

WILLIAM ATKINSON

YOUR MIND AND HOW
TO USE IT: A MANUAL
OF PRACTICAL
PSYCHOLOGY

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Manual of Practical Psychology**

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CHAPTER I

What is the Mind?

PSYCHOLOGY is generally considered to be the science of mind, although more properly it is the science of mental states – thoughts, feelings, and acts of volition. It was formerly the custom of writers on the subject of psychology to begin by an attempt to define and describe the nature of mind, before proceeding to a consideration of the subject of the various mental states and activities. But more recent authorities have rebelled against this demand, and have claimed that it is no more reasonable to hold that psychology should be held to an explanation of the ultimate nature of mind than it is that physical science be held to an explanation of the ultimate nature of matter. The attempt to explain the ultimate nature of either is futile – no actual necessity exists for explanation in either case. Physics may explain the phenomena of matter, and psychology

the phenomena of mind, without regard to the ultimate nature of the substance of either.

The science of physics has progressed steadily during the past century, notwithstanding the fact that the theories regarding the ultimate nature of matter have been revolutionized during that period. The facts of the phenomena of matter remain, notwithstanding the change of theory regarding the nature of matter itself. Science demands and holds fast to facts, regarding theories as but working hypotheses at the best. Some one has said that "theories are but the bubbles with which the grown-up children of science amuse themselves." Science holds several well-supported, though opposing, theories regarding the nature of electricity, but the *facts* of the phenomena of electricity, and the application thereof, are agreed upon by the disputing theorists. And so it is with psychology; the facts regarding mental states are agreed upon, and methods of developing mental powers are effectively employed, without regard to whether mind is a product of the brain, or the brain merely an organ of the mind. The fact that the brain and nervous system are employed in the phenomena of thought is conceded by all, and that is all that is necessary for a basis for the science of psychology.

Disputes regarding the ultimate nature of mind are now generally passed over to the philosophers and metaphysicians, while psychology devotes its entire attention to studying the laws of mental activities, and to discovering methods of mental development. Even philosophy is beginning to tire of the eternal

"why" and is devoting its attention to the "how" phase of things. The pragmatic spirit has invaded the field of philosophy, expressing itself in the words of Prof. William James, who said: "Pragmatism is the attitude of looking away from first things, principles, categories, supposed necessities; and of looking forward toward last things, *fruits, consequences, facts.*" Modern psychology is essentially pragmatic in its treatment of the subject of the mind. Leaving to metaphysics the old arguments and disputes regarding the ultimate nature of mind, it bends all its energies upon discovering the laws of mental activities and states, and developing methods whereby the mind may be trained to perform better and more work, to conserve its energies, to concentrate its forces. To modern psychology the mind is *something to be used*, not merely something about which to speculate and theorize. While the metaphysicians deplore this tendency, the practical people of the world rejoice.

Mind Defined

Mind is defined as "the faculty or power whereby thinking creatures, feel, think, and will." This definition is inadequate and circular in nature, but this is unavoidable, for mind can be defined only in its own terms and only by reference to its own processes. Mind, except in reference to its own activities, cannot be defined or conceived. It is known to itself only through its activities. Mind without mental states is a mere

abstraction – a word without a corresponding mental image or concept. Sir William Hamilton expressed the matter as clearly as possible, when he said: "What we mean by mind is simply *that which* perceives, thinks, feels, wills, and desires." Without the perceiving, thinking, feeling, willing, and desiring, it is impossible to form a clear conception or mental image of mind; deprived of its phenomena it becomes the merest abstraction.

"Think About That Which Thinks."

Perhaps the simplest method of conveying the idea of the existence and nature of the mind is that attributed to a celebrated German teacher of psychology who was wont to begin his course by bidding his students think of something, his desk, for example. Then he would say, "Now think of *that which thinks about the desk*." Then, after a pause, he would add, "This thing which thinks about the desk, and about which you are now thinking, is the subject matter of our study of psychology." The professor could not have said more had he lectured for a month.

Professor Gordy has well said on this point: "The mind must either be *that which* thinks, feels, and wills, or it must be the thoughts, feelings, and acts of will of which we are conscious – mental facts, in one word. But what can we know about *that which* thinks, feels, and wills, and what can we find out about it? Where is it? You will probably say, in the brain. But, if you are speaking literally, if you say that it is in the brain, as a pencil

is in the pocket, then you must mean that it takes up room, that it occupies space, and that would make it very much like a material thing. In truth, the more carefully you consider it, the more plainly you will see what thinking men have known for a long time – that we do not know and cannot learn anything about the thing which thinks, and feels, and wills. It is beyond the range of human knowledge. The books which define psychology as the science of mind have not a word to say about that which thinks, and feels, and wills. They are entirely taken up with these thoughts and feelings and acts of the will, – mental facts, in a word, – trying to tell us what they are, and to arrange them in classes, and tell us the circumstances or conditions under which they exist. It seems to me that it would be better to define psychology as *the science of the experiences, phenomena, or facts of the mind, soul, or self – of mental facts, in a word.*"

In view of the facts of the case, and following the example of the best of the modern authorities, in this book we shall leave the consideration of the question of the ultimate nature of mind to the metaphysicians, and shall confine ourselves to the *mental facts*, the laws governing them, and the best methods of governing and using them in "the business of life."

The classification and method of development to be followed in this book is as follows: —

- I. The mechanism of mental states, *i. e.*, the brain, nervous system, sense organs, etc.
- II. The fact of Consciousness and its planes.

III. Mental processes or faculties, *i. e.*, (1) Sensation and Perception; (2) Representation, or Imagination and Memory; (3) Feeling or Emotion; (4) Intellect, or Reason and Understanding; (5) Will or Volition.

Mental states depend upon the physical mechanism for manifestation, whatever may be the ultimate nature of mind. Mental states, whatever their special character, will be found to fit into one of the above five general classes of mental activities.

