

Perceptive Power

or

The Art of Observation

By W. W. ATKINSON AND EDWARD E. BEALS

"As we observe more accurately, we perceive more clearly, think more truly, remember more correctly, imagine more effectively and judge more soundly."

-Maudsley.

ROBERT COLLIER BOOK CORP.

531 Wyckoff Avenue
RAMSEY, N. J. 07446

PERCEPTIVE POWER

COPYRIGHT MCMXXII—EDWARD E. BEALS

COPYRIGHT MCMLXXV—ROBERT COLLIER BOOK CORPORATION

REPRINTED 1975

Printed in the United States of America

CONTENTS

I. Your World of Experience.....	5
II. Consciousness and Sensation.....	18
III. The Mechanism of the Senses.....	38
IV. Perception and Discernment.....	55
V. Observation and Experiment.....	82
VI. Cultivating Observation	106
VII. The Science of Apperception.....	119
VIII. The Power of Attention.....	137
IX. Mental Concentration.....	154

PERCEPTIVE POWER

I

YOUR WORLD OF EXPERIENCE

In this book we shall direct your attention to a very important phase or form of your Personal Power. Inasmuch as your Personal Power is a phase, form, aspect, or mode of the expression and manifestation of that POWER from which all Power directly or indirectly proceeds, it follows that the particular form of Power to which we are now proceeding to call your attention is one of the manifold manifestations and expressions of that All-Power of the universe.

The particular phase or form of Personal Power which constitutes the subject matter of the present book is that known as Perceptive Power—the power by means of which you perceive, discern, observe, distinguish, and know the things of the outside world by means of the senses and the mental processes employing the raw material furnished by the sensory apparatus. By means of Perceptive Power you see, hear, feel the impressions received from the outside world. By means of Perceptive Power you are able not only to know that out-

side things exist, but also to apprehend them by the intellect, to discern differences between them, and to distinguish one class of things from others.

Your "percepts," i.e., the products of your Perception, furnish the elemental material from which all your concepts, notions, and ideas concerning things are derived, constituted, composed, or made up. Your percepts are the units with which memory, imagination, thought, reason, and judgment build their structures. All mental processes begin with Perception, and depend upon it for their material.

* * * *

Around and about you is a wonderful World of Things, infinite and inexhaustible in its contents. But within this world is a smaller and far more restricted world; a finite world consisting of the scattered items of material which you have abstracted from that outside world by means of your Perceptive Power. No matter how great may be that outside world, this inner world represents all that you have perceived and observed of that greater realm. The size, the extent, the limits of that inner world are determined entirely by the degree of Perceptive Power which you have employed in the task of building up this little mental kingdom within yourself. You are its creator, its ruler, its architect, its builder—the maker of its

boundaries. It is as large or as small, as great or as insignificant, as you determine it to be—no more, no less.

All that you know, have ever known, or ever will know of the great outside world is comprised in that particular mirrored representation or reflection of portions of it which constitutes your individual World of Experience. By "Experience" is meant: "The practical knowledge gained by observation or trial; the acquaintance acquired by personal observation or experiment."

Your World of Experience is your world of actual perception, observation and experiment. Whatever the outside world may or may not be in itself, it is certain that all you know of it is that knowledge gained by your direct or indirect experience and observation of it. This knowledge is originally mirrored upon your mind by Perception—the rest is a matter of rational induction or deduction consisting of inference based upon this original material of experience and observation.

Your World of Experience is your inner world. It is located in your mentality—on the conscious or subconscious planes or fields of your mental being. It is your own—your very own. No other person may enter into it, or dwell within its borders—it is sacred to yourself. It is different from the corresponding in-

ner worlds of all other persons—no two persons possess identical Worlds of Experience.

You, Yourself, have created this unique World of Experience which is your very own. You, Yourself, are still creating it, and will continue to create it so long as you live. You create it with that wonderful tool or instrument which you call the Power of Perception that is, you so create its elementary materials which are then "worked up" and built up into more complex forms by the other faculties of your mind. You are the Creator of this World of Experience. If you are wise, you will perform your creative work so thoroughly and efficiently that in the end you will be justified in "looking upon it and calling it good."

Careful analysis of your mental operations, experience, and consciousness will always reveal to you the important fact that you, Yourself, are always the beginning, always the centre, always the end of your World of Experience. From that point of beginning, from that central point, and toward that end, you have proceeded to the creation of your World of Experience. You build from the centre, outward; your horizon of experience constantly expands as your perceptive vision increases and takes in a greater area of the outside world. Through the glasses and tubes of the telescopes and the microscopes of the senses, you perceive and observe the things of the outside world, and rep-

resent them in your own World of Experience which abides within yourself; but it is you, Yourself, who are always at the observing end of these instruments.

We now invite you to consider the processes by means of which you have created this unique World of Experience—this inner world which is your very own.

* * * *

Plato well said that the Ego is "imprisoned in the body like an oyster in his shell." You, Yourself, cannot get outside of this shell—at least while you are on this particular plane of existence. You cannot escape from its confining limits and thus secure immediate contact with the outside world and so acquire direct knowledge of its facts and events. On the contrary, you are entirely dependent upon certain channels of communication with that outside world for your reports from it; these reports are then converted by you into the finished material with which you create that mirrored world of representation—your World of Experience. If these channels of communication had never been opened to you, then you would never have been able to create your World of Experience—there would exist no such World of Experience for you. In such case, the fact of your own existence would constitute your only item of experience and knowledge—your oyster-shell would never have

opened to admit an inflow of the waters in which it is immersed, and you would be unaware even that such waters existed.

All that you know, ever have known, or ever can know of the outside world becomes known to you by means of the reports furnished by the channels of communication with the outside world—the channels of the senses. While your higher mental faculties may select from these reports such as they choose; may examine, combine and arrange them in logical classification; may draw inferences from them so as to learn the unknown from the known; may store them in memory, and rearrange them in the form of mental pictures of the imagination; yet, at the last, you will find that in these reports of the senses you have your only possible "raw materials of knowledge." Upon the strength, clearness, and truth of these reports, as well as upon their number and variety, depend the particular degree and character of knowledge and experience possible of acquirement by you.

The "I AM I," which is Yourself, is constantly receiving a stream of messages and experiences from the outside world. It is well within the facts of the case to compare that "I AM I," which is Yourself, to the managing editor of a great metropolitan newspaper, seated at his desk, receiving from all parts of the world a multitude of messages of all kinds

which give him the news of the day from which he makes up the next issue of his paper. From this point of the compass, and from that one, pour in the messages—he receives them all.

Some of these messages he discards as non-essential and uninteresting; some he bids his assistants to abridge, discarding a portion while retaining the rest; some he accepts in their entirety; to others he adds previously received details; some are headlined by him in accordance with the traditional policy of his journal; others he bids his editorial helpers to employ as premises from which to draw inferences to be expressed in the editorial columns; others are condensed into brief items for the general summary of the news of the day. He is not actually in the outside world in which these events are happening—he remains seated at his desk, receiving the messages from that outside world—and from these messages he is creating and building up a mirrored world—a representative, symbolic world which takes form in the printed newspaper.

You are in a position very similar to that of this managing editor. You, Yourself,—the “I AM I” element of yourself—are safely sheltered in the inner chamber of your being. Your “I AM I” is not present in the outside world—it is present only at the centre of your consciousness, your inner world which is a mirrored representation of the world external to

itself. All that your "I AM I" knows of that outer world it knows by reason of the sensory messages received from it.

This thought may never have occurred to you, but it is a fact that the only world you really know is this inner World of Experience which you have created for yourself from the reports received through the sense-channels from the actual outer world. If your senses are normal and acute, your inner World of Experience will represent the result of your possession of such sense-qualities; if your senses are deficient or lacking in any respect, or if they are dull and untrained, then your inner World of Experience will as truly represent such conditions.

You see, then, that your World of Experience is not a complete representation of the outside world at all; it only represents such portions of that outside world which, in the first place, have been reported to you by your sense-impressions; and, in the second place, only such portions of these reports which have actually been accepted by you in Perception—all the rest is lacking.

Your World of Experience, then, is merely a symbolic picture of certain aspects of the outside world which have been perceived by you and taken into your inner world—it is a work of art, rather than a work of Nature: and you are the artist who has created that work.

Moreover, your World of Experience is not permanent; it is constantly receiving finishing touches, improvements, alterations, and modifications at your hands, resulting from new reports reaching you. You, as you grow and change, are working incessantly (and often involuntarily) at the task of creating your World of Experience.

It is a matter of the soundest philosophical and scientific teaching that you, Yourself, have created, are now creating, and so long as you live will continue to create this inner World of Experience which constitutes "the world" to you. You create this world from the "raw material" furnished by Sensation, accepted and interpreted by Perception; your processes of classification, inference, induction and deduction; and your creation of ideas, concepts, and mental images from these "worked up" materials. You, Yourself, and none other but Yourself, are the creator of this inner world which is "all the world" to you—the only world that you really know, at the last analysis. This is a statement of tremendous importance to you, if rightly understood; and you should not lightly pass it by—you should carefully consider and assimilate it.

If you have any doubts concerning the truth of the above statements, and should feel desirous of further proof of them, you will find such proof at hand and in abundance. You

need go no further than to consider how different the same outside world appears to different individuals observing it from the same place, at the same time. Each individual will be found to have received messages from the same outside world, under the same outer circumstances, but under different inner conditions—and each individual will have formed a different conception of that same outside world.

The same outside world is present in each case, but the respective inner Worlds of Experience of the several individuals will be found to differ very materially from each other—no two will be exactly the same, and an almost incredible diversity and variety of perceptions have resulted. This fact of diversity and variety does not arise from any essential conditions of the outer world, you must remember; it is caused solely by the differences in the receiving instruments of Sensation, the degrees of power and training of the faculty of Perception, and by the use made of this material by the higher powers of the mind, on the part of the respective several individuals. The difference comes from within—not from without.

But here we wish to impress upon your mind a very important fact, namely, the fact that the powers of Perception, Observation and Attention—those powers which by their varying degrees of perfection cause the differences to

which we have directed your attention—are capable of training, development and cultivation; they respond readily to the proper methods employed for such purposes, and pay large returns for the investment of time and patience bestowed upon such tasks. It is a mistake to imagine that such powers are possible only to those who are "born with it"; it is an error to regard them as akin to the shape of the nose which is born with one, and which never can be altered or improved or exchanged for another more in accord with one's wishes. On the contrary, there are no mental powers which respond more readily to training, development and cultivation than do these very ones now under consideration by us.

By means of approved scientific methods, not only weak faculties of this class may be developed into strong ones—inefficient ones into efficient ones—but even those which are considered reasonably strong and efficient may be made still stronger and still more efficient. Very few persons have done more than merely to begin to employ the full inherent powers of these faculties. Most of us are content if we find ourselves in the class of "the average" in such respects; we little dream of the wonderful possibilities ahead of us in this direction.

Here and there, however, are found thoughtful persons who are advocating the employment of methods of cultivating these faculties

in the young, as an important part of their education. These wise men and women very properly hold that such education would enable the child to learn by Observation and the scientific employment of the powers of Attention, far more effectively than by simply committing to memory the mass of "book knowledge" which constitutes so large a part of the average modern education.

That such training, development, and cultivation is well worth while to you will be apparent when you stop to consider that through these mental faculties in question you receive every constituent of your entire World of Experience; that from such raw materials you obtain the only possible basis for your thoughts, your feelings, and your actions. If you seek a life rich in experience, in knowledge, in effective action, and in the highest emotional feeling, you will do well to begin here at the stage of the acquirement of these "raw materials of knowledge," which are also the raw materials of all conscious experience and its expression. These raw materials are the bricks, the stone, the timbers from which the structures of our World of Experience must be constructed. Moreover, they constitute also the ground upon which these structures are erected, the background, the scenery—the solid earth underfoot, and the blue skies above that World of Experience.

You are a creator of this world within—whether or not you desire to be. You are creating—you must create—a World of Experience of some kind or character, and some degree of efficiency and merit. You cannot avoid the task. This being so, can you escape the conviction that it is your duty toward yourself, toward your fellows, toward the POWER which brought you into being, to build that world as well, as effectively, as beautifully, and as magnificently as lies within you so to do? It has well been said that "By their works they shall be known." This World of Experience is one of the greatest of your "works"—it is the work upon which much of your other "works" depend. Therefore, it is the standard and measure by which you are to be judged—by others as well as by yourself. By it you shall be "known"—see to it that you are "known" well and favorably.

