The relations and development of the mind and brain

Elmer Gates

THE

Relations and Development

OF THE

Mind and Brain

BY

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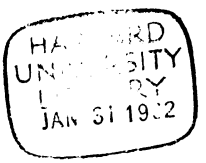

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PUBLISHER'S PREFACE.

Since the articles which comprise this little book were published in THE METAPHYSICAL MAGAZINE, there has been a constant demand for a handy form of them for convenient reference and use. The subject as presented by Professor Gates, appeals to thousands who do not have time or opportunity to enter into extensive studies in psychology, and the results of his discoveries prove intensely interesting to all active minds regardless of previous experience. They represent original work of great importance at the present time. The continuous demand being made, is our reason for reproducing the writings in this form which, we trust, will meet the requirements.

We believe that further investigations in similar lines to those described by Professor Gates will help to solve some, at least, of the mysteries of the mind.

The Art of Mind Building

I

THE ART OF MIND-BUILDING.*

The first experiment in my investigations regarding the mind consisted in giving certain animals an extraordinary and excessive training in one mental faculty—e.g., seeing or hearing—and in depriving other animals, identical in age and breed, of the opportunity of using that faculty. I then killed both classes of animals and examined their brains to see if any structural difference had been caused by excessive mental activity, as compared with the deprivation or absence thereof. During five or six months, for five or six hours each day, I trained dogs in discriminating colors. The result was that upon examining the occipital areas of their brains I found a far greater number of brain-cells than any animal of like breed ever possessed.

These experiments serve to localize mental functions, and, above all, to demonstrate the fact that more brains can be given to an animal, or a human being, in consequence of a better use of the mental faculties. The trained dogs were able to discriminate between seven shades of red and six

* A personal interview, especially reported for the THE METAPHYSICAL MAGAZINE, by George J. Manson.

or eight of green, besides manifesting in other ways more mental ability than any untrained dog.

"The application of these principals to human education is obvious. A child that has been trained for six weeks after birth in the excessive use of the temperature senses (detection of heat and cold) was found, after dying of scarlet fever, to possess in the temperature areas of the brain more than twenty-four times the average number of cells. As a matter of fact, the child was able to detect differences in temperature unrecognizable by other children of its age.

Under usual circumstances and education, children develop less than ten per cent. of the cells in their brain areas. By processes of brain-building, however, more cells can be put in these otherwise fallow areas, the child thus acquiring a better brain and more power of mind. Brain-building should properly begin a few weeks after birth, because, as soon as the brain is fully developed in all its areas, the child is prepared to acquire, by technical and professional education, special knowledge and particular kinds of skill. If the child has manifested artistic ability, this course of brain-building will not only increase that talent but provide supplementary development to prevent one-sidedness and disease.

In 1879 I published a report of experiments showing that, when the breath of a patient was passed through a tube cooled with ice so as to condense the volatile qualities of the respiration, the iodide of rhodopsin, mingled with these condensed products, produced no observable precipitate. But, within five minutes after the patient became angry, there appeared a brownish precipitate, which indicates the presence of a chemical compound produced by the emotion. This compound, extracted and administered to men and animals, caused stimulation and excitement. Extreme sorrow, such as mourning for the loss of a child recently deceased, produced a gray precipitate; remorse, a pink precipitate, etc. My experiments show that irascible, malevolent, and depressing emotions generate in the system injurious compounds, some of which are extremely poisonous; also, that agreeable, happy emotions generate chemical compounds of nutritious value, which stimulate the cells to manufacture energy.

I have succeeded in entirely eliminating vicious propensities from children with dispositions toward cruelty, stealing or anger. In curing a bad habit I would for every evil tendency, image, or craving existing in the same parts of the brain, create a greater number of the opposite kind of

memories and keep them active a greater number of times each day, until the old structures had disappeared and new ones had been formed. This process does not require the assent of the patient any further than to take the course of studies. He may even not desire to abandon a certain practice or habit, but may wish to continue his evil course; yet, by the force of brain-building, that motive can be eliminated.

This system of developments can be applied to regulate the assimilative processes, the diseases of which are dyspepsia, alcoholism, etc. A woman unable to eat fatty or greasy substances, even in the smallest portions, was by this system trained to take them in normal quantities. The alcohol habit, when not engendered by the habitual and excessive use of liquors, can originate through a certain derangement of the stomach and the brain-cells that govern it. Indigestion, accompanied by fermentation of sweets, creates a small amount of alcohol in the stomach. This alcohol produces a stimulating effect which the patient misses when the fermentation is arrested by the alcohol itself, or by a change in the food. The first step toward curing this habit consists in forming another series of brain-structures of the different stages relating to previous experiences, not merely with intoxi-

cants but with foods in general. The creation of at least a hundred times as many morally-functioning cells as there had been immorally-functioning cells will cause the craving for stimulants to disappear. It is possible in three months' time to develop brain-structures which will cause a patient to feel disgust for what he had previously relished and desired.