CHAPTER II

The Mechanism of Mental States

THE mechanism of mental states – the mental machinery by means of which we feel, think, and will – consists of the brain, nervous system, and the organs of sense. No matter what may be the real nature of mind, – no matter what may be the theory held regarding its activities, – it must be admitted that the mind is dependent upon this mechanism for the manifestation of what we know as mental states. Wonderful as is the mind, it is seen to be dependent upon this physical mechanism for the expression of its activities. And this dependence is not upon the brain alone, but also upon the entire nervous system.

The best authorities agree that the higher and more complex mental states are but an evolution of simple sensation, and that they are dependent upon sensation for their raw material of feeling and thought. Therefore it is proper that we begin by a consideration of the machinery of sensation. This necessitates a previous consideration of the nerves.

The Nerves

The body is traversed by an intricate system of nerves, which has been likened to a great telegraph system. The nerves transmit

sensations from the various parts of the body to the great receiving office of the brain. They also serve to transmit the motor impulses from the brain to the various parts of the body, which impulses result in motion of appropriate parts of the body. There are also other nerves with which we have no concern in this book, but which perform certain physiological functions, such as digestion, secretion, excretion, and circulation. Our chief concern, at this point, is with the sensory nerves.

The sensory nerves convey the impressions of the outside world to the brain. The brain is the great central station of the sensory nerves, the latter having countless sending stations in all parts of the body, the "wires" terminating in the skin. When these nervous terminal stations are irritated or excited, they send to the brain messages calling for attention. This is true not only of the nerves of touch or feeling, but also of those concerned with the respective senses of sight, smell, taste, and hearing. In fact, the best authorities hold that all the five senses are but an evolution of the primary sense of touch or feeling.

The Sense of Touch

The nerves of the sense of touch have their ending in the outer covering or skin of the body. They report *contact* with other physical objects. By means of these reports we are aware not only of contact with the outside object, but also of many facts concerning the nature of that object, as for instance, its degree

of hardness, roughness, etc., and its temperature. Some of these nerve ends are very sensitive, as, for example, those of the tip of the tongue and finger ends, while others are comparatively lacking in sensitiveness, as, for illustration, those of the back. Certain of these sensory nerves confine themselves to reporting contact and degrees of pressure, while others concern themselves solely with reporting the degrees of temperature of the objects with which their ends come in contact. Some of the latter respond to the higher degrees of heat, while others respond only to the lower degrees of cold. The nerves of certain parts of the body respond more readily and distinctly to temperature than do those of other parts. To illustrate, the nerves of the cheek are quite responsive to heat impressions.

The Sense of Sight

The nerves of the sense of sight terminate in the complex optical apparatus which in popular terminology is known as "the eye." What is known as "the retina" is a very sensitive nervous membrane which lines the inner, back part of the eye, and in which the fibers of the optic nerve terminate. The optical instrument of the eye conveys the focused light vibrations to the nerves of the retina, from which the impulse is transmitted to the brain. But, contrary to the popular notion, the nerves of the eye do not gauge distances, nor form inferences of any kind; that is distinctly the work of the mind. The simple office of the optical

nerves consists in reporting color and degrees of intensity of the light waves.

The Sense of Hearing

The nerves of the sense of hearing terminate in the inner part of the ear. The tympanum, or "ear drum," receives the sound vibrations entering the cavities of the ear, and, intensifying and adapting them, it passes them on to the ends of the auditory nerve in the internal ear, which conveys the sensation to the brain. The auditory nerve reports to the brain the degrees of pitch, intensity, quality, and harmony, respectively, of the sound waves reaching the tympanum. As is well known, there are certain vibrations of sound which are too low for the auditory nerve to register, and others too high for it to record, both classes, however, capable of being recorded by scientific instruments. It is also regarded as certain that some of the lower animals are conscious of sound vibrations which are not registered by the human auditory nerves.

The Sense of Smell

The nerves of the sense of smell terminate in the mucous membrane of the nostrils. In order that these nerves report the odor of outside objects, actual contact of minute particles of the object with the mucous membrane of the nostrils is necessary.

This is possible only by the passage through the nostrils of air containing these particles; mere nearness to the nostril will not suffice. These particles are for the most part composed of tenuous gases. Certain substances affect the olfactory nerves much more than do others, the difference arising from the chemical composition of the substance. The olfactory nerves convey the report to the brain.

The Sense of Taste

The nerves of the sense of taste terminate in the tongue, or rather in the tiny cells of the tongue which are called "taste buds." Substances taken into the mouth chemically affect these tiny cells, and an impulse is transmitted to the gustatory nerves, which then report the sensation to the brain. The authorities claim that taste sensations may be reduced to five general classes, viz.: sweet, bitter, sour, salty, and "hot."

There are certain nerve centers having important offices in the production and expression of mental states, located in the skull and in the spinal column – the brain and the spinal cord – which we shall consider in the following chapter.

CHAPTER III

The Great Nerve Centers

THE great nerve centers which play an important part in the production and expression of mental states are those of the brain and spinal cord, respectively.

The Spinal Cord

The spinal cord is that cord or rope of nerve substance which is inclosed in the spinal column or "backbone." It leaves the lower part of the skull and extends downward in the interior of the spinal column for about eighteen inches. It is continuous with the brain, however, and it is difficult to determine where one begins and the other ends. It is composed of a mass of gray matter surrounded by a covering of white matter. From the spinal cord, along its length, emerge thirty-one pairs of spinal nerves which branch out to each side of the body and connect with the various smaller nerves, extending to all parts of the system. The spinal cord is the great central cable of the nervous telegraphic system, and any injury to or obstruction of it cripples or paralyzes those portions of the body the nerves of which enter the spinal cord below the seat of the injury or obstruction. Injuries or obstructions of this kind not only inhibit the sensory reports from

the affected area, but also inhibit the motor impulses from the brain which are intended to move the limbs or parts of the body.

The Ganglia or "Tiny Brains."