II.

CONSCIOUSNESS AND SENSATION

Consciousness is one of the greatest mysteries of your being. You know perfectly well what it is to experience consciousness—but you know this largely by reason of its difference from unconsciousness. You find it almost impossible to define it satisfactorily, though you have not the slightest difficulty in distinguishing it from unconsciousness. It is unique; it is different from anything else of which you have knowledge or experience—this because it is only by means of it that you have any knowledge or experience of anything else. There are no other terms synonymous with it; if you seek to define it at all, you must employ the terms of consciousness in order to attempt the definition.

The dictionaries help us but little—for they, too, must use the terms of consciousness in order to state the definition, and this is very unsatisfactory. The following examples of standard definitions of the term will illustrate this fact: "Consciousness is the knowledge of one's own existence, sensations, mental operations, etc." "Consciousness is the state of being aware of one's own existence, his condition,

CONSCIOUSNESS AND SENSATION 19

his sensations, his thoughts, feelings, and actions." "Consciousness is that indefinable characteristic of mental states which causes us to be aware of them."

From the position of strict logical thought, Consciousness is incapable of definition, because there is nothing else except its negation (i. e., unconsciousness) with which to compare it. It resembles nothing else; and a logical definition requires the terms of something else with which to define logically any certain thing. The only way, then, to understand Consciousness is to experience it. Fortunately, all of us have had such experience—otherwise we should never be able to understand what is meant by the term. The least objectionable term to employ in an attempt to define it, perhaps, is the term "awareness"—but, at the last, you perceive that you cannot be "aware" of anything unless you are "conscious" of it in at least some degree.

When we pass from the realm of psychology to that of physiology, we are no more successful in our efforts to explain Consciousness. We discover that the presence of nervous tissue is necessary in order to experience Consciousness—but whether that nervous tissue is the cause of Consciousness, or is merely the machinery by which the latter is manifested, scientists are unable to decide to their perfect satisfaction. Even Huxley with his giant intellect was com-

pelled to report that: "How it is that anything so remarkable as 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." It is at least somewhat comforting to realize that one's own ignorance on this point is shared by even the greatest thinkers of past and present.

It must not be supposed that you are conscious of every impression made upon your mind—of every sensation reaching you through the channels of the senses. Attention decides for you which of such reports from the outside world rise to the plane of consciousness—and to what degree, if any, they awaken your conscious perception of them. There are countless sensations reaching you through your sense-organs of which you are not even dimly conscious, and which you do not perceive—here Attention performs its work of selection for you, it, itself, being influenced by other mental states. Attention is that wonderful mental power or faculty which may be described as either the "focusing of consciousness," or else as "detention in consciousness."

Likewise, it is true that your mind is at no time conscious of all of its contents—its accumulated experiences. In fact, at any one time you are conscious of but a very small portion of the contents of your mind; the remainder slumbers quietly in the realms of the subcon-

scious planes of your mental empire, from whence they may be called forth when needed by memory or imagination. As your World of Experience enlarges, there is a constantly increasing store of these accumulated experiences placed for safe keeping in the subconscious regions of your mind; they are preserved there awaiting their recall into consciousness by the act of recollection or that of imagination.

Finally, it is an error to suppose that you are directly conscious of the objects of the outside world. Your "consciousness" does not come in direct contact with those outside objects. You are conscious merely of certain mental states or conditions within you, which in turn have arisen by reason of the excitation of certain nervous tissue associated with your "consciousing" faculties (whatever these may be at the last)—this excitation being caused by the sensory impulses which pass to the nervous tissues over the sensory nerves, the outer ends of which receive the impressions arising from their contact with outside forces.

For instance, when you "see" the pages of this book, you are merely perceiving the existence of these mental states arising from the excitation of certain nervous tissue connected with your optic nerves. The optic nerves report the contact with certain vibrations of the light-waves reflected from the surface of the

page, and which thus carry the image, shadow, or picture of the printed page to the nervous tissue of the optical apparatus, just as they would carry them to the photographic plate or film in the camera.

There is a distinction here, however,—one which makes “all the difference in the world.” While both the photographic plate and the retina of your eye alike “register” the light-waves and thus produce the image, picture, or “shadow” of the outside thing, nevertheless the photographic plate is “unconscious” of it,—it has nothing with which to do the “consciousing”; on the contrary, your mind is “conscious” of it, for it has something which “consciences” and “becomes aware” of such reports. The photographic plate neither “knows” nor “knows that it knows”; but your mind not only “knows” the report, but your “I AM I” also “knows” that your mind knows—you not only “know” but you “know that you know.” This is more than a play on words—it represents an important fact of conscious experience.

That there is “something” in the outside world—the world external to our minds—we know; even the quite clever metaphysical reasoning of certain extreme subjective idealists fails to shake our fundamental belief that “something exists” outside of our own mental world. But just what that “something” really IS, philosophers inform us we shall never

know—they tell us that we “have nothing to know it with.” All that we can directly know is our mental pictures, representations, or photographs of that “something outside,” which, as you have seen are transmitted through our sense-apparatus. Profound philosophers hold that naught but an Omniscient Mind possibly can know the outside world “in itself”; what it is “in itself” equals that which it is known to be by and to such Infinite Mind.

Our World of Experience, then, is but the mind’s symbolic representation of the “something outside”—of that Universe as it is “in itself,” and as an Omniscient Mind does, or would, know it to be in its ultimate verity. At the best, our mental picture of it is but symbolic and approximate—its degree of verity depends upon the effectiveness and efficiency of our mental photography, and this, in turn, depends upon the quality and efficient employment of our mental photographic apparatus. This has led certain schools of philosophy and psychology to assert as an axiom the following statement: “The total content of consciousness is of sense-origin; the higher activities of mind, as well as the lower, are results left by the impressions originally made upon the mind by external objects, through sensations; our sensations are our elementary modes of being conscious, our elementary elements of experi-

ence, which are conditioned upon some of our organs of sense."

Psychology informs us that the "redness" of the brick, or of the rose, is not in those objects themselves, but is within ourselves. It says that: "The 'redness,' as you call it, is a question of relation between your optic nerve and the light-waves which it is unable to absorb. In a lesser light, the 'redness' will be purple; at night, it will be black; a very little deviation from normal vision on your part, (i. e., 'color blindness') would make it green." Ziehen speaks of, "The obvious error of former centuries, first refuted by Locke, though still shared by naive thought today, i. e., that the objects about us are 'colored,' 'warm,' 'cold,' etc. The nervous apparatus selects only certain motions of matter or of ether, which they transform into that form of nerve-excitation with which they are familiar; it is only this nerve-excitation which we perceive as 'red,' 'warm' or 'hard'."

Gordy says: "The colors, and sounds, and odors that seem to fill the scene before us are only mental facts—things which like the joys and sorrows, the hopes and fears, that make up our conscious life, exist in our own minds and nowhere else. When we follow in imagination the vibrations of air radiating from the singing birds in every direction, and the waves of light radiating from the leaves of the trees,

we are forced to conclude that leaves, songs of birds, blossoms, flowers are only **exciting causes of effects** which appear in our conscious life as sensations. The colors and sounds that we think of in ordinary life—that thrust themselves upon our notice at every moment—are not the undulations of ether and vibrations of air (things that science has learned about only after centuries of investigation), but are the colors and sounds of **experience**—sensations. Before we began our investigations, we thought that the odors, sounds, and colors of which we have direct knowledge, are physical facts, external to the mind; but we have learned that these supposed physical facts are not physical facts at all. We must say either that the world of sounds, and tastes, and odors, and colors, is purely subjective, in the sense of consisting of our own mental facts, or else that the conclusions reached by us are wrong."

But we caution you here not to make the mistake common to many who fail to realize that "a little learning is a dangerous thing," and who rush to the conclusion that the "outside somethings" have no existence whatever outside of our sensations concerning them. Even some brilliant philosophers have at times made this mistake—it has well been said of this extreme idealistic theory that "though it has never been logically disproved, yet no one really has ever believed and acted upon it; even

the metaphysicians asserting that "the world is our dream" have failed to act upon that hypothesis. Something in us tells us that "something is there!" Reason asserts itself; sanity is preserved.

The philosophers of more evenly balanced philosophical temper have sought and found the Golden Mean, from which position they assert that though we can never know the "something outside" as it is "in itself"—as Omniscient Mind does or would know it—and though we can know only our more or less indistinct, distorted, and imperfect symbolic pictures, shadows, or photographs of it, nevertheless common-sense and practical reason assures us that "something is there"—at the least, certain "exciting forces" which produce in us the exciting effects called "sensations."

In steering clear of the Scylla of the naive beliefs of "the man on the street" (who holds that the substance of our sensations is "in the things themselves," rather than in us), we must be equally careful to avoid the Charybdis of those schools of Subjective Idealism which go so far as to hold that "the things themselves" have no existence in themselves, but exist solely in our minds. Here, as elsewhere, beware of the extremes—seek the middle channel, the "middle of the road"; strive to attain and maintain the Golden Mean. "Something is there,"

CONSCIOUSNESS AND SENSATION 27

and we are "conscious" of it—though our consciousness is indirect.

The Senses

You have seen that in the reports of Sensation you have the "raw material of knowledge." Sensation is an elementary state of consciousness resulting from nerve action. As you have seen, when the retina is stimulated by light, the irritation is carried by the optic nerve to the nervous tissue of the brain, excitation of that tissue arises, consciousness results, and Sensation occurs. You also have seen that just "why" this happens is unknown to mankind—but this is "how" it happens. The same rule also applies to sensations arising from the senses of Hearing, Taste, Smell, or Touch—from any or all of the phases of the elementary sense of Feeling: for, know you, that all the senses are but modifications of the original sense of Feeling.

It is probable that you do not as yet fully realize the tremendous importance of the senses to you in the creation of your World of Experience; or how dependent you are upon these sense-reports from that outside world which the "I" cannot contact directly or without the intermediary of the sensory nervous system. Perhaps you will appreciate this fact more fully if you will try to imagine what your consciousness would be had you been born without any of the five senses. Make the ex-

periment: give your imagination a little exercise.

The use of your imagination in this way will reveal to you the fact that even if you had been born with the most perfectly formed brain, composed of the finest grade of brain-matter, and with the advantages of the best mental inheritance in the way of natural capacity for mental activity, you would be absolutely devoid of any conscious World of Experience had all the natural and normal inlets of the senses remained closed by reason of physical imperfection. In such case your mind would remain as dormant as a seed buried in soil unfitted to produce its germination; you would be cut off from all that communication with the outer world from which all of your original experiences must come, and from which you receive all the knowledge which constitutes your World of Experience. You would not know, nor could you know, anything whatsoever concerning what exists in that outer world, or what events are occurring there. Your only knowledge would be that of your self-existence, and even that you would not be able to express in words or in the symbols of thought.

Professor R. P. Halleck has strikingly pictured the condition of a person born with this frightful handicap, as follows: "Suppose a child of intelligent parents were ushered into the world without a nerve leading from his

CONSCIOUSNESS AND SENSATION 29

otherwise perfect brain to any portion of his body; with no optic nerve to transmit the glorious sensations from the eye; no auditory nerve to convey the touch of a hand; no olfactory nerve to rouse the brain with the delicate aroma from the orchards and the wild flowers in spring; no gustatory, thermal, or muscular nerves. Could such a child live, as the years rolled on, the books of Shakespeare and of Milton would be opened in vain before the child's eyes. The wisest men might talk to him with utmost eloquence, all to no purpose. Nature could not whisper one of her inspiring truths into his deaf ear, could not light up that dark mind with a picture of the rainbow or of a human face. No matter how perfect might be the child's brain and his inherited capacity for mental activities, his faculties would remain for this life shrouded in Egyptian darkness. Perception could give memory nothing to retain, and thought could not weave her matchless fabrics without materials."

The above is no mere fanciful picture; on the contrary, it is a statement of the position of science and philosophy concerning the dependence of the mind upon the avenues of sensation for the materials of the higher and more complex mental processes. The mind is as much dependent upon the material of sensations for its sustenance, as is the body dependent upon food for its nourishment. Both mind

and body require for their respective activities the material from the outside world; this supplied, both mind and body are able to convert, transform and transmute this material into more complex forms of activity and substance.