The late Prentice Mulford says, in one of his pamphlets, that "to think success brings success." Unfortunately, however, such effort has but a limited effect in the usual business life. Aside from lack of training or of knowledge, present defects in business life result from an improper classification of the memories and an erroneous use of mental faculties. The mind is usually filled with disordered, disquieting memories which, as a rule, are accompanied by an equal number of pleasant or unpleasant experiences. Wearisome, unpleasant memories weaken health and do not generate thought energy. Cure is accomplished in expelling these by another crop of wholly pleasant memories, which put the necessary structures of the mind in systematic order and teach the patient how to use the mental faculties.

I have been asked how far this new science is related to phrenology. Phrenology had the mis-

fortune of falsely locating every mental function. For instance, sight was placed near the middle of the eyebrow, whereas its true position is in the back of the head. The absence of all memory-cells predominant in any mental faculty could not be discernible through the skull or scalp, because such absence would not change the cerebral cortex of that part of the brain as much as the tenth of an inch. There is, however, alike in man and animals, a general conformation, not merely of the head but of the entire body, which gives us some knowledge of the mental capacity. This will be obvious to any one who observes the facial angles and other characteristics among monkeys and the lower races of human beings.

These discoveries, by giving to individuals a better use of the mind, open a new epoch in the methods of progress and civilization. It is the mind which creates sciences, arts and institutions —which knows, suffers and enjoys; and it is the mind that must continue to do all that is done. Give to people more mind, and all undertakings will be ameliorated, and better results accomplished. Give them more moral mind, and the evils of society will gradually disappear. If it is possible to give more mentality to people, then at last, through scientific experimentation,

we have reached a fundamental law of morals.

If you will remember that it is the mind that thinks, feels, knows, and performs physical labor; that it is the mind that rages, plots, and exercises all propensities, whether moral or immoral—then you will understand my meaning when I say that every act is right which, in its immediate or remote consequences, give us more mind, or a better control and use of the mental faculties; and every act is wrong which, immediately or remotely, produces the opposite result. There can be no other right or wrong. An evil memory promptly antagonizes the functioning of the good memories, slowly poisoning not only the body of which the memory is a part, but memory itself.

A statement made some months ago, by being falsely reported, has done me much harm. I was alleged to declare that sin is pink in color. It is, however, as inaccurate to speak of the color of sin as of the moral qualities of a vacuum. If an evil emotion is dominant, then during that period the respiration contains volatile poisons, which are expelled through the breath and are characteristic of these emotions. By applying chemical reagents I can detect the presence of these poisons, because a precipitate is produced; and this precipitate generally has some color. In the case of

grief, for instance, if I use rhodopsin for my reagent, the color will be pinkish. Other reagents will produce other colors.

My researches in brain-building have led to a demonstration of the evil effects of hypnotism. This practice produces a species of congestion of the brain. The pupil in the science of mind-structure who desires to achieve good mental and moral character must avoid hypnotic experiences, under no circumstances permitting himself to be hypnotized—save, perhaps, for some absolutely necessary surgical purpose. Hypnotism tends to vitiate the moral character.

The various methods of mind cure, faith cure, laying on of hands, and similar processes that have come down to us from remote ages, have each some sort of a fundamental verity. One aspect of the truth has been seen, but it is generally combined with many mischievous practices and belief, and is seldom scientifically applied. My experiments prove that the mind activities create the structures which the mind embodies, or manifests. In addition to massage, diet, regulations of surroundings, etc., modern medicine will eventually evolve methods of brain-building to effect cures. Simple belief that you will get well, will, in a measure, produce nutritious

products and stimulate the health of the entire body. The indulgence of certain emotional states will do the same. To achieve any certain result, however, the process must begin with the first stages of brain-building and be pursued systematically to the highest stages, in order to create in the brain those structures which govern different portions of the body. This can best be done by the methods I have described.

The value of this new science will be better understood when we remember that mind underlies all sciences, art, and institutions. The mind has produced all our paintings, poems, literatures, languages, architectures, governments, and religions. Your mind is, to you, the most momentous and important fact in the universe; for without your mind, what would be the nniverse and its possibilities to you? Take away your mind, and what would there be left? To your own mind you must always look for guidance. If you can get more mind, or a better regulated mind, you will fundamentally and directly promote all your undertakings. You will be better able to apply whatever knowledge you possess.

Real progress among peoples is the degree of their mental development. To test this statement, imagine progress in civilization which at each step

produces less and less mind! To give people more mind is at once to promote all reform and all progress. If evolution did not lead to more mind, it would be retrogression

As my investigations and experiments in the art of mind-building are directly related to psychology, the reader may ask my definition of that term. Psychology is the science of mind. The word comes from the Greek "psycho," meaning soul. The earlier psychologists, being metaphysicians and none of them experimentalists, believed that in their speculations they were dealing with the faculties of the soul. Whether they were or not is not the question now under consideration. The art of mind-building and the art of mind-using, which I have evolved from the data of psychology, I have named "psychurgy."

The experimentalist knows mind only as he finds it manifested in himself and in other living creatures. He believes that this entity cannot exist apart from structure. Mind, however, is not a function of the brain in the same sense as bile is a secretion of the liver. The functioning of the individual organism is but one factor of mind. A more important factor is the fundamental connection of the individual organism with the cosmic environment. Mind may be more than this, but

at least it is this. I make no distinction between mind and soul. I do not attempt any definition of mind further than that it is the totality of the sub-conscious and conscious adaptive functions of the organism in interaction with the Cosmos.