What are known as ganglia, or tiny bunches of nerve cells, are found in various parts of the nervous system, including the spinal nerves. These groups of nerve cells are sometimes called "little brains," and perform quite important offices in the mechanism of thought and action. The spinal ganglia receive sensory reports, and issue motor impulses, in many cases, without troubling the central brain regarding the matter. These activities are known as "reflex nervous action."

Reflex Action

What is known as reflex nervous action is one of the most wonderful of the activities of the nervous and mental mechanism, and the knowledge thereof usually comes as a surprise to the average person, for he is generally under the impression that these activities are possible only to the central brain. It is a fact that not only is the central brain really a trinity of three brains, but that, in addition to these, every one has a great number of "little brains" distributed over his nervous system, any and all of which are capable of receiving sensory reports and also of

sending forth motor impulses. It is quite worth while for one to become acquainted with this wonderful form of neuro-mental activity.

A cinder enters the eye, the report reaches a ganglion, a motor impulse is sent forth, and the eyelid closes. The same result ensues if an object approaches the eye but without actually entering it. In either case the person is not conscious of the sensation and motor impulse until the latter has been accomplished. This is reflex action. The instinctive movement of the tickled foot is another instance. The jerking away of the hand burnt by the lighted end of the cigar, or pricked by the point of the pin, is another instance. The involuntary activities, and those known as unconscious activities, result from reflex action.

More than this, it is a fact that many activities originally voluntary become what is known as "acquired reflexes," or "motor habits," by means of certain nervous centers acquiring the habit of sending forth certain motor impulses in response to certain sensory reports. The familiar movements of our lives are largely performed in this way, as, for instance, walking, using knife and fork, operating typewriters, machines of all kinds, writing, etc. The squirming of a decapitated snake, the muscular movements of a decapitated frog, and the violent struggles, fluttering, and leaps of the decapitated fowl, are instances of reflex action. Medical reports indicate that in cases of decapitation even man may manifest similar reflex action in some cases. Thus we may see that we may *feel* and *will* by means

of our "little brains" as well as by the central brain or brains. Whatever mind may be, it is certain that in these processes it employs other portions of the nervous system than the central brain.

The Three Brains

What is known as the brain of man is really a trinity of three brains, known respectively as (1) the *medulla oblongata*, (2) the *cerebellum*, and (3) the *cerebrum*. If one wishes to limit the mental activity to conscious intellectual effort, then and then only is he correct in considering the cerebrum or large brain as "the brain."

The Medulla Oblongata.— The medulla oblongata is an enlargement of the spinal cord at the base of the brain. Its office is that of controlling the involuntary activities of the body, such as respiration, circulation, assimilation, etc. In a broad sense, its activities may be said to be of the nature of highly developed and complex reflex activities. It manifests chiefly through the sympathetic nervous system which controls the vital functions. It does not need to call on the large brain in these matters, ordinarily, and is able to perform its tasks without the plane of ordinary consciousness.

The Cerebellum.— The cerebellum, also known as "the little brain," lies just above the medulla oblongata, and just below the rear portion of the cerebrum or great brain. It combines

the nature of a purely reflex center on the one hand, with that of "habit mind" on the other. In short, it fills a place between the activities of the cerebrum and the medulla oblongata, having some of the characteristics of each. It is the organ of a number of important acquired reflexes, such as walking, and many other familiar muscular movements, which have first been consciously acquired and then become habitual. The skilled skater, bicyclist, typist, or machinist depends upon the cerebellum for the ease and certainty with which he performs his movements "without thinking of them." One may be said never to have thoroughly acquired a set of muscular movements such as we have mentioned, until the cerebellum has taken over the task and relieved the cerebrum of the conscious effort. One's technique is never perfected until the cerebellum assumes control and direction of the necessary movements and the impulses are sent forth from below the plane of ordinary consciousness.

The Cerebrum.— The cerebrum, or "great brain" (which is regarded as "the brain" by the average person), is situated in the upper portion of the skull, and occupies by far the larger portion of the cavity of the skull. It is divided into two great divisions or hemispheres. The best of the modern authorities are agreed that the cerebrum has zones or areas of specialized functioning, some of which receive the sensory reports of the nerves and organs of sense, while others send forth the motor impulses which result in voluntary physical action. Many of these areas or zones have been located by science, while others remain as yet unlocated.

The probability is that in time science will succeed in correctly locating the area or zone of each and every class of sensation and motor impulse.

The Cortex

The area of thought, memory, and imagination has not been clearly located, except that these mental states are believed to have their seat in the *cortex* or outer thin rind of gray brain matter which envelopes and covers the mass of brain substance. It is, moreover, considered probable that the higher processes of reasoning are performed in or by the cortex of the frontal lobes. The cortex of a person of average intelligence, if spread out on a flat surface, measures about four square feet. The higher the degree of intelligence possessed by a lower animal or human being, as a rule, the deeper and more numerous are the folds or convolutions of the cortex, and the finer its structure. It may be stated as a general rule, with but very few exceptions, that the higher the degree of intelligence in a lower animal or human being, the greater is the area of its cortex in proportion to the size of the brain. The cortex, it must be remembered, is folded into deep furrows or convolutions, the brain in shape, divisions, and convolutions resembling the inner portion of an English walnut. The interior of the two hemispheres of the cerebrum is composed largely of connective nerves which doubtless serve to produce and maintain the unity of function of the mental processes.

While physiological psychology has performed great work in discovering brain-centers and explaining much of the mechanism of mental processes, it has but touched the most elementary and simple of the mental processes. The higher processes have so far defied analysis or explanation in the terms of physiology.

CHAPTER IV

Consciousness

THE fact of consciousness is the great mystery of psychology. It is difficult even to define the term, although every person of average intelligence understands what is sought to be conveyed by it. Webster defines it as "knowledge of one's own existence, sensations, mental operations, etc.; immediate knowledge or perception of any object, state, or sensation; being aware; being sensible of." Another authority defines the term as "the state of being aware of one's sensations; the power, faculty, or mental state of being aware of one's own existence, condition at the moment, thoughts, feelings, and actions." Halleck's definition is: "That indefinable characteristic of mental states which causes us to be aware of them."