A celebrated philosopher and psychologist once asked his students to consider the fanciful possibilities arising from a case in which the nerves of sight should be attached to the areas of the brain concerned with the office of hearing: and those of hearing, with the areas of sight: the faculties of the receiving apparatus thus exchanging duties. In such case, one would hear all colors and would see all sounds. One would thus perceive the sounds of flowers and paintings, and would see the beauties of the musical notes of the great composers. In such a case, the outer world would still be sending him the same messages—but he would be interpreting them differently.

A writer commenting on this possibility has said: "Beauty would still be ours, though speaking another tongue. The bird's song would then strike our retina as a pageant of colors; we would see all the magical tones of the wind; hear as a great fugue the repeated and harmonized greens of the forest, the cadences of stormy skies." This illustration, of course, is pure artistic fancy—but the result is logically pictured; it will serve to illustrate how de-

pendent we are upon the mechanism of consciousness in its phase of sensation.

Psychologists have also pointed out the fact that the World of Experience of the individual is decreased by the absence of the power of normal functioning in any one or more of his several senses; and that this World of Experience would be increased if he were able to evolve additional senses. This is more than mere speculation, for science shows us that the sense of Feeling was the elementary sense, from which all the other senses have been evolved; and that is well within the possibilities of evolution that additional senses may be unfolded in the course of the evolutionary development of living forms.

In order to give you a personal illustration of your dependence upon your Senses for the character and extent of your World of Experience, we ask you here to use your imagination once more. Begin by imagining what the outside world would mean to you if you were merely a one-sense individual—possessed merely of the Sense of Touch. Your entire field of knowledge would be limited to your idea of how things feel to your Touch—it would be a very small World of Experience, would it not? Then, imagine yourself as evolving the senses of Taste and Smell—those half-brothers in the Sense-world. Can you not see how your world would enlarge, and how

its character would change? Then imagine yourself as evolving the Sense of Hearing; and realize the wonderful addition to your World of Experience that such would furnish. And, then, last of all, imagine that some wonderful day your Sense of Sight would suddenly unfold into activity—and the great World of Sight Experience would unfold before your consciousness. Can you not see by this how materially your World of Experience depends upon Sensation—how each new sense adds to it, and each lacking sense detracts and subtracts from it? Your imagination employed in this flight has taught you a valuable lesson—and a true one!

In the same way, you will see that the possession of an additional sense—a sense as yet not evolved by man—would enable you to know the world in an entirely new way. There are undoubtedly properties in material objects of which you remain in total ignorance solely by reason of the absence of appropriate senses through which to become aware of them. Even as it is, you are able to hear only a small portion of the vibrations of sound, or to see only a small portion of the waves of light. Instruments invented by science are able to catch and record sound-waves and light-waves which your senses fail to register. Only a very small proportion of the outer world is really revealed to you through your senses; this because of

the fact that your sense-instruments are not capable of registering them. A further evolution of your senses would enable you to become aware of an entirely new world of things which exists on all sides of you, but which form no part of your inner World of Experience.

The microscope, the telescope and other optical instruments show what your normal sight would perceive were your optical mechanism of a higher order. Delicate apparatus reveal sounds which your normal hearing would perceive were your auditory organs of a finer order. Delicate photographic plates register light-waves which your eyes perceive not, but which would become apparent to you were your optical mechanism more perfect. These "supplementary senses," as these scientific appliances have been called, reveal to you the presence of objects and qualities of objects which are unknown to you when you depend upon your normal sense organs. Moreover, certain of the lower animals have a higher development of certain senses than has man; in fact, some careful thinkers even believe that certain of the lower animals possess senses lacking in man. The far-seeing eye of the eagle and the hawk perceive distant objects invisible to man; most of the lower animals have preserved that fine and delicate sense of smell which man has lost by disuse in the course of

his rise to civilization; and some of the insects undoubtedly hear sounds below the register of the human ear.

An additional sense undoubtedly would open up a new world to you. Fancy the result of the development in you of a new sense which would register the waves of electricity or magnetism. In such case you would be able to "see" or "hear" what is going on at great distances—even on the other side of the globe; fancy may even picture you possessed of a sense enabling you to become aware of the waves of wireless telegraphy. A sense capable of registering the "X Ray" waves would enable you to see through a stone wall, and to perceive what is going on inside of a brick house or on the other side of a closed door. A similar extension of your sense of sight might enable you to see what is happening on Mars; or to perceive the life of the microscopic world in the drop of water. If you had appropriate sense instruments, you might even catch the vibrations of the thought-activities of others—a "telepathic sense" certainly would be most interesting and instructive!

Scientific imagination has pictured worlds in which living creatures possess seven, nine, fifteen, or more senses—and this is possible, theoretically, for seventeen senses would be really no more wonderful than are five, though

they would seem so to five-sense creatures. Listen to these statements made by careful thinkers. Kay says: "An additional sense might probably make revelations to us no less surprising than the sense of sight to one who has been born blind." Carpenter says: "It does not seem at all improbable that there are properties of matter of which none of our senses can take immediate cognizance, and which other beings might be formed to perceive in the same manner as we are sensible to light, sound, etc." Mason says: "If a new sense or two were added to the present normal number in man, that which is now the phenomenal world for all of us might, for all we know, burst into something amazingly wider and different, in consequence of the additional revelations through these new senses." Isaac Taylor says: "It is not to be thought that the eye of man is the measure of the Creator's power. Has He created nothing which He has not exposed to our senses? The contrary seems much more than barely possible; ought we not to think it almost certain?"

However, we have presented to you the above-stated speculative, and apparently somewhat fanciful ideas, merely for the purpose of bringing to you a clearer and more comprehensive conception of the relation between Yourself and the outside world; and to show

you how dependent you are upon your senses for the material with which you build up and create your World of Experience. We have no desire to urge you to develop new senses, rest assured. But our purpose is none the less constructive and in the direction of opening up to you new worlds of knowledge—a new World of Experience. For, know you, that there is almost, if not quite, as much difference between the World of Experience of the man of untrained and undeveloped powers of Attention, Perception, and Observation, and that of the man who has highly developed these mental powers, as there would be between the latter individual and the one who had developed one or more new senses.

You have but to contrast the man of highly developed perceptive powers, with one of the opposite type, to realize that the two individuals dwell in entirely different Worlds of Experience. The former sees, hears, feels, and knows a multitude of facts of Life and Nature which are entirely unperceived and unknown to the latter type of individual. The developed man recognizes, considers and solves problems the very existence of which is unknown to the undeveloped man. It is as if the two types see with different eyes, hear with different ears, feel with different nerves of touch. In this book we are striving not to endow you with

CONSCIOUSNESS AND SENSATION 37

additional senses, but to enable you to perfect the senses you already possess—to perfect them to such an extent that they will take on powers and possibilities, effectiveness and active qualities, which to the uninitiated seem to be the result of additional mental faculties possessed only by the favored few and denied to the great masses of the human race.

III

THE MECHANISM OF THE SENSES

The Sensory Mechanism—the vital machinery concerned with the processes of Sensation—consists of certain portions of the brain, certain portions of the nervous system, and the special organs of sense.

The Brain. What “mind,” in itself, may be or may not be; whatever may be the ultimate nature of its relation to the brain; we must at least admit that “the brain is the physical mechanism through and by means of which the mental processes are performed or manifested.” Moreover, we are forced to admit that the mind must depend upon certain portions of the brain and of the nervous system for the reception and perception of the messages from the outside world which compose the “raw material of knowledge” which constitute the elements of the World of Experience of the individual. The detailed study of the physiology of the brain is outside of the field sought to be covered by this book. Therefore, we shall confine our description of it to the technical definition, viz., “The brain is the whitish mass of soft matter which is inclosed in the cartilaginous or bony cranium of vertebrate

animals; it is the centre of the nervous system and the seat of consciousness and volition." Here we have the general description of the physical aspect of the brain, and the statement that it is "the seat of consciousness"—this is sufficient for our present purpose.

The Sensory Nerves. The nerves are "bundles of fibres which transmit nervous impulses between nerve-centres and various parts of the animal body." They constitute important elements of the great nervous system which traverses the body, and which has been compared to a great telegraphic system. There are motor-nerves, which serve to transmit motor impulses (impulses producing motion) to the various parts of the body. There are also other classes of nerves which serve the performance of certain physiological functions, such as digestion, secretion, excretion, and circulation. With these classes of nerves, however, we are not concerned in our consideration of the general subject of the Senses.

Our sole concern here is with what are called "the sensory nerves"—that general class of nerves which transmit sensations from the various parts of the body to the central receiving office of the brain. These sensory nerves are the great telegraphic wires which report to the central office of the brain that irritation or excitation which their surface terminal-ends experience by reason of their contact with the

objects of the outside world. When the surface terminal-ends of a sensory nerve are irritated or excited by reason of such contact with the outside object, they send to the brain a message demanding more or less attention. Whether these nerves be nerves of Touch, of Sight, of Hearing, of Taste, or of Smell, the action is essentially the same—at the last, all the sensory nerves are nerves of Feeling. Fix this last statement in your mind—it will aid you in your comprehension of the processes manifested by the several particular sense-organs and mechanism.

The Sense Organs. There are five general senses, according to the popularly accepted classification, namely: (1) Touch; (2) Sight; (3) Hearing; (4) Smell; and (5) Taste. Physiologists and psychologists often note an additional sense, called the "Muscular Sense," which reveals the state of our muscles, and which furnishes us with our ideas of weight, spatial dimensions, etc. Others would add certain other senses, namely those connected with the feelings arising from the condition of certain internal physical organs, and which furnish us with reports manifesting the feelings of hunger, thirst, sexuality, repletion, indigestion, etc., or of burns, inflammations, bruises, cramps, etc. These latter classes, however, for convenience are usually included in the class of the Sense of Touch, and we shall not

make the technical distinction in this book, interesting though it is for academic consideration.

Each particular sense has its appropriate organ of reception, and the special sensory nerves attached to it, the latter conveying the reports from the receiving organ to the brain. Thus, the Sense of Touch employs the nervous centres upon the surface of the skin and in the muscles, and the nerves attached to these which lead to the brain. The Sense of Sight employs the eye, and its appropriate nerves. The Sense of Hearing employs the ear, and its nerves. The Sense of Smell employs the nose, and its nerves. The Sense of Taste employs the tongue, portions of the mouth, and their nerves. Each organ of sense is specially adapted for the reception of the irritation or excitation arising from its appropriate stimuli. No organ of sense will report the stimuli appropriate to another. Each organ of sense has its own particular kind of irritation by which it is excited. Sound does not excite the eye; nor light, the ear. Each sense-organ functions only in its own special field.

Each and every sensation involves: (1) an external stimulus which, coming in contact with the sense-organ, serves to irritate or excite the latter; (2) a physical organ which receives the irritation or excitation caused by contact with the external object, and transmits

it to the brain by means of the connecting nerves; (3) the connecting nerves which serve to transmit the irritating, or exciting message from the sense-organ to the brain-centre concerned with the latter; (4) the brain-centre concerned with the sense organ, and which receives the message from the latter carried by the sensory nerves; and (5) the mental impression, or state of perceptive consciousness, which arises from the physical impression, and which is the representation of the latter on the mental plane.

A Sensation, then, is seen to consist of (1) a physical condition of change arising from contact with an external object, this condition of change involving the sense-organ, the transmitting nerves, and the brain; and (2) the mental impression or state of perceptive consciousness resulting from the physical change or condition. In short, a completed Sensation is perceived to be "a mental representation of an external fact by which it is produced"; or "a mental representation which is the internal sign of an external fact exciting it."

It should be noted here that one may have a partial Sensation, caused by the action of the imagination, in which there is no external object involved; likewise, the external object may produce the physical irritation and excitement, and the resulting message to the brain, but if the attention of the mind is strongly directed

elsewhere the mental state or impression will not be produced; but in all cases of complete and full Sensation both the physical and the mental elements must be involved actively.

It is generally accepted that all the various senses, with their special organs, are evolutions from the original sense and organs of Feeling—the most elementary form of the latter being the Sense of Touch. In every Sensation something external must “touch” the sensitive organ or nerves of the sense involved. Sight, Hearing, Taste, Smell—all these are but refined and more complex forms and phases of Touch or Feeling; and their special organs are but more complex organs of Touch or Feeling. Touch of one kind or another, of some degree or mode, is concerned in every act of Sensation. Modern science tends to verify the ancient contention of Democritus that all the senses are but modifications of Touch.