Modern psychology began within the last fifty years with Fechner, Helmholtz, Wundt, and their followers. They commenced to measure sensations and times of reaction, to study the effect of diseases upon the brain, and to make investigations of the cerebral cortex through electrical stimulations of those areas and through ablations and excisions thereof. As a result, we have physiological psychology, or psycho-physics.

I shrank from vivisection and regarded the results of Horsley's and Monk's experiments upon brains as somewhat untrustworthy, because, when you remove a portion of the cortex (the outer line of gray matter which covers the cerebrum), you destroy the fibrous and the blood-vessel connections with other brain areas, producing a pathological but not a normal result. In the first part of this interview I described my experiments upon animals by a method which does not require vivisection and which does not produce diseased results.

This brain-building process embodies a number

of successive stages. The first stage consists in enregistering the sense impressions of all the senses, so as to produce sensation-structures. In the new nomenclature, cognizance of a sense impression is called "sensation." The conscious state which we call "perceiving a sense impression" produces a chemical deposition of matter in the brain-cells, and each repetition of that sense-consciousness increases the amount of matter deposited, the result being a sense-memory structure. The refunctioning of that structure constitutes memory.

As soon as all the sensation-structures have been formed in the brain, we can begin the second stage, which consists in causing the child to discriminate between the different sensations previously acquired and to associate them in consciousness, so as to produce what is called an integrant of the second order, or images, the units of which are the sensations of the first stage of brain-building. And so on through thirty or forty successive stages.

This process can be applied up to the period of decrepitude, but it is probable that it can be fully realized only when commenced with infants; and, inasmuch as the germ-cell of the female is directly affected by the nutriment which it gets from the parents' blood, it follows that a proper course of

living before conception will directly affect the development of the child. My experiments have demonstrated that every emotion of a false and disagreeable nature produces a poison in the blood and cell tissues. These poisons affect the health of the germ-cells. During pregnancy, life-depressing and unpleasant emotions—grief, anger, sorrow, etc.—will, through the poison generated, affect the development of the fœtus. For this and other reasons brain-building should properly begin a few months before conception.

Out of these researches arose not only a method of mind-building, or mind-embodiment, but also the art of using the mind systematically in original thinking, which art may be suddivided as follows: (1) the art of systematic, originative, conscious mentation; (2) the art of systematic sub-conscious mentation; and (3) the art of systematic originative, co-operative mentation. These arts lead to original thinking, invention and discovery by a systematic training in the use of the intellectual, emotive, and conative lines of mentation, and in each of the mental faculties. The pupil desiring to discover new things in any science has his brain rebuilt with reference to that science. This is the first step. He is then taught whatever knowledge the human race has acquired concerning that

subject, and to each of these data he is trained several hours a day, for a few years, to apply each one of his mental faculties.

The rules of this art have been derived from many thousand experiments and observations, and by practical application to myself and pupils. Two men of equal knowledge may study the same phenomena and the same data, and one of them will evolve original ideas and make discoveries, while the other will add nothing to our knowledge of the subject. Now, the mind art will enable the former to do better thinking, and will so train the latter to use his mind that he, also, will make discoveries and originate ideas. At present almost every organic and cosmic law of originative mentation is persistently violated by the investigator.

With the sum of human knowledge in any science classified in the mind; with a rebuilt brain from which evil affections and emotions have been eliminated; and with proper regulation of the body and its surroundings, the pupil commences to practice the art of original thinking somewhat as follows: According to rules which must be learned to be understood, he exercises every one of his thirty or forty mental functions upon each proposition or datum of the science, in order that

each faculty may be active a certain number of hours each day. This produces brain-growth in those very parts of the brain which are needed to deal with that subject. As the new growth is acquired, day after day, the sub-conscious functions become stimulated, the cosmical inter-actions of the brain become more vivid, and new ideas dawn as suddenly as lightning illuminates a landscape. New congruities, and generalizations are achieved, and, as a result, a reclassification of that knowledge must soon be made. Then the pupil again applies each mental function to each one of those data until he gets a new growth in those parts of the brain needed for the study of that particular subject. Six months' practice generally quadruples the mental capacity and more than quadruples the number of ideas gained each day. Such ideas must always be tested for truthfulness by observation and experiment in that domain of nature to which they relate.

Then there is the art of regulating the sub-conscious mental functions. At least ninety-eight per cent. of our mental life is sub-conscious. If you try to remember what happened on your tenth birthday, it may be ten minutes before you can recall any incident. What occurs while you are trying to remember? Certainly not conscious

processes. The processes of memory are in the sub-conscious domain.

If you will closely analyze your mental operations you will find that consciousness—conscious thinking—is never a continuous line of consciousness, but a series of conscious data with great intervals of sub-consciousness. We sit, trying to solve some problem, but fail. We rise, walk around, try again, and still fail. Suddenly an idea dawns which leads to the solution of the problem. The sub-conscious processes were at work. We do not volitionally create our thinking. It takes place in us. We are more or less passive recipients. We cannot change the nature of a thought or of a truth, but, we can, as it were, guide the ship by moving the helm. Our mentation is most largely the result of the operation of the cosmic Whole upon us. Annihilate the Cosmos, and our thinking would instantly cease.