It will be seen that the idea of "awareness" is the essence of the idea of consciousness. But, at the last, we are compelled to acknowledge that it is impossible to closely define consciousness, for it is something so entirely unique and different from anything else that we have no other terms at all synonymous to it. We can define it only in its own terms, as will be seen by reference to the definitions above given. And it is equally impossible to clearly account for its appearance and being. Huxley has well said: "How it is that anything so remarkable as a state of consciousness

comes about by the result of irritating nervous tissue, is just as unaccountable as the appearance of the jinnee when Aladdin rubbed his lamp." All that we can ever know regarding the nature of consciousness must be learned from turning the consciousness in ourselves back upon itself – by focusing consciousness upon its own mental operations by means of introspection. By turning inward the conscious gaze we may perceive the flow of the stream of thought from its rise from the subconscious regions of the mind to its final disappearance in the same region.

It is a common error to suppose that we are directly conscious of objects outside of ourselves. This is impossible, for there is no direct knowledge of such outside objects. We are conscious merely of our sensations of, or mental images of, the outside objects. All that it is possible for us to be directly conscious of are our own mental experiences or states. We cannot be directly conscious of anything outside of our own minds. We are not directly conscious of the tree which we *see*; we are directly conscious merely of the sensation of the nerves arising from the impact of the light waves carrying the image of the tree. We are not directly conscious of the tree when we touch it and perceive its character in that way; we are directly conscious merely of the sensation reported by the nerves in the finger tips which have come in contact with the tree. We are directly conscious even of our own bodies only in the same way. It is necessary for the mind to experience that of which it may become conscious. We are conscious only of (1) that which our mind is experiencing

at this moment, or (2) that which it has experienced in the past, and which is being re-experienced this moment by the process of the memory, or which is being re-combined or re-arranged this moment by the imagination.

Subconscious Planes

But it must not be thought that every mental state or mental fact is in the field of consciousness. This error has been exploded for many years. The fact is now recognized that the field of consciousness is a very narrow and limited one, and that the great field of mental activity lies outside of its narrow limits. Beyond and outside of the narrow field of consciousness lies the great subconscious storehouse of memory in which are stored the experiences of the past, to be drawn again into the field of consciousness by an effort of the will in the act of recollection, or by association in ordinary remembrance. In that great region, also, the mind manifests many of its activities and performs much of its work. In that great region are evolved the emotions and feelings which play such an important part in our lives, and which often manifest a vague disturbing unrest long before they rise to the plane of consciousness. In that great region are produced the ideas, feelings, and conceptions which arise to the plane of consciousness and manifest that which men call "genius."

On the subconscious plane the imagination does much of its work, and startles its owner by presenting him with

the accomplished result in the field of consciousness. In the subconscious field is performed that peculiar process of mental mastication, digestion, and assimilation with which all brain workers are familiar, and which absorbs the raw mental material given it, separates, digests, and assimilates it, and re-presents it to the conscious faculties sometime after as a transformed substance. It has been estimated that at least eighty-five per cent. of our mental activities are performed below or outside of the field of consciousness. The psychology of to-day is paying much attention to this formerly neglected great area or areas of the mind. The psychology of to-morrow will pay still greater attention to it.

The best of the modern authorities agree that in the great field of subconscious mentation is to be found the explanation of much that is unexplainable otherwise. In fact, it is probable that before long consciousness will be regarded as a mere *focusing of attention* upon mental states, and the objects of consciousness merely as that portion of the contents of the mind in the field of mental vision created by such focusing.

CHAPTER V

Attention

INTIMATELY connected with the object of consciousness is that process of the mind which we call "attention." Attention is generally defined as "the application of the mind to a mental state." It is often referred to as "concentrated consciousness," but others have ventured the somewhat daring conjecture that consciousness itself is rather the result of attention, instead of the latter being an incident of consciousness. We shall not attempt to discuss this question here, except to state that consciousness depends very materially upon the degree of attention bestowed upon its object. The authorities place great importance upon the intelligent direction of the attention, and hold that without this the higher forms of knowledge are impossible.

It is the common belief that we feel, see, hear, taste, or smell whenever objects affecting those senses come in contact with the organs of sense governing them. But this is only a partial truth. The real truth is that we become conscious of the report of these senses only when the attention is directed toward the sensation, voluntarily or involuntarily. That is to say, that in many cases although the sense nerves and organs report a disturbance, the mind does not become consciously aware of the report unless the attention is directed toward it either by an act of will or else by

reflex action. For instance, the clock may strike loudly, and yet we may not be conscious of the fact, for we are concentrating our attention upon a book; or we may eat the choicest food without tasting it, for we are listening intently to the conversation of our charming neighbor. We may fail to perceive some startling occurrence happening under our very eyes, for we are buried in deep thought concerning something far removed from the present scene. There are many cases on record showing that one may be so interested in speaking, thinking, or acting that he will not experience pain that would otherwise be intolerable. Writers have forgotten their pain in the concentrated interest bestowed upon their work; mothers have failed to feel pain when their infants required urgent attention; orators have been so carried away by their own eloquence that they have failed to feel the pricking of the pin by means of which their friends have sought to attract their attention. Not only perception and feeling depend largely upon attention, but the processes of reasoning, memory, and even of will, depend upon attention for much of their manifestation.

Psychologists divide attention into two general classes, viz.: (1) voluntary attention and (2) involuntary attention.

Voluntary attention is attention directed by the will to some object of our own more or less deliberate selection. It requires a distinct effort of the will in order to focus the attention in this way, and many persons are scarcely aware of its existence, so seldom do they manifest it. Voluntary attention is the result

of training and practice, and marks the man of strong will, concentration, and character. Some authorities go so far as to say that much of that which is commonly called "will power" is really but a developed form of voluntary attention, the man of "strong will" holding before him the one idea which he wishes to realize.

Involuntary attention, often called "reflex attention," is attention called forth by a nervous response to some sense stimulus. This is the common form of attention, and is but the same form which is so strongly manifested by children whose attention is caught by every new object, but which cannot be held for any length of time by a familiar or uninteresting one.