Moreover, modern science informs us that everything external that acts upon the organs of sense acts in the form of “motion”; that nothing external can act upon the senses or be taken up by them unless it present itself to them in the form of motion. Thus, Light is motion resulting from undulations in the ether; Sound is motion resulting from vibrations of the air; Tastes and Smells are the result of motion arising from the chemical changes in the particles of minute substances coming

in contact with the sensitive portions of the tongue and mouth, and of the nose; Touch results from the motion of objects external to our bodies, or of portions of our body, or both—all Touch implies motion.

The external world is made manifest to you through your senses only by reason of the motions caused by its energies—these external motions being taken up and continued by your nervous system, and finally brought to the attention and perception of your mind. Science holds that the various nervous actions which result in various sensations must be regarded as definite series of motions. The vibrations from outside yourself accelerate and are transformed into the vibrations within your nervous system, and thus produce Sensation. All that is transmitted from an organ of sense to the brain is a particular mode of motion. The particular modes of motion thus transmitted are then variously interpreted by the mind in the process of Perception.

All this serves once more to bring us to the realization that your World of Experience is merely a representation of the outer world—such portion of that outer world which your senses are able to receive and transmit to your mind, there to be interpreted and employed as the “raw materials of knowledge.” You do not know the outside world directly and immediately; all that you know of it is its reports to

you over the channels, and through the medium of your senses. As Helmholt says: "Our sensations are for us only symbols of the objects in the external world, and correspond to them only in some such way as written characters or articulate words do to the things they denote."

We ask you now to consider in further detail each of the five great classes of the Senses.

The Sense of Touch. The special receptive organ of the Sense of Touch extends practically over the entire outer surface of the body, though it manifests in greatly varying degrees according to the particular part of the body subjected to the contact with the external objects. The skin covering your body is attached to a very large number of sensory nerves which have their ending in it. When these nerve-ends come in contact with an external object, they become irritated and excited, and report the degree and character of such contact to your brain, employing for the transmission the entire length of the connecting nerves. They convey to your brain a peculiar report of pressure or contact, which your mind refers to the particular part of your body in which the receiving nerve-end is located. Not only this, but they report also the particular character or nature of the pressure or contact, so that your mind perceives the differences which indicate what you call "hard-

ness," "softness," "roughness," "smoothness," etc.; or what you call "temperature"; and what you call "weight," "shape," "form," or "size"; or what you call "pressure."

Some of these nerve-ends report mere contact and degree of pressure; others merely report temperature; others report the other several material sensation-producing properties of the contacted object. Some of these nerve-ends are very sensitive, as, for example, the tip of the tongue, the finger-tips, etc.; others lack this degree of sensitiveness, as, for instance, the nerve-ends located in the back. The nerve-ends of certain portions of the body respond far more readily than do others to the excitement of temperature, as, for example, the nerve-ends of the cheek—this is why a woman will hold her hot iron near to her cheek in order to test its temperature. Certain nerve-ends abound in "heat spots" on the body, while others are located in the "cold spots" the region of which is particularly susceptible to impressions of cold.

Other sensory nerves concerned with the Sense of Touch have their ends in the muscles, as well as in the skin. The reports of such nerves are the basis of that variation of the Sense of Touch which some psychologists call the "Muscular Sense" in contradistinction to the other forms of Touch, the latter being called the "Tactile Sense"—the true Sense of

Touch. The Muscular Sense reports differences in weight; space dimensions; pressure; movements in the contacted objects and certain other physical conditions in the contacted object—in fact the term “muscular sensations” has been applied to all those sensations originating in the tensed or relaxed muscles. The “muscular sensation” nerve-ends are excited not so much by the contact of the external object, as by the state of tension resulting from the extension or contraction of the muscles.

The Sense of Sight. The special receptive organ of the Sense of Sight consists of that delicate piece of physical mechanism known as the “eye.” This wonderful instrument, or piece of mechanism, consists of several parts, the actions of which are closely coordinated. The following description of the mechanism of the eye, made by Kirke, will give you a comprehensive and practical conception of it.

“The optical apparatus may be supposed for the sake of description to consist of several parts. First, of a series of transparent refracting surfaces and media by means of which images of external objects are brought to a focus upon the back of the eye and secondly, of a sensitive screen, the Retina, which is a specialized termination of the optic nerve, capable of being stimulated by luminous objects, and of sending through the optic nerve such an impression as to produce in the brain visual sen-

sations. To these main parts may be added, thirdly, an apparatus for focusing objects at different angles from the eye, called 'accommodation'. Even this does not complete the description of the whole organ of vision, since both eyes are usually employed in vision; and so, fourth, an arrangement exists by means of which the eyes may be turned in the same direction by a system of muscles, so that binocular vision is possible.

"The eye may be compared to a photographic camera, the transparent media corresponding to the photographic lens. In such a camera images of objects are thrown upon a ground-glass screen at the back of a box, the interior of which is painted black. In the eye, the camera proper is represented by the eyeball with its choroidal pigment, the screen by the retina, and the lens by the refracting media. In the case of the camera, the screen is enabled to receive clear images of objects at different distances, by an apparatus for focusing. The corresponding apparatus in the eye is the 'accommodation'. The iris, which is capable of allowing more or less light to pass into the eye, corresponds with the different sized diaphragms used in photographic apparatus."

But the eye does not really "see"—the mind is that which actually "sees." The eye is merely a miniature natural photographic lens in which the rays of light are focused upon the

screen of the retina; the retina is irritated and excited by these focused rays, and by means of the optic nerve it transmits this excitement to certain areas of the brain. From these changes in the brain-cells of those areas the physical phase of Sensation results; the mental phase being performed by the mind which becomes aware of these brain-changes in Perception, and thus "sees" them. Seeing, at the last, is a mental process—but the physical optical apparatus is required in order that the mind may perform it.

The Sense of Hearing. The special receptive organ of the Sense of Hearing is that delicate piece of physical mechanism known as the "ear." The front portion of the internal ear is a labyrinthine cavity, consisting of intricate windings manifesting accurate scientific principles and mechanical arrangement. This cavity is so constructed that it may most effectively convey to the back portion of the internal ear the sound-waves reaching it from the external world. These sound-waves are vibrations of the air set in motion by some physical activity or change. In the inner part of the ear, at the back of this cavity, there is located the Tympanum, or "ear drum," which receives the focused sound-waves from the cavity, and which thereupon intensifies and adapts them according to scientific mechanical principles. These intensified and adapted sound-vibra-

tions are taken up by the ends of the auditory nerve, the excitation of the latter being then transmitted over the length of the auditory nerve to the brain. The mind then becomes consciously aware of the excitement of the auditory nerve, and thus "hears" the sound.

The mind becomes conscious of, and perceives and interprets those qualities and properties of sound which we know as (1) Pitch, consisting of the comparative number of vibrations; (2) Intensity, or the comparative volume or quantity of the vibrations; (3) Quality, or the special character or nature of the vibrations arising from the character of the agent producing the sound; and (4) Relation, or the comparative degree of harmony or discord, music or noise, resulting from the vibrations. The range of the Sense of Hearing is limited in human beings to a very narrow scale; there are many sound-vibrations which are either too low or too high for us to hear and know, but which are registered by special scientific instruments designed for the purpose.

The Sense of Smell. The special receptive organ of the Sense of Smell is that more or less efficient piece of physical mechanism known as the "nose." The nostrils, or the external openings of the nose, admit the passage of minute portions of material objects, such as gaseous matter, or very small particles of solid matter—the admitted particles, however, con-

sisting principally of tenuous gases thrown off from solid matter or fluids. The cavity of the nostrils is lined with a thin mucous membrane, well filled with the ends of minute olfactory nerves. The minute particles of matter, coming in contact with this delicate mucous membrane, irritate and excite these olfactory nerve-ends, and this excitement is transmitted by the olfactory nerves themselves to the brain; the brain excitement awakens conscious attention on the part of the mind, and the mental process of Sensation occurs.

Some particles of matter excite the olfactory nerves much more than do others; the difference arises from the respective chemical composition of the substances of which the particles consist. Some substances are very penetrating in their action upon these nerves—as, for instance, musk—this because of the fact that they give off a large number of molecules. Other substances possess a strong property of irritation in their action upon these nerves—as, for instance, ammonia—this because of some chemical property strongly affecting the olfactory nerves. The Sense of Smell is very active and efficient in the lower animals, and in primitive man; in civilized man, however, the sense is believed to have become partially atrophied from disuse resulting from lack of necessity.

The Sense of Taste. The special receptive organ of the Sense of Taste is that very efficient piece of physical machinery known as the "tongue." Certain portions of the mouth also serve as receptive organs of Taste. The tongue contains certain tiny cells called "taste buds"; these are connected with the gustatory nerves, which in turn lead to the brain. When soluble material substances are taken into the mouth the chemical action of their constituents, coming in contact with the "taste buds," sets up an irritation or excitement in the nerve-ends connected with them. This excitement is transmitted over the gustatory nerves to the brain; there producing an excitement of which the mind becomes conscious by Attention.

Taste has been classified by some as follows: (1) bitter; (2) sweet; (3) sour; (4) salty; (5) alkaline; (6) "hot" (as in the case of pepper, mustard, horseradish, etc.) and (7) "acid" (i.e., bitter and "hot" combined). Much that we call taste really is "smell," there being a close connection and relation between the physical organs and processes of these two respective senses; when your Sense of Smell is affected by a bad cold, catarrh, or similar condition, you will discover that your Sense of Taste is seemingly affected—this because of the close relation above noted.

Some psychologists hold that other features usually attributed to the Sense of Taste really

are incidents of the Sense of Touch. Hoffding, noting this fact, says: "The pleasantness of many sorts of food (e.g. jelly) is certainly derived from their effect upon the delicate skin of the palate, and is therefore, much more a question of Touch than of Taste." The Shah of Persia, visiting in England, is said to have reproached Europeans for their use of forks, saying, "You do not know that the Sense of Taste begins with the finger-tips."

Development of the Senses. That the senses may be developed, cultivated, and trained to a marvelous degree, is a fact known to all practical psychologists. We shall give you specific instances and methods when we consider the subjects of Attention, Perception and Observation. But it must always be remembered by you that such training and development is mental and not physical. It is the mind, and not the body, which "senses" at the last. The sense-instruments must be there, it is true—but they serve merely as "instruments," and are never by any chance the real "that-which-experiences-Sensation," or that which directs it.

Training and development of the senses, really is training and development of the power of "consciousing" by the direct action of the "I AM I," which is Yourself. We need scarcely add that, inasmuch as the senses supply the "raw material of knoweldge," it follows that your world of knowledge—your

World of Experience is greatly enlarged and enriched by the scientific training and development of your senses, and by their rational culture. With the proper kind and quantity of the "raw materials," the finished product must be more satisfactory in quantity and in quality—this is self-evident.

IV

PERCEPTION AND DISCERNMENT

Perception is: "The faculty, or act, or consciousness whereby it apprehends, comprehends, or takes cognizance of the reports of the senses reaching it in the form of Sensation." James defines it as, "The consciousness of particular material things present to sense." It is that power or faculty of the mind by means of which the latter interprets the "raw materials of thought" furnished through Sensation. Discernment is: "Perception intelligently applied and consciously directed."

You will remember that in completed Sensation the final stage is that mental state arising from the consciousness of the physical impression upon the brain substance derived from the excitation of the sensory nerves; it is the mental representation of the physical impression. This mental state also constitutes the elemental and primary stage of Perception; the higher and more complex manifestations of Perception involve the exercise of memory, association, and a certain degree of reasoning power. Perception, aided by the other mental faculties to some extent, gives to you your first real knowledge of the outside world.

You will also remember that not all sensations are received in consciousness—not all are “perceived” by the mind; as a fact, but a comparatively small number of your sensations are so perceived. Moreover, in simple Perception there is but a comparatively slight apprehension or cognizance—but a slight “knowing”—of the object perceived. It is only when Voluntary Attention begins more actively to manifest its powers that your real “knowing” actually begins.

While Perception depends upon the senses for its “raw materials,” it relies for its fuller manifestation upon “thought” in some degree or form. Perception, then, may be regarded as “the thought arising from the feeling of Sensation.” Sensation is Feeling—Perception is the beginning of Thought. Sensation brings to you the “feeling” of the things of the outside world; Perception interprets this “feeling” by identifying it with the outside thing arousing the “feeling,” and referring it to that outside thing. From Perception all of your higher mental states arise.