Sub-conscious mentation is regulated by maintaining proper conditions of the body and environment, i. e., the forces which affect the body. Co-operative mentation consists in a number of specialists applying the art of conscious mentation to the same subject at the same time. If all the great minds of the human race were trained in this mode of systematic mentation, and if they were

to take for their subject the sum of human knowledge, they would achieve an interpretation of the universe which we may call philosophy, using the word as the synthesis of the generalizations of science. The result of each day would be a stepping-stone for the next. And if such minds, trained in these arts of originative mentation, were thus to deal with the whole scope of human knowledge systematically, they would continually eliminate former errors and constantly add new insights and new discoveries to their interpretation of the universe.

Such a perpetual, re-organized philosophy I have called "omnism." This philosophy is the highest generalization that can at any time be achieved by a number of the ablest minds practising co-operative mentation upon the sum of human knowledge. It is not realism, nor idealism, nor monism. It is, of course, a synthesis of all philosophies and branches of knowledge by specially constructed brains, acting according to systematic methods of mentation which begin by eliminating the immoralities in the mind. Such a philosophy could never become a fixed creed or belief.

Mentation is mind in activity. Using the word "psychology" as including all of the sciences of

mind, I may further define it by saying that there are six experimental sciences of mentation; and the generalizations which arise from a synthesis of the data from each of these six domains of research constitute psychology proper.

The first of these six domains is comprised by Biologic Psychology. In this realm the investigator experimentally varies the structures of the organisms and the conditions of their environment in order to discover what mentations result from each variation. This includes most of what is called physiological psychology and psychophysics. After many hundreds of experiments in this line I established a new method of research in biologic psychology. It consists in giving organisms new anatomical structures or in taking anatomical structures away from them in order to see what mental activities appear and disappear with the coming and going of these structures. No; I do not vivisect, mutilate or graft! I do it by a rapid process of evolution and retrogression. I evolve the structures of organisms in the process of rapid evolution to higher or more complex structures, or to lower and simpler ones. I raise several million infusoria (animalcules that occur in infusions of decaying substances) in a tank, and then, by gradually increasing heat or cold, or con-

cussions, I destroy all except two or three proved to be the most capable of surviving. These survivors propagate several million more, and, generation after generation, the process is repeated. After about twenty-one months, new structures arise, and I made a note of the concomitant mentations, or adaptive activities which also arise. As a method of psychological research, this is new.

I am organizing a laboratory of subjective biological investigation which will contain a great many new instruments.

I am also organizing a laboratory of subjective biopsychology, with special apparatus never before seen by psychologists. This science varies, one at a time, the environmental conditions of the pupil, and he observes the effect produced upon his own conscious mentations. The moods and intellections are found to vary with the electrostatic potentials—humidity, altitude, etc. I have found that, for successful mentation, it is as necessary to maintain high electrostatic conditions in the student's room as to maintain a healthful temperature. The potentials referred to are the electrical changes in the atmosphere. These electrostatic potentials of the atmosphere change constantly, varying often many million of volts every hour. Every change makes an

alteration in your emotions, you secretions, your excretions, and your whole mentation.

I am also starting a third laboratory—sociological psychology. A prominent scientist recently said that this is the first step toward experimental sociology. I will have special apparatus, much of which is now being made. Sociological psychology consists in varying the environment of social groups of living things, such as a bevy of birds, a school of fish, a hive of bees, etc. As we vary the social structure or the environment of a social group, changes take place in the group-activities. This also is a new method of psychological research. I shall have three other laboratories—six in all. There are six methods of research, which include all possible methods of experimenting upon the mind, and these include much more than what is usually called psychological experimentation.

The mind has created all sciences; consequently, they must all be studied as products of mentation. Included in these six studies are all sciences, which will be studied as subdivisions of the science of mind. A synthesis of the generalization of these six sciences, therefore, will be a synthesis not merely of the six psychological departments, but of all the sciences included therein. The synthesis

of these sciences constitutes not only Psychology, but Philosophy also.

Just as correlated with the science of chemistry there is an art of chemistry, so with the science of mind there is an art of mind, or mind-art, more properly called Psychurgy. The latter includes the three arts of getting more mind and the three which pertain to its proper use. The arts of getting more mind are those of Brain-building, Character-building and Immorality-curing and Education. The arts of mind-using are those of conscious originative mentation, sub-conscious originative mentation, and co-operative mentation. The syntheses of these six arts constitutes a synthetic mind art, or Psychurgy.