It is of the utmost importance that one should cultivate his power of voluntary attention. Not only is the will power strengthened and developed in this way, but every mental faculty is developed by reason thereof. The training of the voluntary attention is the first step in mental development.

Training the Attention

That the voluntary attention may be deliberately trained and developed is a fact which many of the world's greatest men have proved for themselves. There is only one way to train and develop any mental power or faculty – and that is *by practice and use*. By practice, interest may be given to objects previously uninteresting, and thus the use of the attention develops the interest which further holds it. Interest is the natural road

over which attention travels easily, but interest itself may be induced by concentrated attention. By studying and examining an object, the attention brings to light many new and novel features regarding the thing, and these produce a new interest which in turn attracts further and continued attention.

There is no royal road to the development of voluntary attention. The only true method is *work, practice, and use*. You must practice on uninteresting things, the primary interest being your desire to develop the power of voluntary attention. But as you begin to attend to the uninteresting thing you will become interested in the task for its own sake. Take some object and "place your mind upon it." Think of its nature, where it came from, its use, its associations, its probable future, of things related to it, etc., etc. Keep the attention firmly upon it, and shut out all outside ideas. Then, after a little practice of this kind, lay aside the object for the time being, and take it up again the next day, endeavoring to discover new points of interest in it. The main thing to be sought is *to hold the thing in your mind*, and this can be done only by *discovering features of interest in it*. The interest-loving attention may rebel at this task at first, and will seek to wander from the path into the green pastures which are found on each side thereof. But you must bring the mind back to the task, again and again.

After a time the mind will become accustomed to the drill, and will even begin to enjoy it. Give it some variety by occasionally changing the objects of examination. The object need not always

be something to be looked at. Instead, select some subject in history or literature, and "run it down," endeavoring to bring to light all the facts relating to it that are possible to you. *Anything* may be used as the subject or object of your inquiry; but what is chosen must be held in the field of conscious attention firmly and fixedly. The habit once acquired, you will find the practice most fascinating. You will invent new subjects or objects of inquiry, investigation, and thought, which in themselves will well repay you for your work and time. But never lose sight of the main point – the development of the power of voluntary attention.

In studying the methods of developing and training the voluntary attention, the student should remember that *any* exercise which develops the will, will result in developing the attention; and, likewise, any exercise which develops the voluntary attention will tend to strengthen the will. The will and attention are so closely bound together that what affects one also influences the other. This fact should be borne in mind, and the exercises and practices based upon it.

In practicing concentration of voluntary attention, it should be remembered that concentrating consists not only of *focusing* the attention upon a given object or subject, but also of the *shutting out* of impressions from other objects or subjects. Some authorities advise that the student endeavor to listen to one voice among many, or one instrument among the many of a band or orchestra. Others advise the practice of concentrating on the reading of a book in a room filled by persons engaged in

conversation, and similar exercises. Whatever aids in *narrowing the circle* of attention at a given moment tends to develop the power of voluntary attention.

The study of mathematics and logic is also held to be an excellent practice in concentration of voluntary attention, inasmuch as these studies require close concentration and attention. Attention is also developed by any study or practice which demands *analysis* of a whole into its parts, and then the *synthesis* or building up of a whole from its scattered parts. Each of the senses should play a part in the exercises, and in addition to this the mind should be trained to concentrate upon some one idea held within itself – some mental image or abstract idea existing independently of any object of immediate sense report.

CHAPTER VI

Perception

IT is a common mistake that we *perceive* everything that is reported to the mind by the senses. As a matter of fact we perceive but a very small portion of the reports of the senses. There are thousands of sights reported by our eyes, sounds reported by our ears, smells reported by our nostrils, and contacts reported by our nerves of touch, every day of our lives, but which are not *perceived* or *observed* by the mind. We perceive and observe only when the attention, reflex or voluntary, is directed to the report of the senses, and when the mind interprets the report. While perception depends upon the reports of the senses for its raw material, it depends entirely upon the application of the mind for its complete manifestation.

The student usually experiences great difficulty in distinguishing between *sensation* and *perception*. A sensation is a simple report of the senses, which is received in consciousness. Perception is the *thought* arising from the *feeling* of the sensation. Perception usually combines several sensations into one thought or percept. By sensation the mind *feels*; by perception it *knows* that it feels, and recognizes the object causing the sensation. Sensation merely brings a report from outside objects, while perception identifies the report with the object which caused it.

Perception *interprets* the reports of sensation. Sensation reports a flash of light from above; perception interprets the light as starlight, or moonlight, or sunlight, or as the flash of a meteor. Sensation reports a sharp, pricking, painful contact; perception interprets it as the prick of a pin. Sensation reports a red spot on a green background; perception interprets it as a berry on a bush.

Moreover, while we may perceive a simple single sensation, our perceptions are usually of a group of sensations. Perception is usually employed in grouping sensations and identifying them with the object or objects causing them. In its identification it draws upon whatever memory of past experiences the mind may possess. Memory, imagination, feeling, and thought are called into play, to some extent, in every clear perception. The infant has but feeble perception, but as it gains experience it begins to manifest perceptions and form percepts. Sensations resemble the letters of the alphabet, and perception the forming of words and sentences from the letters. Thus *c*, *a*, and *t* symbolize sensations, while the word "cat," formed from them, symbolizes the perception of the object.

It is held that all knowledge begins with sensation; that the mental history of the race or individual begins with its first sensation. But, while this is admitted, it must be remembered that sensation simply provides the simple, elementary, raw material of thought. The first process of *actual thought*, or knowledge, begins with perception. From our percepts all of our higher concepts and ideas are formed. Perception depends

upon association of the sensation with other sensations previously experienced; it is based upon experience. The greater the experience, the greater is the possibility of perception, all else being equal.