The processes of Perception are as follows: (1) Attention causing consciousness to become aware of the definite Sensation arising from indefinite nervous excitement; (2) Thought interpreting the definite Sensation, and attributing it to the outside object causing it; and (3) Reason (based upon experience) perceiving the

Sensation-producing element of the outside object to be a quality, property, or attribute of that outside object. For example: You touch a piece of heated iron. You first (1) become aware of a certain Sensation reaching you through your sensory nerves without any consciousness of anything but the "feeling" element; then (2) you interpret this feeling as "heat," and attribute it to the piece of iron; then (3) you perceive that "heat" to be a quality of iron in that particular condition.

The above statement may seem to be merely a needless elaboration of a familiar experience, but when you were a little child you actually gained this experience by passing through precisely these several stages of Perception, and all your knowledge gained by actual experience has been so acquired. The infant or young child at first experiences but indefinite sensations—it is not able to interpret these, nor to refer them to particular external objects, nor to deduce that the feeling-producing powers constitute qualities in that and similar external objects. As it grows older, and "gains experience," however, it begins to realize that Sensation has a practical meaning only in so far as it refers to definite objects causing it—that the meaning of Sensation must be sought in Perception. The natural education of the child consists almost entirely of its discovering by Perception the real meaning and

source of Sensation. It is only in this way that the child brings about a harmonious relation and practical working unity between its World of Experience and the things of the outside world.

Perception, then, is seen to consist of your power to apprehend and cognize the qualities and relations of outside things reported by Sensation. The greater the extent of your discovery of such qualities and relations, the greater is the degree of practical knowledge and experience possessed by you. Your entire stock of knowledge is built up in this way; this because all that your mind is able to know about the things of the outside world is the knowledge of the characteristic qualities and relations of those things. When you define a thing, you but state its qualities and its relations; and such qualities and relations are known to you only by means of Perception. To know all the qualities and relations of a thing is equivalent to knowing fully the nature or character of that thing, at least so far as human knowledge is capable of full knowledge of anything.

In the higher acts of Perception all of the mental faculties or powers are represented. For instance: you obtain a sensation of form and color, evidently related to a certain tree. Your memory (based upon experience) identifies this form and color as connected with

fruit. Your experience informs you that this particular fruit is a peach. Examining the object closer, you see that the peach is in that condition which your experience interprets as "ripe." Your memory and experience inform you that ripe peaches are pleasant to the taste; and your imagination makes a mental picture of the sweetness and general satisfaction of the taste which form qualities of that peach. Then your Will acts to pluck that peach (if such be deemed proper in the light of reason and feeling) and to eat it. But all that you "know" about that peach when you see it has been gained by experience along the lines of the gradual and progressive processes of Sensation, Perception, Memory, Imagination and Thought. This, again, may seem needless elaboration—but such is the way by which you have learned about the qualities of peaches; and the processes by means of which you must learn about any and every other thing when you first become acquainted with it. You learn only by experience based upon your Perception of the qualities and relations of things; and your Perception arises from Sensation. Your World of Experience is created by Perception. You will do well to fix this fact in your mind, for it is important.

Distinction between Sensation and Perception. We ask you to consider, in the form of the following summary, the distinction between

Sensation and Perception—this distinction is a somewhat difficult one for many students, and it is important for the purpose of the present instruction that you should be able clearly to make it. Here follows the Summary. In Sensation, the mind is conscious simply of an inflowing feeling; in Perception, the mind goes out toward the object of that feeling. Sensation flows inward; Perception moves outward. In Sensation, the mind is passive; in Perception, the mind is active. Sensation necessarily implies neither the belief in nor the conviction of the existence of an outside object (the infant's early experiences show this plainly); Perception necessarily implies a belief in and conviction of the existence of an outside object causing Sensation. Sensation is concerned merely with inner mental states; Perception involves also the recognition of outer things. Sensation requires merely consciousness; Perception requires thought directed toward an outside object. Sensation knows only the inner "feeling" giving rise to it; Perception knows also the outside thing which causes the inner "feeling."

Perception is a power of the mind—not of the physical senses; it is capable of an almost incredible degree of training, cultivation and development; there are certain laws governing its development and training. It is possible for you to train and develop your powers of

Perception to such a degree that you may become a veritable Master of Perception. If your ambition does not reach such heights, you may at least develop and train your powers of Perception to such a degree and extent that you will double or treble your efficiency in your chosen field of endeavor, and also fit yourself for still higher planes of work in the world. You, Yourself, are the creator of your World of Experience—and you create it largely by means of your powers of Perception. It is for you to decide just what you wish to create—your action upon that decision will perform the creative work.

In order that you may realize the full possibilities of the development of the powers of Perception along the lines of each of the several senses, we call your attention to the following scientific statements of examples and instances of cases in which certain individuals have developed such powers far beyond that of the average person. Such individuals were not possessed of abnormal senses, or sense-organs—their sense-organs were probably no more efficient than are yours: but their mental powers of Perception had been so trained and developed as to cause them to appear to be gifted with abnormal powers.

Visual Perception. The mental power of Perception of the impressions received through the sense of Sight is capable of extraordinary

improvement by training. This improvement, and the training which produces it, proceeds along three general lines, viz., (1) the line of increased quickness and readiness in the visual perception of general or special objects; (2) the line of increased capacity for discerning and perceiving minute objects which ordinarily escape visual observation; and (3) the line of increased powers of discriminating and perceiving the subtle and slight differences of form, size, color, and general composition or arrangement of parts, in the objects observed. It should be noted, in passing, that one may train his Visual Perception along any one of these three lines, and attain great efficiency in it, yet with but comparatively little improvement in the other two lines.

As examples of trained Visual Perception along the above mentioned lines, the following instances will serve to illustrate the principle. Houdin, who had developed marvelous powers of Visual Perception, once said: "I can safely assert that a lady seeing another pass at full speed in a carriage will have time to analyze her toilette from her bonnet to her shoes, and be able to describe not only the fashion and quality of the stuffs, but also to say whether the lace be real or only machine-made. I have known ladies to do this."

Houdin, himself, acquired by practice and self-training the faculty of being able to pass

rapidly before a shop window, bestowing but one full glance upon its contents, and then, when out of sight of the window, correctly to call off or write down a complete list of the window's contents, including even the merest trifles there displayed. Not only this, but he also taught his assistants to perform the same feat as a preparation for respective careers as conjurers.

Celebrated artists have won wagers by painting satisfactory portraits of persons upon whom they had bestowed but a single though comprehensive glance. Noted scholars have acquired by practice the art of reading long sentences, paragraphs, or portions of printed pages at a single glance. In fact, many students are able to read a whole line of a printed column at a glance, after but slight practice. Professor Porter, once president of Yale, is said to have been able to read at a single, quick glance, a quarter and sometimes a half page of an ordinary text book. Instances of similar proficiency are far from uncommon. Book reviewers frequently are able to catch the spirit of a book, and to obtain a very comprehensive idea of its contents, by rapidly turning its pages and "skimming through it," stopping only here and there when some particularly attractive passage presents itself. Others frequently handling books acquire a similar proficiency.

Large department stores employ skilled observers to report the special features displayed in the business establishments of their rivals in trade. These observers promenade leisurely through the aisles and corridors of the rival establishments, carefully noting the details of the articles of merchandise there displayed, or the arrangement of the goods, or other points concerning which their employers desire information. They frequently attain wonderful proficiency along these lines; some of them are renowned for their almost photographic powers of Perception. Milliners and celebrated dressmakers are very careful not to subject their advanced styles and models to even the casual inspection of strangers, since these visitors often turn out to be the trained observers employed by others in the same lines of business.

Along the same general lines are the activities of the spies sent out by professional thieves to discover and report the details of the premises which have been selected as the scene of future burglaries. Disguised as beggars, peddlers, telegraph messengers, errand-boys, telephone inspectors, electric-light repairers, etc., these spies gain access to the premises. Once in a house or a room, the spy glances hastily around, carefully noting the location of the doors, windows, locks, receptacles, stairways, etc., from which observations a map is after-

ward drawn to be used by the professional burglars or sneak-thieves. Military spies often attain wonderful proficiency along these lines; a single glance frequently suffices to give them a comprehensive and detailed idea and mental picture of important military preparations and plans.

Along the second lines of Visual Perception, we find scientists and special workers in certain trades who have attained great efficiency in the direction of perceiving minute objects which escape the perceptive attention of the ordinary persons. Watchmakers possess this faculty; makers of delicate scientific instruments likewise have acquired the faculty of distinguishing minute objects and parts of things. Microscopists by practice develop the power of perceiving very minute objects and their details, where untrained observers gazing through the same lens perceive merely a tiny speck, or minute blur. The magnifying instrument increases the strength of the minute physical impression, but it requires the trained observer's mental power of Perception to perceive and to "know" that impression made upon his brain tissue.

Along the third lines of Visual Perception, we have many instances of the wonderful efficiency of trained observers who are able to perceive and to discriminate between the subtle and slight differences in the form, size, color

and general composition or arrangement of parts, in the objects under observation by them. In fact, specialists in any business, trade, art or profession must acquire proficiency of this kind in order to be successful in their particular line. Bank employes become very expert in handling coin or banknotes; often they are able to detect counterfeits almost instinctively, so keen have become their powers of Visual Perception (though in this particular case they are often aided by Tactile Perception). Experts in handwriting are able to distinguish between the finest shades of difference in the written words—often being able to discover differences arising from the varying physical condition of the individual as evidenced in his several writings.

Artists, as you well know, are able to distinguish between shades and hues, and combinations of color. They are able to see diversity where the ordinary observer perceives sameness and identity. Subtle distinctions which are imperceptible to the ordinary observer, "stand out" most strikingly to the perceptive faculties of the trained artist or worker in colors. Dyers, and dealers in colored fabrics, as well as many purchasers of those fabrics, are able to distinguish between very minute differences in shades, tints, and hues of color in fabrics. The "color sense" of some trained observers sometimes seem to other persons like

an additional sense. Herschel said that the highly trained Visual Perception of the workers upon the mosaics in the Vatican enabled them to distinguish correctly between 30,000 different shades of color.

Expert readers of character, and good judges of human nature, are often able so accurately to distinguish between the different shades of expression manifested by the human features, that they can interpret with a startling degree of correctness the inner feelings or thoughts of the person at that time. Persons having much to do with a number of subordinates in a school, office, workshop, army, etc., often become very efficient in many cases in "sensing" what is in the mind or feelings of those in their charge or under their authority. The skilled school-teacher acquires proficiency in this line; the expert salesman also becomes an adept in this direction.

Women, as a rule, seem by nature to possess this particular phase of this faculty well developed—this probably because their success and happiness in life frequently depends to a great extent upon their ability to sense and to act upon the moods of men; whatever may be the true reason, however, the woman of experience often surprises men by her perception of "what is in the mind" of the men—and of other women! We may like to call this "intuition"—but more often it is merely the

result of an unconsciously developed power of accurate Visual Perception along these particular lines: the observer knows what certain expressions mean, even though those manifesting them are seeking to conceal their inner thoughts and feelings.

Auditory Perception. The power of Perception of impressions received through the sense of Hearing is capable of extraordinary improvement by training. This improvement, and the training which produces it, proceed along three general lines, viz., (1) the line of increased capacity for perception of the general distinction between the general properties of sound, namely, the quality, intensity, and the volume or quantity of the sound impressions; (2) the line of the increased capacity for perception of the musical attributes of sound, i.e., the pitch, the tone, the harmony; (3) the line of the increased capacity for perception of the articulateness, distance, and direction of sounds. It should be noted, however, that one may train his Auditory Perception along any one of these three lines, and attain great efficiency in it, yet with comparatively little improvement in the other two lines.

Physiologists and psychologists have made the interesting discovery that in the case of many persons who are supposed to be "slightly deaf," or "somewhat hard of hearing," there exists no physical deficiency whatever—the organs and mechanism of hearing are normal in many of

such cases. The explanation of this apparent paradox is found in the fact that such persons have failed to develop normally the perceptive powers of that part of the mind which is concerned in Auditory Perception; in short, such persons are deficient in the power of attending to the sounds reaching them through their ears, and in the faculty of interpreting or understanding them—of perceiving them mentally. It is gratifying to be able to state that such cases are usually capable of being cured of their “deafness” under the proper methods of awakening the Attention, and of training the Auditory Perception.