The experiments I have made contradict the conclusions of Weismann and others regarding heredity. They claim we have no proof of a skill, an idiosyncrasy, or a habit acquired during the lifetime of an individual, being transmitted to that person's offspring. They mention circumcision as practised by the Jews generation after generation, asserting that it is not transmitted. The mutilation of a Chinese woman's foot they say is not transmitted. I say it could not be transmitted because the change does not originate in the mind. If I train an animal in the excessive use of some

one mental faculty, its germ (or reproductive) cell will be influenced in its nutrition through the parent's changed metabolism, which is produced by the changed character of the mentation. I have trained four generations of guinea-pigs in the use of the visual faculty, and the children of the fourth generation were born with a greater number of brain-cells in the seeing-areas than other guinea-pigs that had not been thus trained. The experiment has been successfully repeated several times, and it demonstrates the transmission of acquired characteristics. I have found in the uni-cellular organisms, i. e., small protoplasmic cells, when they are caused to respond generation after generation to some one stimulus in excess of all other stimuli, that there gradually arise specific anatomical structures produced by the mental activity which responds to that stimulus. In this experiment, the cells which do not respond as readily as others are not destroyed, but are allowed to propagate as freely as the rest; hence the Darwinian factor of "survival of the fittest" is eliminated, i. e., favorable and unfavorable variations do not signify. The conclusion is that mental activity creates in mental organism certain structures transmissible to their offspring.

In regard to heredity and freedom of the will,

I have this to say: We are all conscious of being capable of doing as we please; if we please to do wrong we find ourselves capable thereof, and *vice versa*. If our motive for wrong-doing predominate—if the majority of our effective and emotive states, our appetites and desires, lead us in a certain way and we have enregistered no mental experiences of an opposing character, or at least not enough of them—then it will be our will to do as our motive leads us, i. e., as we choose.

This question of choice and of motive is based upon the character and degree of mind that the person has embodied or inherited. A person can inherit tendencies of growth in certain parts of the brain. His memories of sensations, images, concepts, emotions. and activities must come from experience. If a majority of these memories, relating to a certain object or event, are pleasurable, the person will naturally like it. If a majority of the experiences are un-pleasurable, or evil, he will in the one case not like the object, and in the other he may either like it or dislike it, according as the evil experiences are pleasurable or the reverse. The person's will is the result of the interaction of the totality of his memory-structures relating to any given object or event. It is possible completely to change the dominance of his desires and motives,

likes, and dislikes, etc., by enregistering in any part of his brain another series of memories, and, by so doing, you control the will. This is called "autургy"; it is the art of systematically controlling the will by a process of-brain-building and character-building based upon a taxic registration of experiences with the Ego.

The power which is active in the mind to control the will is a centrimmanent force of a cosmical character, omnipersonal, unitary, and the basis of Autургy.

The Laboratory of Psychology and Psychurgy is now the scene of experiments in these various lines. The Laboratory is growing in completeness, and its purpose is to study the mind scientifically, to diffuse the knowledge thus obtained, to cure immoral dispositions, to train investigators, and to organize research along these lines."

Old and New Phrenology

(A LETTER.)

II

OLD AND NEW PHRENOLOGY.

WASHINGTON, D. C. July, 13, 1896.

EDITOR THE METAPHYSICAL MAGAZINE:

Dear Sir—On page 4 of the July number of The Metaphysical Magazine, the inadvertency and too great brevity of the reporter have made me criticize phrenology in a way that does not correctly represent my attitude toward a domain of research which promises some day to become a science.

In speaking of phrenology I meant the "old" phrenology, not the new; and what I desired the reporter to say was that "the old phrenology had the strange misfortune of incorrectly locating a great many of the functions of the brain, and also of assigning locations to functions and supposed faculties that do not exist in any definitely localized areas." The higher faculties are complex combinations of mental integrants of simple forms, which simpler memory-structures are distributed all over the brain surface and not confined to any one locality. Thus, when I relate the concept of "orange" with the concept of "nutrition," into the idea that "oranges are nutritious," I am exercising more than one locality of the brain. For example, the above idea requires the activity of the color-areas in the part of the cerebral cortex, of the taste-areas at the base of the cerebrum, of the smell-areas in another part of the base of the cerebrum, of the touch-areas in still another part of the cerebrum, of the speech-motor areas in still another, etc. In like manner the "faculties" named by the old phrenologists "spirituality," "logic," "inventiveness," etc., are exceed-

ingly complex combinations of functions widely scattered, not merely over all areas of the cerebrum, but diversely through the different areas of the six or eight cell-layers of the cortex.

It would have been more accurate also if the reporter had made me say that "the true position of the color-memories is in the cortex of the back part of the cerebrum, in the region of the cuneus," instead of that of "sight." The old phrenologists located color in the region of the forehead, near the outer angle of the eyebrow and a little above it. Modern physiologists and psychologists have positively demonstrated that the color-memories are located in the cerebral cortex at the back of the head, nearly opposite the location assigned by the old phrenologists. Sight is a complex combination of the memory-structures in this area, with other kinds of memory-structures in several other areas.

The old phrenologists assigned a definite location in the forehead to a faculty called "memory." Now, no fact of modern physiology or of psychology has been more clearly established than the fact that there is not a faculty of memory located in any one small area of the brain, but that every area of the brain-cortex has it own memories. Every functioning structure and every conscious experience that can be remembered exists as a memory-structure. In the region of the cuneus, in the back part of the head, are the color-memories; and if that part becomes destroyed by disease those memories are also destroyed; in the first temporal lobes above the ears are the sound-memories; in the region of the "fissure of Rolando" are the muscular motor-memories; and so on. Memories (plural) are in every part of the brain-cortex, and it is not

true that memory (singular) has one definite location. I refer to the "Physiology" of Landois and Stirling, to Ladd's "Physiological Psychology," to Foster's "Physiology," to the writings of Ferrier, Munk, Monakow, etc., as well as to my own researches, for abundant proof of these statements, and to modern medical, physiological, and psychological literature in general.