When perception begins, the mind loses sight of the sensation in itself, for it identifies it as a quality of the thing producing it. The sensation of light is thought of as a quality of the star; the pricking sensation is thought of as a quality of the pin or chestnut bur; the sensation of odor is thought of as a quality of the rose. In the case of the rose, the several sensations of sight, touch, and smell, in their impression of the qualities of color, shape, softness, and perfume, are grouped together in the percept of the complete object of the flower.

A *percept* is "that which is perceived; the object of the act of perception." The percept, of course, is a mental state corresponding with its outside object. It is a combination of several sensations which are regarded as the qualities of the outside object, to which are combined the memories of past experiences, ideas, feelings, and thoughts. A percept, then, while the simplest form of thought, is seen to be a mental state. The formation of a percept consists of three gradual stages, viz.: (1) The attention forms definite conscious sensations from indefinite nervous reports; (2) the mind interprets these definite conscious sensations and attributes them to the outside object causing them; (3) the related sensations are grouped together, their unity perceived, and they are regarded as qualities of the

outside object.

The plain distinction between a sensation and a percept may be fixed in the mind by remembering the following: *A sensation is a feeling; a percept is a simple thought identifying one or more sensations.* A sensation is merely the conscious recognition of an excitation of a nerve end; a percept results from a distinct mental process regarding the sensation.

Developing Perception

It is of the utmost importance that we develop and train our powers of perception. For our education depends very materially upon our perceptive power. What matters it to us if the outside world be filled with manifold objects, if we do not perceive them to exist? Upon perception depends the material of our mental world. Many persons go through the world without perceiving even the most obvious facts. Their eyes and ears are perfect instruments, their nerves convey accurate reports, but the perceptive faculties of the mind fail to observe and interpret the report of the senses. They see and hear distinctly, but the reports of the senses are not observed or noted by them; they mean nothing to them. One may see many things, and yet *observe* but few. It is not upon what we see or hear that our stock of knowledge depends, so much as it does upon what we perceive, notice, or observe.

Not only is one's stock of practical knowledge largely based

upon developed perception, but one's success also depends materially upon the same faculties. In business and professional life the successful man is usually he who has developed perceptive powers; he who has learned to perceive, observe, and note. The man who perceives and takes mental notes of what occurs in his world is the man who is apt to know things when such knowledge is needed. In this age of "book education" we find that the young people are not nearly so observant as are those children who had to depend upon the powers of perception for their knowledge. The young Arab or Indian will observe more in an hour than the civilized child will in a day. To live in a world of books tends, in many cases, to weaken the powers of observation and perception.

Perception may be developed by practice. Begin by taking notice of the things seen and heard in your usual walks. Keep wide open the eyes of the mind. Notice the faces of people, their walk, their characteristics. Look for interesting and odd things, and you will see them. Do not go through life in a daydream, but keep a sharp lookout for things of interest and value. The most familiar things will repay you for the time and work of examining them in detail, and the practice gained by such tasks will prove valuable in your development of perception.

An authority remarks that very few persons, even those living in the country, know whether a cow's ears are above, below, behind, or in front of her horns; nor whether cats descend trees head first or tail first. Very few persons can distinguish

between the leaves of the various kinds of familiar trees in their neighborhood. Comparatively few persons are able to describe the house in which they live, at least beyond the most general features – the details are unknown.

Houdin, the French conjurer, was able to pass by a shop window and perceive every article in it, and then repeat what he had seen. But he acquired this skill only by constant and gradual practice. He himself decried his skill and claimed that it was as nothing compared to that of the fashionable woman who can pass another woman on the street and "take in" her entire attire, from head to foot, at one glance, and "be able to describe not only the fashion and quality of the stuffs, but also say if the lace be real or only machine made." A former president of Yale is said to have been able to glance at a book and read a quarter of a page at one time.

Any study or occupation which requires *analysis* will develop the power of perception. Consequently, if we will analyze the things we see, resolving them into their parts or elements, we will likewise develop the perceptive faculties. It is a good exercise to examine some small object and endeavor to discover as many separate points of perception as possible, noting them on a sheet of paper. The most familiar object, if carefully examined, will yield rich returns.

If two persons will enter into a contest of this kind, the spirit of rivalry and competition will quicken the powers of observation. Those who have had the patience and perseverance

to systematically practice exercises of this kind, report that they notice a steady improvement from the very start. But even if one does not feel inclined to practice in this way, it will be found possible *to begin to take notice* of the details of things one sees, the expression of persons' faces, the details of their dress, their tone of voice, the quality of the goods we handle, and *the little things especially*. Perception, like attention, follows interest; but, likewise, interest may be created in things by observing their details, peculiarities, and characteristics.

The best knowledge gained by one is that resulting from his own personal perception. There is a nearness and trueness about that which one *knows* in this way which is lacking in that which he merely *believes* because he has read or heard it. One can make such knowledge a part of himself. Not only is one's knowledge dependent upon what he perceives, but his very character also results from the character of his percepts. The influence of environment is great – and what is environment but things perceived about one? It is not so much what lies outside of one, as what part of it gets *inside* of one by perception. By directing his attention to desirable objects, and perceiving as much of them as is possible, one really builds his own character at will.

The world needs good "perceivers" in all the walks of life. It finds a shortage of them, and is demanding them loudly, being willing to pay a good price for their services. The person who can voluntarily perceive and observe the details of any profession,

business, or trade will go far in that vocation. The education of children should take the faculty of perception into active consideration. The kindergarten has taken some steps in this direction, but there is much more to be done.

CHAPTER VII

Memory

PSYCHOLOGISTS class as "representative mental processes" those known as memory and imagination, respectively. The term "representation" is used in psychology to indicate the processes of re-presentation or presenting again to consciousness that which has formerly been presented to it but which afterward passed from its field. As Hamilton says: "The general capability of knowledge necessarily requires that, besides the power of evoking out of unconsciousness one portion of our retained knowledge in preference to another, we possess the faculty of representing in consciousness what is thus evoked."