In this connection it is interesting to note the cases of persons who seem to be deficient in hearing ordinary conversation, but who will very quickly and distinctly hear even the slightest whisper of the voices of persons who are discussing the careless hearer, i.e., making “personal remarks” concerning him, or her. Here we have a familiar example of the result of the failure to employ Attention, and the marked improvement when Attention is actually employed. As Harvey said: “That one-half of the deafness that exists is the result of inattention, cannot be doubted.” Some old women who experience much difficulty in hearing ordinary conversation, and complain that they are “hard of hearing,” will be found to be very keen in hearing a bit of whispered gossip, or the low-toned criticisms of themselves on the part of others. Attention follows Inter-

est, in such cases; and Perception follows Attention.

It is generally held that Auditory Perception is more susceptible of education, cultivation and development, and may be more easily and effectively trained than any other form of Perception. You may witness on all sides many convincing illustrative examples of its possibilities in this direction. The blind depend upon this highly developed perceptive faculty to a great extent; they can walk easily through a crowded thoroughfare guided only by the sounds perceived and interpreted by them, but of which the normal individual will not be aware. They can tell when they are passing a stationary object, such as a lamp-post; and frequently they can discriminate between a standing man and a lamp-post by means of the difference in the reverberations of the sound of their own footsteps received through the ear and interpreted by Perception. They readily distinguish between the respective rumbles of the different street-cars, and can inform you to what particular car-line the passing car belongs. We have known cases in which the blind man has been able correctly to inform us of the size and type of a passing automobile. Likewise, blind persons usually can distinguish between an empty room and one in which another person happens to be—all by means of their keen perception of sounds.

PERCEPTION AND DISCERNMENT 71

The savage, by placing his ear upon the ground, often is able to perceive the approach of men or wild animals, frequently displaying an almost incredible degree of perceptive power in this direction. The director of a large orchestra usually can detect even the slightest failure or mistake in time or tune on the part of one of the many instruments under his direction, and to point unerringly to the guilty performer. Skilled musicians will perceive and shudder at slight inharmonies or similar imperfections occurring during the rendition of some complicated and technical number by a large orchestra, while others are totally unaware of any such occurrence.

There are persons who truthfully may be said never to forget a voice once heard—even though years have elapsed. We have known persons who could pick out the sound of a particular footstep from among many others echoing along the corridor of a large building. It is said that a mother sheep can distinguish the bleat of her own lamb from that of scores of other lambs in the flock. Young animals usually can unerringly recognize the sound of the voice of the mother; it is a poor chick which cannot recognize the "cluck" of its own hen. Human mothers frequently can distinguish the wail of their own particular infants from those of others in the same building. We witnessed a test of this several years ago, in which the blindfolded mothers almost without ex-

ception, moved directly toward the right crying infant!

Telegraphers know the difference between the sounds of the respective messages sent by different operators; they can usually name the particular operator, provided that they have had time to become acquainted with his manner of "sending." Engineers and operatives in a railroad yard can distinguish between the different whistles of a large number of locomotives. Old steamboat men frequently know the whistles of every steamboat on the river; and many boys living on the shores are equally proficient in this respect.

Machinists can detect the slightest difference in the sound proceeding from the machine under their care, and often know the precise point at which trouble exists, and the nature of the disturbance as well—all from the slight difference in the general sound proceeding from the machine. It is a very inattentive man who cannot distinguish between the rings of his own telephone or door bell, and that of his neighbor.

Instances and illustrations of this kind might be multiplied almost indefinitely, but the principle involved is the same in all such cases. This principle is: Auditory Perception is developed by Attention and practice; and Attention is stimulated by Interest or self-interest.

Gustatory Perception. The power of Perception of impressions received through the sense of Taste is capable of extraordinary improvement

by training. Unfortunately, however, but few persons consider it worth while to cultivate the sense of Taste scientifically, except the few who make gods of their stomachs, and who live to eat instead of eating to live.

Kay says: "There can be no doubt that if this sense (Taste) were properly trained and directed, instead of being, as it generally is, led astray or perverted by excessive indulgence, it would be a much more reliable guide than it is at present." Professor G. Wilson says: "We eat what we should not eat; drink what we should not drink; eat too much of what we may eat; and drink too much of what we may drink. And the result is that we ruin our health, enfeeble our bodies, dull our intellects, brutalize our feelings, and harden our hearts."

Moreover, as some modern physiologists hold, we miss most of our taste-values by not understanding how to extract the taste from our food—thus habituating ourselves to gross eating and gluttony, instead of being true epicures manifesting moderation in eating and drinking but securing the full taste-values and a high form of aesthetic enjoyment. Epicures inform us that there exists a harmony in tastes as well as in colors and in sounds—some tastes modifying, intensifying, or harmonizing with others with which they are associated. Dr. Muller says: "In the art of cooking, attention has at times been paid to the consonance or harmony of flavors in their com-

bination or order of succession; just as in painting and music the fundamental principles of harmony have been employed empirically, while the theoretical laws were unknown."

Examples of highly developed Gustatory Perception are had in the case of the "tea tasters," and the "wine tasters" of commerce. The "tea taster" is employed to pass upon the flavor, quality, and value of submitted samples of tea. If experienced, he will be able to inform you as to the technical merits or demerits of the sample, its general grade, the locality of its production, the method of its curing, and also its current market value; all this resulting from the mere passing of the drawn tea over his tongue. The "wine-taster" performs a similar service, in much the same way. In both of the above-cited cases, however, the sense of smell plays a considerable part in the perceptive process.

In certain lines of business in which articles of food are dealt with, there are men who are adepts in "tasting" such articles, and thus determining their quality and value; this faculty is acquired by practice and training—Interest and Attention developing the Perception. Certain chemists, also, possess marked ability in this particular direction. Moreover, certain skilled epicures are said to be able to state correctly just what are the ingredients of any given sauce or dressing, as well as its relative proportions; and also to state correctly the manner in which has been killed the animal

whose meat they are eating. Roman epicures were able to tell by the taste whether the fish was caught above or below a certain bridge; and some modern epicures claim to be able to decide by taste on which leg the partridge was accustomed to sleep. Such things, however, are entirely outside the world of the ordinary individual.

Olfactory Perception. The power of Perception of impressions received through the sense of Smell is capable of extraordinary improvement by training. But few modern civilized persons, however, deem it worth while to undertake any such development or training. Smell has grown out of fashion it would seem; some moderns seem even to regard it as an unworthy and animal-like sense—probably because of its lack of cultivation and training in modern times and in civilized communities. The ancients, however, regarded this sense as of high value and importance, and treated it with marked respect. Incense and perfumes played a large part in the lives of the ancients; and even today the Orientals pay much attention to them.

Thoughtful men have regretted the modern relegation of this sense to the background. They point out that mental associations frequently cluster around sensations of Smell far more strongly than around other classes of sensations. There is romance in the recollection of the smell of a favorite perfume, or of a certain flower—a romance which is readily revived by a present-

day experience of that same odor. Did you ever read that wonderful poem that begins, "But, Oh! the smell of that jasmine flower?" There is a suggestive power and value to odors, far surpassing those of sights or sounds; they appeal to the emotions most powerfully; their memories persist longer. Many hold that as a valuable source of pleasure and of mental enjoyment the sense of Smell demands far more care and attention than it commonly receives.

The lower animals, and the primitive races of mankind, as well as the blind of our own time and land, have very highly developed senses of Smell—this due to use, habit, and necessity. Some young children also possess the power of effective Olfactory Perception—but disuse serves to eliminate this as they grow older, in most cases. Some psychologists, however, hold that the human race frequently exercises this sense and perceptive power along subconscious lines, and that many of our likes and dislikes are influenced thereby. Certain perfumes are held to be sexual excitants. Perfumers, chemists, and men whose business necessitates the knowledge of the odor and aroma of their wares—as for instance, dealers in certain kinds of food, tobacco, flowers, etc.,—frequently possess a highly developed power of Olfactory Perception. We see here the operation of the same general principle of development, namely, Interest, Attention, and Perception.

Tactile Perception. The power of Perception of the impressions received through the sense of Touch is capable of extraordinary improvement by training. This improvement, and the training which produces it, proceeds along four general lines, viz., (1) the line of increased perception of minute objects or parts of objects; (2) the line of increased perception of certain qualities and conditions of objects, and their details or composition, arrangement, or relation of their parts or attachments; (3) the line of increased perception of temperature; (4) the line of increased perception of conditions of weight, spatial dimensions, etc., by the so-called "muscular-sense."

Watchmakers and others who constantly handle minute objects, and adjust delicate parts of mechanical contrivances, are found to possess wonderfully developed Tactile Perception. Their sensitive finger-tips become almost like organs of sight so far as is concerned their efficiency in the delicate work in which they are engaged. Likewise the manufacturer and the professional buyer of woollen, silk, or cotton fabrics frequently depends materially upon this highly trained Sense of Touch. Wool-sorters instantly grade the wool passing through their hands; and wool-buyers depend upon the same sense in deciding the value of the materials under examination. The engraver passes his hand lightly over the engraved plate, and is able to detect instantly even the slightest imperfection upon it. Experts in vari-

ous lines of trade are often paid large salaries by reason of their developed and trained Tactile Perception.

We need scarcely call your attention to the highly developed Sense of Touch of the blind. To witness a trained blind man read rapidly by means of applying his finger-tips to the surface of the raised letters of a book is a revelation; and to witness his manual dexterity in successfully performing technical, delicate work which would be difficult even for a man of keen sight, is almost like witnessing a miracle. As Taine says: "At present we have only rough discrimination as to the tactile sensations; we can hardly distinguish their shades of difference, for want of being compelled to do so. With some blind persons, the sense of touch surpasses all imagination. It is enough to see blind men employ this sense, to comprehend all the discrimination which our touch might have, but has not acquired."

Persons whose occupations necessitate a quick and ready perception of temperature will be found to have acquired the necessary development of this phase of the Sense of Touch. Cooks discriminate nicely in this matter; and manufacturing chemists, preservers, canners, makers of toilet preparations, and others become very proficient in the art of detecting the fine, nice distinctions and variations of temperature found necessary in their processes of manufacture. Some, indeed, become so expert as justly to be entitled to their

title of "human thermometers." The average housewife is able to gauge with a high degree of correctness the temperature of her oven, or of her cooking dishes, or of her iron. The experienced physician often is able to determine whether a patient has "a temperature" the moment he applies his hand—this being remarkable when it is remembered that the difference so detected is that merely of a few degrees.

That phase of Tactile Perception which is often called the "Muscular Sense," also is capable of the highest development and training; in fact, instances of such cultivation are to be seen in the case of every skilled artisan. This phase of Tactile Perception employs the muscles, especially the voluntary muscles, as its organs and instruments of impression, by means of which it detects differences in weight, pressure, force, resistance, hardness, softness, spatial dimensions, etc. It is by means of this form of Perception that you become aware of the effort being put forth by the muscles in performing certain movements, and thus may direct and regulate them. Without it all voluntary purposeful muscular movements would be impossible, except in so far as the other senses might supply the deficiency.

Even in the simple act of walking, dressing, using knife and fork or shaving, we have evidences of training of this form of Tactile Perception. In drawing, painting, engraving, and other forms of manual exertion we display a still

greater degree of training. When you detect differences of weight or of size by means of the hands, you manifest the same kind of training. The manual dexterity of the pianist, the skill of the rope-walker, the juggler, the conjuror, the acrobat, the skilled touch of the masseur, the Osteopathic or Chiropractic physician, depend upon the training of this phase of Perception. The billiard player depends for his skill upon this training; and so likewise does the expert baseball batter.

The artisan or the tradesman who "takes hold" of an object in order to determine its weight or size, is manifesting the skill which he has gained in the training of this phase of Perception. The blind man employs it to a still greater extent; by means of it he obtains all of his ideas of weight and size. The blind man, wishing to ascertain the size and shape of a table, passes his hand around it; wishing to ascertain its weight, he lifts it. Many of us instinctively "take hold" of an object when we wish to obtain an idea of its weight; and most of us find it much easier to estimate the size, length, breadth, height, or depth of an object by placing our hands upon it, instead of depending solely upon Visual Perception.

Important as is this phase of Tactile Perception which is technically known as the "Muscular Sense," it is a surprising fact that but few of us have ever realized that it existed, at least until our attention has been directed to it. We have

taken it for granted far more than has been the case concerning the other phases of Sensation and Perception.

* * * *

The consideration of the foregoing instances and examples illustrating the principle of the special development, cultivation, and training of Perception should cause you to realize the wonderful possibilities existing for you in a similar direction. What others have done, can do, and are now doing—that you also can do.