But I do not therefore decry phrenology. These discoveries teach how to improve upon the old art of character-reading, to avoid its mistakes, and to take advantage of the newly discovered truths. Every mental characteristic finds expression in form and feature throughout the whole domain of animal life. Even recent emotional experiences are graphically depicted in the physiognomy, and when such experiences are long continued the "phrenological" features are also affected. There is, therefore, a sound scientific basis for character-reading. The art, in the hands of good practioners, even despite the errors to which I have called attention, has enabled them to make readings of character which could not be the result of guesswork, and their percentage of correct delineations has been far greater than their mistakes. A more accurate knowledge of functional localization in the brain and the discovery of errors in the old phrenology will not injure the art of character-reading, but rather raise it to the level of a scientific art.

Very truly yours,

ELMER GATES.

Psychology and Psychurgy

III

PSYCHOLOGY AND PSYCHURGY.

The Nature and Use of the Mind.

In this paper I have thought it well to call attention to the importance of a study of the Science of Mind (Psychurgy).

The word "Mind," as I have herein used it, signifies the totality of the phenomena of Consciousness and includes all that can feel, remember, or adapt acts to ends; and, therefore, it properly includes all of the phenomena of the Intellect, such as sensations, images, concepts, ideas, thoughts, reasonings, introspection, etc. It includes all of the activities of the systemic and organic feelings and of the tender, æsthetic, moral, logical and religious emotions. It includes the whole subject of volition and will; and it includes a study of all of the vital and subconscious processes connected with the the exercise of these functions. It includes affections, tastes, habits, knowledge, conduct and civilization. Whatever thing can feel and adapt

acts to ends has mind; and therefore, the study of the mind includes feeling, memory, and adaptive activity. Psychology, therefore, includes the study, by scientific methods, of our own minds and of the minds of all living organisms, so that we may judge from the facts regarding anatomy, physiological activities, habits, environment, etc., what mind IS, and so that we may learn by a study of minds what organisms ARE.

The definition which I have herein made of the mind is the one I have found most consistent with the general study and practice of Psychurgy, or the Art of Mentation; but the philosophic import of this definition, that mentality includes and is synonymous with vitality, constitutes no necessary part of the science of mind as I desire to teach it, or of the psychurgic art. But it will be necessary for the reader to remember that the meaning which I have herein given to the word "mind" includes all there is of consciousness, together with the functionally associated subconscious processes of the organism; that is, it includes within its scope the psychologic characteristics of the cellular activities. The organs of the body are composed of cells, and these cells can feel stimuli and perform adaptive activities, and as only mind can feel and adapt, it follows that what characterizes

the life of a cell is its mind-capacities. If a cell cannot feel and perform adaptive actions, it is dead. I do not attempt to philosophize upon the subject; I prefer to await further knowledge of the mind. It matters not, as far as an understanding of the principles of the art of using the mind are concerned, whether mind includes all there is of vitality or not; or whether there is Mind *and* Matter; or *Spirit*, Mind and Matter; or whether Mind, like number, dimension, motion, and persistence is a property inseparable from matter; or whether there is an energy that manifests as Matter, Mind, Motion, etc. These questions I do not attempt to decide, but the fact remains that it is the mind-like capacity of the cell that constitutes its life, and that it is out of these mind-like functionings of the cells of the body and brain that the conscious processes of the human mind arise; or, if you prefer a different philosophical implication, you may say that it is the judgment-properties of the matter of the body becoming dynamically evolved and accentuated as compared with the space-properties, motion-properties, number-properties, and time-properties of the matter of the body.

Some people have supposed that there is in us a higher kind of intelligence than mental; such,

for example, as that of the "soul;" and that, therefore, psychology does not include within its survey all of the phenomena of life. To see the incompleteness of this belief, it will suffice to say, without at present committing myself to either the materialistic or spiritualistic hypotheses, that if the soul has not, or is not, a Mind, then it cannot feel, nor remember, nor know, nor adapt acts to ends. To maintain this position is equivalent to saying that the soul is inanimate. If that which has been called "soul," "spirit," etc., can feel, remember, know, adapt acts to purposive ends, etc., then the scope of psychology includes all such phenomena. Science has experimented upon the mind, but it has not yet, in the same manner, experimented upon the soul, if by "soul" is meant something different from mind. I doubt if it ever pays to theorize or express opinions upon this, or upon any other subject, or to discuss matters in advance of scientific evidence; but it will serve to illustrate my point of view if I may be allowed to say that if there are orders of existence higher than man (and there is no reason why the Universe in its infinite possibilities should not contain them), then, no matter how much higher and greater than man's conceptions these forms may be, and no matter in what unknown states and conditions they

may exist, if they can feel and know and act, they must have minds, and thereby they will fall within the survey of psychology. Furthermore, if there is embodied in the whole Cosmic Universe a Supreme Mind in some manner analogous to the way in which mind is embodied in the human organism (and I say it with deep and genuine reverence), then, in studying the phenomena of mind you will, to that extent, become acquainted with the kind of power that lies at the head of Cosmos.