Memory is the primary representative faculty or power of the mind. Imagination depends upon memory for its material, as we shall see when we consider that faculty. Every mental process which involves the remembrance, recollection, or representation of a sensation, perception, mental image, thought, or idea previously experienced must depend upon memory for its material. Memory is the great storehouse of the mind in which are placed the records of previous mental experiences. It is a part of the great subconscious field of mental activity, and the greater part of its work is performed below the plane of consciousness. It is only when its results are passed into the field of consciousness

that we are aware of its existence. We know memory only by its works. Of its nature we know but little, although certain of its principal laws and principles have been discovered.

It was formerly customary to class memory with the various faculties of the mind, but later psychology no longer so considers it. Memory is now regarded as a power of the general mind, manifesting in connection with every faculty of the mind. It is now regarded as belonging to the great subconscious field of mentation, and its explanation must be sought there. It is utterly unexplainable otherwise.

The importance of memory cannot be overestimated. Not only does a man's character and education depend chiefly upon it, but his very mental being is bound up with it. If there were no memory, man would never progress mentally beyond the mental state of the newborn babe. He would never be able to profit by experience. He would never be able to form clear perceptions. He would never be able to reason or form judgments. The processes of thought depend for material upon the memory of past experiences; this material lacking, there can be no thought.

Memory has two important general functions, viz.: (1) The *retention* of impressions and experiences; and (2) the *reproduction* of the impressions and experiences so retained.

It was formerly held that the memory retained only a portion of the impressions and experiences originally noted by it. But the present theory is that it retains every impression and experience which is noted by it. It is true that many

of these impressions are never reproduced in consciousness, but experiments tend to prove, nevertheless, that the records are still in the memory and that appropriate and sufficiently strong stimuli will bring them into the field of consciousness. The phenomena of somnambulism, dreams, hysteria, delirium, approach of death, etc., show that the subconscious mind has an immense accumulation of apparently forgotten facts, which unusual stimuli will serve to recall.

The power of the memory to reproduce the retained impressions and experiences is variously called remembrance, recollection, or memory. This power varies materially in various individuals, but it is an axiom of psychology that the memory of any person may be developed and trained by practice. The ability to recall depends to a great extent upon the clearness and depth of the original impression, which in turn depends upon the degree of attention given to it at the time of its occurrence. Recollection is also greatly aided by the law of association, or the principle whereby one mental fact is linked to another. The more facts to which a given fact is linked, the greater the ease by which it is recalled or remembered. Recollection is also greatly assisted by use and exercise. Like the fingers, the memory cells of the brain become expert and efficient by use and exercise, or stiff and inefficient by lack of the same.

In addition to the phases of retention and reproduction, there are two important phases of memory, viz.: (3) Recognition of the reproduced impression or experience; and (4) localization of

the impression, or its reference to a more or less definite time and place.

The recognition of the recalled impression is quite important. It is not enough that the impression be retained and recalled. If we are not able to recognize the recalled impression as having been experienced before, the recollection will be of but little use to us in our thought processes; the purposes of thought demand that we shall be able to identify the recalled impression with the original one. Recognition is really re-cognition – re-knowing. Recognition is akin to perception. The mind becomes conscious of the recalled impression just as it becomes conscious of the sensation. It then recognizes the relation of the recalled impression to the original one just as it realizes the relation of the sensation to its object.

The localization of the recalled and recognized impression is also important. Even if we recognize the recalled impression, it will be of comparatively little use to us unless we are able to locate it as having happened yesterday, last week, last month, last year, ten years ago, or at some time in the past; and as having happened in our office, house, or in such-and-such a place in the street, or in some distant place. Without the power of localization we should be unable to connect and associate the remembered fact with the time, place, and persons with which it should be placed to be of use and value to us in our thought processes.

Retention

The retention of a mental impression in the memory depends very materially upon the clearness and depth of the original impression. And this clearness and depth, as we have previously stated, depend upon the degree of attention bestowed upon the original impression. Attention, then, is the important factor in the forming and recording of impressions. The rule is: *Slight attention, faint record; marked attention, clear and deep record.* To fix this fact in the mind, the student may think of the retentive and reproductive phases of memory as a phonographic record. The receiving diaphragm of the phonograph represents the sense organs, and the recording needle represents the *attention*. The needle makes the record on the cylinder deep or faint according to the condition of the needle. A loud sound may be recorded but faintly, if the needle is not properly adjusted. And, further, it must be remembered that the strength of the reproduction depends almost entirely upon the clearness and depth of the original impression on the cylinder; as is the record, so is the reproduction. It will be well for the student to carry this symbol of the phonograph in his mind; it will aid him in developing his powers of memory.

In this connection we should remember that attention depends largely upon interest. Therefore we would naturally expect to find that we remember interesting things far more readily than

those which lack interest. This supposition is borne out in actual experience. This accounts for the fact that every one remembers a certain class of things better than he does others. One remembers faces, another dates, another spoken conversation, another written words, and so on. It will be found, as a rule, that each person is interested in the class of things which he most easily remembers. The artist easily remembers faces and details of faces, or scenery and details thereof. The musician easily recalls passages or bars of music, often of a most complicated nature. The speculator easily recalls the quotations of his favorite stocks. The racing man recalls without difficulty the "odds" posted on a certain horse on a certain day, or the details of a race which was run many years ago. The moral is: *Arouse and induce an interest in the things which you wish to remember.* This interest may be aroused by studying the things in question, as we have suggested in a preceding chapter.

Visualization in Memory

Many of the best authorities hold that original impressions may be made clear and deep, and the process of reproduction accordingly rendered more efficient, by the practice of *visualizing* the thing to be remembered. By visualizing is meant the formation of a *mental image* of the thing in the imagination. If you wish to remember the appearance of anything, look at it closely, with attention, and then turning away from it endeavor

to reproduce its appearance as a mental picture in the mind. If this is done, a particularly clear impression will be made in the memory, and when you recall the thing you will find that you will also recall the clear mental image of it. Of course the greater the number of details observed and included in the original mental image, the greater the remembered detail.