If you have employed your powers of analysis you will have already perceived the general principles underlying each and every one of these instances of special development, viz., (1) Interest, or self-interest; (2) Desire, or strong wish to attain; (3) Purposeful Determination, or the Will to attain; (4) Practice, or acquiring the habit; (5) Exercise, or strengthening the habit; (6) Judgment, or the right direction of the application of the new faculty; and (7) Use, or the actual, efficient employment of the faculty for some definite purpose, end, and service.

V

OBSERVATION AND EXPERIMENT

Observation is "the act or faculty of observing or taking notice with care." To "observe" is "to notice carefully; to turn the attention to; to regard carefully and attentively for the purpose of discovering, noting, or detecting anything." Thus, you see, Observation is the act of Attentive Perception, exercised for the purpose of discovering, noting, or detecting the qualities or relations of things. It is Perception attentively directed and applied with a definite purpose—and that purpose is the discovery of facts concerning that which is observed.

In our everyday life, Observation constitutes an important factor of Efficiency. Men must know something about the things connected with their occupations; and this "knowing about" is acquired only by investigation, inquiry, and Observation. In the keen battle which constitutes the struggle for existence in modern business, industrial or professional life, the efficient observer gradually works to the front, and the poor observer is crowded to the rear. There are, of course, other mental factors involved in Success; but, if the fac-

ulty of efficient Observation be lacking, the other factors are likely to avail little or nothing. The man striving for Success must begin by cultivating Observation.

The man who "knows" and who "knows how" is in demand in all walks of life. It will always be found that such "knowing" is based upon efficient Observation. Unless one discovers and detects the qualities and relations of things which are involved in his work and life, he will not "know" those things. At the last all that we can "know" about a thing are the facts concerning the qualities and relations of that thing. We discover these facts only by means of direct or indirect Observation. Observation is the basis of all scientific knowledge; of all practical business knowledge; of all practical knowledge of any kind. Observation is a fundamental requisite for success in all lines of human endeavor, and of all individual culture.

One may obtain much important theoretical information from text-books, but such information is actually valuable only when it is added to, or corroborated by individual Observation. The real use of text-books is that of pointing out to one the direction in which he should apply his powers of Observation. The ideal plan is to establish a harmonious combination between books and personal Observation; but too many omit the latter element

of the combination, and thus they become "bookish"—theoretical instead of practical—and are sooner or later pushed aside in the battle of life by the individuals who have supplemented their book knowledge with that gained at first hand by Observation. In this connection, moreover, it must not be forgotten that books in so far as they are practical and useful, are themselves the result of the Observation of their authors, or of the authorities accepted by the latter.

The entire structure of our scientific and technical knowledge has been evolved slowly from the discoveries made by Observation. Qualities and relations of individual objects are first observed; then comparison results in classifications of those objects, according to their degrees of likeness and unlikeness; then general classes and general principles are formulated, and hypotheses are advanced; then experimental Observation demonstrates clearly the truth or fallacy of those hypotheses, and, finally, general laws are established. But the entire structure of knowledge rests upon the solid basis of Observation; unless every part of it stands the test of Observation the strength of the whole edifice is doubtful, and its security is questionable.

Observation is concerned with "facts." Facts are discovered only by Observation. Facts constitute the materials for practical knowl-

edge. The practical individual is he who bases his knowledge upon actual Observation and upon logical induction and deduction from premises thus supplied. Not only is the "know" of the practical man derived from Observation, but his "know how" also comes from the same source. Books are employed by such a man not as fetiches to be bowed down to and worshipped, but rather as valuable servants and assistants to him in his work of Observation. To the practical man the ordinary books do not constitute the text of his Book of Knowledge—they are to him merely the foot-notes of that great volume.

Eminent educators are sounding a warning note concerning the tendency to supplant Observation by mere books. They insist that unless this tendency be counteracted Observation will become a lost art, and practical knowledge merely tradition. They point out that whatever one learns by direct Observation is far better learned than what one learns (or thinks that he learns) from books or the reports of others. They advance the theory that the child should not be taught from books anything which it can observe for itself—until after it has employed fully its power of direct Observation in the direction of that thing; books, say they, should be regarded as supplementary to Observation.

Educational experts have reported a sad deficiency among school-children in the matter of the correct Observation of familiar objects. For instance: pupils usually are unable to distinguish between marble and granite; or between an oak tree and a beech tree; between cast iron and wrought iron; between iron and steel. Even farmers' children usually are unable to state correctly whether the ears of the cow are in front of her horns or behind them, over them or under them; whether cats descend trees head first or hind feet first; whether horses and cows rise with their fore or hind feet first, and whether horses and cows differ from each other in this respect. Other children are unable to state correctly how many legs has a fly, and how many a spider; whether the fourth hour on the watch-dial is designated by the Roman numerals IV or IIII; and other presumably familiar facts.

As an ideal example of careful and effective Observation, we ask you to consider the following statement of Maupassant in which he relates how Flaubert laid down to him the fundamental rules of literary descriptive expression. Maupassant says that Flaubert told him: "Talent is nothing but long patience! Go to work! Everything which one desires to express must be looked at with sufficient attention, and during a sufficiently long time, to discover in it some aspect which no one has

yet seen or described. In everything there is still some spot unexplored, because we are accustomed only to use our eyes with the recollection of what others before us have taught on the subject which we contemplate. The smallest object contains something unknown. Find it! To describe a fire that flames, and a tree on a plain, look, keep looking, at that flame and that tree until in your eyes they have lost all resemblance to any other tree or any other fire. That is the way to be original."

Maupassant adds the following comment: "Having, besides, laid down this truth, that there are not in the whole world two grains of sand, two specks, two hands, or two noses exactly alike, Flaubert compelled me to describe in a few phrases a being or an object in such a manner as clearly to particularize it, and to distinguish it from all other beings or all other objects of the same race or the same species. He said to me: 'When you pass a grocer seated at his shop door, a janitor smoking his pipe, a stand of hackney coaches, show me that grocer and that janitor—their attitude, their whole physical appearance—embracing, likewise, as indicated by the skillfulness of the picture, their whole moral nature; so that I cannot confound them with any other grocer, or any other janitor. Make me see, in one word, that a certain cab horse does not resemble the fifty others that follow or precede it.'"

George Randolph Chester, the popular story-writer, gives to those who seek to become writers the following advice concerning the important part played by Observation in the work of the writer:

"Observation is the faculty upon which both creation and imagination are built. After all, we have finite minds, and man only creates after known forms; he only imagines upon material foundations. Our most brilliant castles in the air are but more delicate variants of familiar structures of brick and stone; the most expert builders of air-castles, then, are those who have most closely observed and mentally indexed to minutest detail our mundane castles. There is no end of information, scarcely obtainable from reference-books, which the observing mind will and must acquire. What trees are indigenous to certain localities, and what are their characteristics of sprouting their leaves and developing and shedding them; of blossoming and budding and bearing fruit.

"Have you noticed how the white undersides of leaves, while fluttering up in a breeze, give quite a different shade of green to a tree? Have you observed the differing apparent color of still or running water at differing times of the day, at differing times of the year, under differing atmospheric conditions? How many common insects can you recall and describe? What effect has a frown upon the other fea-

tures of man's countenance? How many sorts of sunsets, as infinite in their variety as the shapes of clouds, can you at this moment mentally catalogue and briefly describe? Have you ever noticed the peculiar heave of the body given by a man straightening up under a hod of brick, or the unconscious rhythmic pauses, for rest of the muscles, indulged in by a man mixing mortar? * * * The importance of this faculty can scarcely be overestimated, as you will discover to your later humiliation if you set down details without knowing them to be entirely accurate."

The Three Factors of Efficient Observation.

Your attention is now called to the Three Factors of Efficient Observation, i. e., the three elemental and fundamental elements of Efficient Observation.

1. **Attention.** It is scarcely necessary to do more than merely to call your attention to the fact that Attention is the first requisite of Purposeful Observation. Attention being the key to Perception, and Perception being the basis of Observation, it follows that Attention is the prime factor of Efficient Observation. Your Observation becomes effective in the degree in which your Attention is directed to the task—the degree in which you consciously and voluntarily "attend to" it.

A subsequent section of this book is devoted

to the special consideration of the subject of Attention.

11. Interest. Attention proceeds along the lines of Interest. The greater Interest an object or a subject possesses for you, the greater degree of Attention do you direct toward it.

You will perceive this fact more fully in your consideration of the subject of Attention in a subsequent section of this book.

In this connection it should be noted that Interest may be awakened, stimulated, and continued by Attention intelligently applied under the Rules of Attention which we shall present for your consideration in that section of this book in which the subject of Attention is considered in detail.

III. Discrimination. One may cultivate Observation "on general principles" by directing it to all objects, without regard to their importance, essentiality, or special purpose. But such Observation will not be Efficient Observation. Efficient Observation requires discrimination along the lines of Purpose. Efficient Observation is Purposive Observation. Purposive Observation is Observation directed toward the discovery and detection of facts which will be "useful" to you in the general or special fields with which are concerned your work, your recreation, your studies, your culture.

If you proceed upon the principle that any and all kinds of Observation—the Observation of all manners, sorts and kinds of things—is Efficient Observation, you will have failed to catch the spirit of this instruction. If you had all Eternity in which to observe, and in which to accomplish an Infinity of Creative Work, then this indiscriminate Observation might serve your purposes and thus be advisable. But, inasmuch as you have only a limited time in which to observe, and a limited number of tasks possible of attainment by you in this life, then it behooves you to exercise an intelligent discrimination concerning the general or special classes of objects or subjects toward which you are to exercise Efficient Observation.

To “observe on general principles” is as impracticable and inefficient as to “think on general principles”—in either case you will “get nowhere,” as the current idiom so forcibly expresses it. In such cases you will be so occupied in observing or thinking about the non-essentials that you will have no time left in which to observe or think about the essential, necessary, efficient things in your particular field of activity. You will be like the squirrel in his wheel, continually traveling but never arriving anywhere—you will simply be wasting your time and energy. Your Efficient Observation, then, must have a definite purpose, and must proceed in a definite direction. It must be

concerned with the lines of activity which represents your chief purposes in life—and it must be kept within at least the general limits of such purposes.

This Purposive Observation may proceed along two general lines, viz., (1) **Simple Observation**, i.e., the observation of the qualities of the objects brought into Attention by reason of their presence in or association with your general or special lines of work or study—to the end that you discover and detect so far as is possible their general character and nature, i.e., the “whatness” of them; (2) **Experimental Observation**, i.e., the observation of the aforesaid classes of things along the lines of trial, experiment, or test directed to the discovery and detection of their “workability” in certain directions—the way in which they will work or “work out” under certain applied conditions; in the latter form of Observation the assistance of Constructive Imagination is required.

In Simple Observation you merely discover or detect certain qualities or circumstances concerned with the object under observation; in Experimental Observation you proceed to change or vary the circumstance, that you may perceive the “working out” of those qualities under different relations. In Simple Observation you simply “watch” natural phenomena; in Experimental Observation you “set Nature

to work" in order to make further discoveries or to detect the results arising from new conditions. Thus: man for centuries observed the phenomena concerned with thunderstorms, and learned some very important facts concerning them; later, Franklin, by means of his kite and key, applied the method of Experimental Observation to the same phenomena, and discovered the identity of their causing power with the better known forms of electricity. Simple Observation is employed in the initial stages of science, art and handiwork. Experimental Observation marks their more advanced stages, when the knowledge gained by the simpler phase has greatly progressed and has been subjected to the tests of experiment and trial in many cases and under varying circumstances.

In Simple Observation you observe what exists and what happens without your active interference; in Experimental Observation you interfere with things, and then watch the result. Experimental Observation, therefore, is Simple Observation plus your deliberate interference with, and regulation of, the active processes of the observed object. Thus: you observe certain actions of a young dog, and make certain discoveries concerning them; then you proceed by experiment to test the dog's actions under changed conditions and relations with other things, and from the results thus obtained

you make additional discoveries which give you a fuller understanding of the actions originally observed.

Experimental Observation is a "short cut" in Observation. If you had all Eternity in which to observe, and could perceive every natural happening anywhere in the universe, then you would not require Experimental Observation; in such case Nature would sooner or later present to your Simple Observation the entire materials for a complete knowledge concerning all of her processes. But inasmuch as your time and powers of perception are limited, you proceed to take the "short cut" of experiment, and thus anticipate many of Nature's future and distant revelations and bring to the present time and place the actual events and happenings. Thus, man has discovered by scientific experiment and reasoning many things which would have required, innumerable years for him to have discovered by Simple Observation. The animal and the primitive man employ Simple Observation alone; reasoning man has enormously increased his effective power by applying it under the forms and methods of test, trial, and scientific experiment.