I say, that if there is purposive intelligence at the head of the Universe, and if that which has been called God or the Supreme Being can know, or adapt acts to ends, or if that which has been called the Creator can be conscious, then it must *have* Mind or *be* Mind, and in that case, to learn the laws of consciousness is to learn something about that which rules the whole Cosmic Event throughout all space and duration. Your mind must be, in its own nature, similar unto that cosmic condition in the Universe out of which it came, or of which it is an eternal part. Your mind cannot be in fundamental antagonism and contradiction to the cosmic order out of which it was generated and from which it has directly inherited all of its characteristics; and, therefore, to introspectively and scientifically know the nature

and laws of your own mind is to know directly that much of what is the most interesting, mysterious, wonderful, and perhaps the most all-pervading and potent force in the Universe. It is to know in your own consciousness and as consciousness the power that rules life and is life in all worlds and times. If "that, than which there can be nothing greater," has the power to know or to have a purpose, then that power must be due to mind; and in that case, to the extent that you know the mind, just to that extent you know the Universe ontologically. Or if, for the sake of still illustrating a point of view, we assume the opposite belief and contend that there is in the Universe no being higher than man, and that death ends the individual life, then it still follows that the chief subject of study must be the mind, for it is the mind that constitutes the man and is his only guide through life.

From the psychurgic standpoint all sciences should be studied as subdivisions of psychology, and that fact has been to many a puzzling feature. I have often been asked, "Why do you devote so much time and give such prominence to the experimental study of chemistry, physics, botany, zoology, mathematics, history, and the other sciences, when your laboratories are devoted to

psychology?" "Why do you study music, metallurgy, microscopy, photography, electricity, and the arts generally, when your work is psychological?" The popular idea is that these subjects have no connection with the study of psychology. The reason why the sciences constitute such a prominent feature in the study of the science of the mind is, that we must study the products of mental activity in order to understand the mental functions which produce these products. It must be obvious that the most wonderful, useful and notable products of the mind's action are these very sciences. Not only are the sciences discovered and known by means of the mind-activities, and by no other way, but each science is a particular mode of mental functioning and comprises a particular kind of mental content. Hence, the sciences offer the best fields for the study of the mind through its products, modes and contents. In order to adapt acts to ends—in order that such a thing as conduct may be possible—the mind must know. It must have a knowledge about the things on which and in the presence of which it acts, as well as a knowledge of the thing (the mind) that does the acting. Without such a knowledge of things outside of the body no adaptive action whatsoever could take place. Now,

such a knowledge of things, no matter how meagre, must be a knowledge about some of the natural groups of objects in the universe around us, such as the starry-group (Astronomy), or the plant-group (Botany), or the animal-group (Zoology), or the substance-group (Chemistry), and so on; that is, a normal mind must contain correct knowledge of each taxonomic group of phenomena, and only to the extent that it does possess such knowledge can normal and safe conduct be possible.

The intimate and direct relation of the sciences to the study of the mind must be obvious to any one who will reflect upon this aspect of the subject. In like manner the arts represent what the mind has done in applying knowledge to human uses. It is not enough to discover by means of the intellect a new truth; it is not even enough to feel the beauty and possible utility of such a discovery; the mental process is not completed until that truth which you know, and that beauty which you feel have been rendered concrete and available for human uses by conation, or by that act or series of acts which applies this knowledge and feeling to the good of the human race. The industrial and fine arts represent the utilitarian and æsthetic deeds of the mind and the methods by

which the mind applies knowledge and feeling. In the practical study of these arts we come in closest and completest touch with the mind's modes of working. The sciences and arts, are, therefore, from this point of view, properly, subdivisions of the science of psychology.

If it is the mind that creates and discovers every science and art, and if it is in the mind alone which can supply such knowledge to an amelioration of the conditions of life; if it is the mind that builds every house, writes every book, and paints every picture; if it is the mind that suffers and enjoys; then it follows that a knowledge of how to regulate the functions of the mind so as to achieve results more economical and more truthful, will rank first in importance in the knowledge to which the human race has been paying attention.

It will be impossible to fully describe this Art in a single paper. I will very briefly describe the first step, which consists, among other things, in the complete inductive mastery of some one science by the psychurgic method. First of all, each one of the nine kinds of sensory functionings, such as touch, pressure, warmth, cold, muscular feeling, taste, smell, seeing and hearing, are trained for several months, until the sensitiveness and accuracy have been increased from five to ten

times! * These senses are the instruments of observation by which all knowledge is acquired.† If a person had been born without any of the senses he could never have known of the existence of a single object, and knowledge and conduct would have been impossible to him.

After this training of the senses the pupil should be taken into a building wherein have been placed, in classific groups, every object and piece of apparatus known to some one science, so that every phenomenon of that science might be shown to him, in taxonomic order. The second step consists in giving the pupil correct images of every object belonging to that science; then in causing the pupil to classify these images into naturally-related groups, for the purpose of forming concepts of such groups. The next step consists in experimentally discovering the relations which exist in nature between the objects for which the pupil has concepts; and thus arise ideas. The pupil is then taught how to discover truths common to two or more such ideas, and thus arise thoughts of the first order or laws of the first

* I have proof of this.

