function is not therefore simply or only voluntary action, but includes the whole conscious process that led to this act. In this process we are made to feel that we have a power within us that can reach any of several judgments and lead us to any one of several choices. This leads us to believe we have a free will and are responsible for our acts; and society holds men responsible on the basis of this view. We accept it as long as we feel that there is the ordinarily free play of association and inhibition, so that the decision or choice comes about without any artificial or abnormal interference.

When an act is done without conscious preference or desire, or in response to an impulse coming upon one from subconsciousness, it is an involuntary or impulsive act. Acts which are done under the influence of a conscious feeling like an obsession are compulsions. Acts which are the expression and result of habit and which are done without our having any memorable consciousness of them are called automatic. Many acts are brought about by imitation and suggestion, and these are often done with so little conscious volition that they belong almost to involuntary or complicated reflex actions.

Conclusions.—I have told something about the old psychology; and while the ancient science may not help the sick, it is essential to an understanding of the mental functions, just as anatomy helps to an understanding of physiology.

I also gave some indication of what the “new” psychology means and of what it aims to do. I feel very seriously that the medical profession, educators, and moralists ought to understand with what we are confronted in connection with this movement. This “new” psychology presents a one-sided, but definite method of dealing with the education and character-building of the young, and with human conduct generally. Its cultural technique involves a special ethics, a philosophy of life, and a means of treating mental abnormality and disease.

So the medical profession, and especially those interested in public health and mental hygiene, ought to take a definite and carefully studied stand as to the sanity and wisdom of applying
psychoanalysis in the moral, mental, and physical education of adolescents and others. Adopting it, we will bring up our children and direct our own lives on the theory that our motives, our conduct, and character are determined by certain highly organized subconscious activities largely sexual and infantile. The young will be shown that by a close and meticulous study of their early experiences and dreams they will learn to know themselves and adjust their conduct and their ideals accordingly. They will learn that man is under the control of these particular psychic laws, and can only make himself what such laws allow. Is this going to be the main and preferable method of developing mind and character? I hold that it is not, though I believe that psychoanalysis has a field and I respect highly those who are following in it intelligently and conscientiously.

Probing into the past life, and rooting up complexes, showing the real psychic causes of morbid habits of thought ought to be of help to some who have grown up with wrong points of view, and who do not know that they have removable maladjustments. This conception or new psychology gives us a technique for carrying out the old Socratic advice "know thyself." But I also hold that it is a dangerous therapeutic and pedagogic tool and one of limited value. It cannot take the place of methods of training and treatment approved by experience; nor, perhaps, of the Sermon on the Mount or any equivalent appeal. I would place it in therapeutics along with physical training, dietetic teaching, narcotics and bromides as one of the handmaids of medicine serving only a wise master.

After all, the really new psychology is not
A COMPOSITE FAC-SIMILE

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