Perception in Memory

Not only is attention necessary in forming clear memory records, but careful perception is also important. Without clear perception there is a lack of detail in the retained record, and the element of association is lacking. It is not enough to merely remember the thing itself; we should also remember *what* it is, and all about it. The practice of the methods of developing perception, given in a preceding lesson, will tend to develop and train the retentive, reproductive, recognitive, and locative powers of the memory. The rule is: *The greater the degree of perception accorded a thing, the greater the detail of the retained impression, and the greater the ease of the recollection.*

Understanding and Memory

Another important point in acquiring impressions in memory is this: *That the better the understanding of the subject or*

object, the clearer the impressions regarding it, and the clearer the recollection of it. This fact is proved by experiment and experience. A subject which will be remembered only with difficulty under ordinary circumstances will be easily remembered if it is fully explained to the person, and accompanied by a few familiar illustrations or examples. It is very difficult to remember a meaningless string of words, while a sentence which conveys a clear meaning may be memorized easily. If we understand *what a thing is for*, its uses and employment, we remember it far more easily than if we lack this understanding. Elbringhaus, who conducted a number of experiments along this line, reports that he could memorize a stanza of poetry in about one tenth the time required to memorize the same amount of nonsense syllables. Gordy states that he once asked a capable student of the Johns Hopkins University to give him an account of a lecture to which he had just listened. "I cannot do it," replied the student; "it was not logical." The rule is: *The more one knows about a certain thing, the more easily is that thing remembered.* This is a point worth noting.

CHAPTER VIII

Memory – Continued

THE subject of memory cannot be touched upon intelligently without a consideration of the Law of Association, one of the important psychological principles.

The Law of Association

What is known in psychology as the Law of Association is based on the fact that *no idea exists in the mind except in association with other ideas*. This is not generally recognized, and the majority of persons will dispute the law at first thought. But the existence and appearance of ideas in the mind are governed by a mental law as invariable and constant as the physical law of gravitation. Every idea has associations with other ideas. Ideas travel in groups, and one group is associated with another group, and so on, until in the end every idea in one's mind is associated directly or indirectly with every other idea. Theoretically, at least, it would be possible to begin with one idea in the mind of a person, and then gradually unwind his entire stock of ideas like the yarn on the ball. Our thoughts proceed according to this law. We sit down in a "brown study" and proceed from one subject to another, until we are unable to remember any connection

between the first thought and the last. But each step of the reverie was connected with the one preceding and the one succeeding it. It is interesting to trace back these connections. Poe based one of his celebrated detective stories on this law. The reverie may be broken into by a sudden impression from outside, and we will then proceed from that impression, connecting it with something else already in our experience, and starting a new chain of sequence.

Often we fail to trace the associations governing our ideas, but the chain is there nevertheless. One may think of a past scene or experience without any apparent cause. A little thought will show that something seen, or a few notes of a song floating to the ears, or the fragrance of a flower, has supplied the connecting link between the past and the present. A suggestion of mignonette will recall some past event in which the perfume played a part; some one's handkerchief, perhaps, carried the same odor. Or an old familiar tune reminds one of some one, something, or some place in the past. A familiar feature in the countenance of a passer-by will start one thinking of some one else who had that kind of a mouth, that shaped nose, or that expression of the eye – and away he will be off in a sequence of remembered experiences. Often the starting idea, or the connecting links, may appear but dimly in consciousness; but rest assured they are always there. In fact, we frequently accept this law, unconsciously and without realizing its actual existence. For instance, one makes a remark, and at once we wonder, "How did he come to think of that?"

and, if we are shrewd, we may discover what was in his mind before he spoke.

There are two general classes of association of ideas in memory, viz.: (1) Association of contiguity, and (2) logical association.

Association of contiguity is that form of association depending upon the previous association in time or space of ideas which have been impressed on the mind. For instance, if you met Mr. and Mrs. Wetterhorn and were introduced to them one after the other, thereafter you will naturally remember Mr. W. when you think of Mrs. W., and vice versa. You will naturally remember Napoleon when you think of Wellington, or Benedict Arnold when you think of Major André, for the same reason. You will also naturally remember *b* and *c* when you think of *a*. Likewise, you will think of abstract time when you think of abstract space, of thunder when you think of lightning, of colic when you recall green apples, of love making and moonlight nights when you think of college days. In the same way we remember things which occurred just before or just after the event in our mind at the moment; of things near in space to the thing of which we are thinking.

Logical association depends upon the relation of likeness or difference between several things thought of. Things thus associated may have never come into the mind at the same previous time, nor are they necessarily connected in time and space. One may think of a book, and then proceed by association

to think of another book by the same author, or of another author treating of the same subject. Or he may think of a book directly opposed to the first, the relation of distinct difference causing the associated idea. Logical association depends upon *inner relations*, and not upon the outer relations of time and space. This *innerness* of relation between things not connected in space or time is discovered only by experience and education. The educated man realizes many points of relationship between things that are thought by the uneducated man to be totally unrelated. Wisdom and knowledge consist largely in the recognition of relations between things.

Association in Memory

It follows from a consideration of the Law of Association that when one wishes to impress a thing upon the memory he should, as an authority says, "Multiply associations; entangle the fact you wish to remember in a net of as many associations as possible, especially those that are logical." Hence the advice to place your facts in groups and classes in the memory. As Blackie says: "Nothing helps the mind so much as order and classification. Classes are always few, individuals many; to know the class well is to know what is most essential in the character of the individual, and what burdens the memory least to retain."

Repetition in Memory

Another important principle of memory is that the impressions acquire depth and clearness by repetition. Repeat a line of poetry once, and you may remember it; repeat it again, and your chances of remembering it are greatly increased; repeat it a sufficient number of times, and you cannot escape remembering it. The illustration of the phonograph record will help you to understand the reason of this. The rule is: *Constant repetition deepens memory impressions; frequent reviewing and recalling what has been memorized tends to keep the records clear and clean, beside deepening the impression at each review.*

General Rules of Memory

The following general rules will be of service to the student who wishes to develop his memory: —

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