† Knowledge of physical objects and their relations, rather, we should say. "Subjects" and "Principles" are matters of knowledge, but are not recognizable by the senses.—ED.

degree of generalization. The generalization of thoughts of the first order produces thoughts of the second order, where most sciences end.

In thus acquiring psychologic data belonging to any science the pupil avoids learning any theories, hypotheses or speculations! He learns the science by first-hand observation and acquires the sum total of the knowledge relating to that group of phenomena. By this means he observes that there are no other kinds of knowledge about phenomena than the sensations, images, concepts, ideas and thoughts which he may inductively derive from a study of such objects. This puts normal content in the mind. The pupil is next taught conceptual reasoning, and ideative reasoning, and thinking reasoning; and then made to introspect all of these processes while they are taking place; this finishes the intellectual acquisition of that science (The concomitant emotional or moral training and the concomitant volitional training I will not now describe).

Having mastered this science, the pupil then re-images each one of the images belonging to that science, and thus causes certain parts of the brain to grow stronger and increases the imagining speed from five to ten times.* He then re-concept-

* I have proof of this.

uates the concepts, re-ideates the ideas, re-thinks the thoughts, and this increases the speed and the accuracy of each of these functions. He practices the three kinds of reasoning and introspection, and thus learns for the first time in the history of education to use each one of the intellectual functions independently of the others. He increases the speed of his mental activity from five to ten times. He likewise increases the accuracy of the process. He wastes no time in theory and hypothesis. Each incorrect image, each false idea, misleads the whole mentative functioning and vitiates every conclusion that may be formed. Having thus mastered the normal content of one science, having acquired skill in using each one of the intellectual processes, the pupil is then taught to apply this knowledge and skill to the art of invention and discovery, according to methods that cannot now be described

The object of this mentative art is to discover Truth and apply it to the betterment of life. This is the whole process and scope of evolution, and it involves the getting of more mind at each step. The getting of less mind would not be evolution; hence, every act which give us more mind is right, and every act which gives us less mind is wrong. There is no other kind of knowledge

about the universe than just such a knowledge as I have described. A knowledge of one science, however does not suffice. Each one of the natural sciences must thus be learned, to make up a perfectly normal mind.

My plea is for the study of the sciences according to this method, so that by basing our mental operations upon verified truth, without an admixture of speculation, we may the more certainly achieve more and more truth. And it is in the Religion of Truth that I have perfect confidence; I have but little confidence in theory, and speculation, and philosophy. Generally their postulates have been wholly or partly wrong. But truth itself would be of no value were it not for the mind which may learn to apply this truth. Hence, progress resolves itself into a question of the amount of mind which we have and into ways of using the mind. Psychology has, pointed out the feasibility of an art of promoting and regulating the use of the mind in discovery, in invention, and in right living, and the development of this art, which I have called Psychurgy, shows that we can systematize the hitherto undirected mental functions of talent and genius, and reduce to scientific rule the haphazard efforts of the mind in discovering Truth. Investigators and

thinkers have hitherto violated almost every bodily, environmental and psychologic condition conducive to the best mental functioning, and for some unaccountable reason the human race has studied almost every subject except how best to use that mind which makes all such studies possible. There is a correct way of acquiring scientific data; there is a correct way of regulating bodily and environmental conditions so as to conserve organic energy and promote mental functioning; and the development of such an art of Mentation is destined to exert an important influence upon any individual life and through that upon the life of the race.

You did not create your own consciousness; you did not form the nature and capacities of your own mind; it had its own immanent nature when you first became aware of consciousness, and out of it has grown the total sum of your experiences and possibilities. The wonder of consciousness taking place within us according to its own eternal laws, and in obedience to its own cosmical nature, may well profoundly amaze and astound us. It is an ever-present mystery and wonder towards which our aspirations may lead us to an increasing knowledge, not only of the mind, but of the things in the presence of which it exists.

I regard Mind with as much reverence as I have ever regarded the infinite Cosmic Universe out of which all mind is born. With overwhelming awe I meditate upon the star-studded expanse, with systems of worlds floating therein, and doubtless filled with life—systems of worlds that in presence of Eternity come and go like bubbles upon the stream, but it is with still deeper awe and reverence that I turn to that Awareness in me which is conscious of every passing conscious state; which observes critically, and with absolute justice, the phenomena of mind as they are imperfectly and partially exhibited to me in my consciousness; and I feel that if there be an intelligent purpose or Consciousness at the head of that which has eternally filled unlimited space, then to the extent that I learn the truth about mind, to that extent I become acquainted with the power that is regnant in nature. Whatever of purpose or plan there is in the whole or in any part of the universe, must be due to mind, and whatever you and I may achieve for self or others must be due to the activity of the mind functioning in us; and this mind which takes place in us, and of which we become aware, is as much a cosmical process as is the flow of the tides or the evolution of the universe. A knowledge of your own mind and how

best to use it is your only possible guide, for what can never come to your consciousness can never be a part of you or for you. Mind is the path to the goal of all possibilities. This is the age of the apotheosis of Mind.