The following general Rules of Observation apply more particularly to Simple Observation along the general lines of Perception:

Rules of Observation

I. Concentration. Employ Concentrated Attention when you are deliberately observing an object. The clearness of your Perception and the strength of its impressions upon your Memory depend materially upon the degree of Concentration which you apply in the observation. (See final section of this book for special instruction concerning Concentration.)

II. Interest. Throw as much Interest as possible into every act of deliberate Observation. Interest brings forth the full power of Attention, and Attention is the working power by means of which effective Observation is accomplished. The greater the degree of Interest, the easier becomes the application of Concentrated Attention—and its continuance.

III. The Whole and the Parts. Observe the Whole Thing before you observe its constituent parts. See the observed thing as a whole, i.e., in its general outlines, in its main characteristics, in its appearance as a whole thing, before you proceed to observe its constituent parts, its details, its minor characteristics. Get your main facts, and your general outlines, well fixed in mind and memory; this done, proceed to add your subordinate parts and to fill in your details. Study first the tree as that whole thing called "a tree," until you understand clearly its main characteristics and

general outlines; then proceed to a study of its roots, its trunk, its limb, its branches, its leaves, its blossoms and its fruit; then proceed to the study of its soil, its normal environment, etc. Observe the tree and its parts in logical sequence and classification—in this way your reasoning powers will be able to take hold of it more effectively, and your memory of it will be much clearer. Lay a sound foundation, and build from the ground upwards. An important psychological principle is involved in this rule—you will do well to make a careful note of it.

IV. Reviewing Observations. In observing an object subsequently to your original observation of it, review in your memory your previously observed facts concerning that object; and then add to these your additional discoveries and detected facts. In this way you combine the two sets of perceived facts in your memory, so that when you think of the one you will also remember the other; you also will thus associate logically the two respective sets of discovered facts, and by so doing will be able to reason far more effectively concerning the entire subject or object of your Observation. You will also do well frequently to revive in memory the results of your observations of the object or subject, even though you are not conducting a fresh observation; this for reasons similar to those just mentioned.

V. Combined Observation. In observing an object, employ as many channels of sense-impression as possible. Discover not only how the thing looks, but also (when possible and expedient) how it sounds, tastes, smells, and how it feels to the touch and the "muscular sense." This not only because the Memory obtains a clearer impression when the reports concerning a thing reach it through several channels, but also because it is probable that certain forms of your sense-perception are more effective than are the others; in such case, by this method the weak perceptive-impression of the one sense is reinforced and supported by the strong report from the other sense or senses.

VI. Visualized Observations. Wherever possible, you should endeavor to visualize, or create a mental picture of the object as you have observed it. The better and clearer, the deeper and the stronger, the mental picture of the observed thing you are able to create, the clearer will be your "idea" concerning it, and the better will you remember the results of your observation. You will do well frequently to recall this picture in recollection. If you are unable to see and remember it clearly, you should remedy the deficiency when you again observe it—continue this until you can mentally picture and remember it in complete detail, or nearly so. By following this plan you

will both "know" and remember the observed thing, as a whole and in detail, far better than otherwise.

VII. Naming Observations. Wherever possible, you should endeavor to learn and remember the name of each of the qualities, parts, elements, factors or general and special characteristics of the observed thing. That is to say, just as in the preceding rule you have been advised to visualize or "see" the observed thing, as a whole and in its parts, so you are now advised to learn the "name" of such whole and parts. The ancient philosophers (particularly the Oriental teachers) had much to say concerning "name and form": they have implied that in the knowledge of "name and form" consists all possible knowledge of a phenomenal thing. Be this as it may, it is a fact that the better you know the "name and form" of an observed object and its parts, the better do you practically and effectively "know" the same—and the better do you remember it. Your perceptions of the "names and forms" of things are the bricks with which are built up the greater part of your structure of knowledge; add to this your perceptions of "how the things act," and there is very little missing in the full conception. Words serve to crystallize thoughts.

You will do well to write down the "names" above referred to, when you are conducting a

deliberate and earnest observation of anything. Put down on paper the facts which you have discovered and detected in your observation, whenever such is possible and expedient. Review this list frequently—particularly before each new observation of the thing. It is not necessary to go into a technical explanation concerning this principle; enough to know that it is scientifically sound—and, above all, that it “works out.” If, however, you insist upon some sort of an explanation, here is one: Just as words are crystallized observations, so are written or printed words the “hard crystals” of Observation—unwritten words too often are like the crystals of snow or ice which melt away by reason of a slight change of the emotional temperature. While this is not an academic, technical definition, it is at least an efficient pragmatic explanation—it will “work out” in actual practice.

The General Rule. A general rule concerning deliberate and Purposeful Observation is this: What is worth deliberately observing, is worth observing thoroughly; what is worth observing thoroughly, is worth observing as completely as may be. If you wish to “know” a thing thoroughly and completely, because of its importance to you as an item of knowledge, you must proceed as does the child sucking a sweet orange—you must extract every drop of sweetness in it. Or, you must be as a weasel

sucking an egg—you must suck it dry. Just as the egg is full of meat, or the orange full of sweet juice, so is every "worth while" object full of facts—and it is your business to extract those facts from it.

You must attack the observed object from all angles, all sides—not forgetting that "everything has two sides: the outside and the inside." You must go to its centre; and extend your observation to its full circumference. "Worth while" knowledge is the knowledge of facts. Every "worth while" object or subject is full of facts. These facts may be extracted by Observation conducted under the principles of scientific analysis, dissection and separation. You, yourself, have all the elements of an efficient observer within you—it is for you to decide, however, whether you wish to express them. We can merely point out the principles to you—you must do the rest.

Concluding our consideration of the general subject of Observation, we ask you carefully and earnestly to consider the following true incident in the life of an eminent scientist. The story embodies in it most, if, indeed, not all of the essential elements of Efficient Perception and Purposive Observation. If you will grasp the spirit of the story, then will you realize just what Observation actually is, in its full meaning. When you comprehend the lesson of this true story, then will you understand the

Art and Science of Observation. We advise you to fix well in your memory the essential features of this remarkable story, true as it is in every detail and in its sequel. Here follows the story:

How Agassiz Taught Observation

Louis Agassiz was one of the world's greatest naturalists. Moreover, he was renowned as a teacher of his special branch of science. His pupils were noted for their keen powers of Perception, scientific analysis and synthesis. He could lecture on the subject of an animal of apparently no interest whatsoever, and his audience would listen as if to an entrancing story—this because he knew the really interesting facts about the apparently uninteresting creature, and could make others perceive them. He taught his students to know the facts of animal-life so well that they frequently were able to reconstruct the picture of an animal from being shown merely a few of its unimportant bones. His advice to his students was: **"See, Observe, Remember; Interest is the key to these three doors of Knowledge."**

One day there arrived at Agassiz's laboratory a pupil from a distance; he had traveled far to learn the science of zoology at the school of the master. The great teacher, instead of directing him to study certain textbooks, simply made him take a chair. Placing before the seated student a fish taken from its jar of alcohol, Agassiz

told him to observe the creature carefully, noting down on paper every fact he could discover from an examination of its body, without cutting it open or using any instruments. He then excused himself, telling the student to continue at his task until his return.

The student was a little piqued at the simplicity of the task. He felt that he knew all about a fish's body, but he cursorily examined the specimen more as a matter of politeness and of duty than from any belief in the value of the task or its result. He examined the fish for about fifteen minutes, noting down carefully the few things he perceived concerning its shape, size, conformation, color, etc. Then he waited somewhat impatiently for the teacher's return; but the teacher failed to come back to him. He asked the assistants to find the professor; but they reported that he had seemingly dropped out of sight. However, they advised the student to await his return, and to continue the task while doing so.

The student was disgusted, to state it mildly. He looked at that fish from nose to tail; he turned it over and looked at the under side of it. He discovered a few additional facts—but very few. He felt that there was no one—even the great teacher—who could discover anything more about that fish. He began to think that he had made a mistake in coming to that particular teacher—the man must be silly to set him at such a task, and then to go away and forget him. He went

out for lunch; when he returned, the teacher was still away. The assistants told him that the professor had returned during his absence, and had left word for the young man to continue the task set him. Then he became more than disgusted—he was filled with impotent rage.

In his anger he took another look at that despised fish. He grew tired of the monotonous gazing at the creature; and in desperation he began to classify and count its scales. This over with, he drew a picture of the fish in order to pass the time. In making the drawing, he discovered that the fish had no eyelids. (Agassiz afterward told him that "a pencil is the best of eyes.") Continuing with the sketch, he made a number of similar discoveries, and finally began to work up a little interest in the task. He forgot his former weariness and disgust, and the returning teacher found him deeply engrossed in his discoveries concerning the fish. But Agassiz said: "You have missed nearly all the interesting points; keep on observing." The young man felt a bit disappointed, for he had expected to be commended; but he kept on, and was reluctant to leave when called a hour or so later. His interest had begun to awaken; his Attention followed Interest; and he had begun to manifest Purposive Observation with Concentrated Attention.

That evening, in his room, the pupil began to think about that fish; he recalled the many facts he had discovered about it, and he began to see

where other facts might be sought and found. He became impatient at the slow passage of the time—he longed to be at his work. He had begun to extract facts from that fish, and his intellectual appetite had been sharpened by his success. Attention had awakened Interest; and Interest has resulted in further and closer Attention. He had discovered the endless chain of Attention-Interest-Attention-Interest-Attention, and so on and on and on.

The next day, and for several days thereafter, that student eagerly worked over the same fish. He drew pictures of everything he discovered; and he sought for and wrote down the names of the detected qualities and relations. He had recognized the value of "name and form" as a working-principle of Observation. Aided merely by an occasional general suggestion from the teacher, the young man persisted until he knew practically everything there was to be known about the external facts concerning its habits, etc. When he was finally relieved from his task, it was said that he knew more about that particular kind of fish (from the outside) than any living man except Agassiz himself—a tribute well worth while, his fellow students thought.

The student, himself, afterward developed into an eminent scientist, and carried into his own work and instruction the fundamental principles which Agassiz had imparted to him in that lesson upon the fish, trifling and tiresome as the task

had at first appeared to be. In after years, when he had won renown and fame on his own account, this one-time student said in a public address, after telling the tale: "That was the best zoological lesson I ever had,—a lesson whose influence has extended to the details of every subsequent study; a legacy that Agassiz has left to me, as he left it to many others, of inestimable value, which we could not buy, with which we cannot part."

We are not asking you to emulate this student—you probably have different needs and other aims in life. But we do ask you to try to "catch the spirit" of the teacher, which he successfully passed on to this pupil. Once you have grasped the spirit of the idea, the details will unfold themselves.

VI

CULTIVATING OBSERVATION

In addition to the general rules concerning Observation which we have presented for your consideration—and in addition to that illuminating story of the pupil of Agassiz—we wish to direct your attention to several special exercises designed for the cultivation of the several particular forms of Observation concerned with the five respective phases of sense-perception. These exercises, however, are not presented as “cut and dried” methods, but rather are given as suggestive illustrations of certain effective forms of exercise and training along the special lines indicated.

Sight Observation. Exercises for the cultivation and training of Perception and Observation through the channels of the Sense of Sight fall into two general classes, viz., (1) exercises for training Sight Observation along the lines of rapid perception; and (2) exercises for training Sight Observation along the lines of full and comprehensive perception. It will be well for you to train your powers of Sight Observation along both of these lines; the ideal, of course, being that of comprehensive perception performed as rapidly as is consistent with efficiency.

In exercises and methods along the lines of Rapid Visual Perception the main purpose is to develop the power of seeing clearly as many things or details as possible in one rapid though comprehensive glance. It is astonishing how greatly this power may be increased by deliberate exercise and practice. We have pointed out to you that young thieves are trained in this way by the master criminals. They are trained gradually, proceeding from simple tasks to more complex ones; the teachers proceeding according to strict scientific principles which they have learned by experience. While deploring the evil uses to which such principles have been prostituted in such cases, we must admit their efficiency. The plan is as follows: A few small articles are shown to the student, and he is allowed to give to them but a single swift glance, endeavoring to note as many points as possible. At first, he is able to observe few objects and still fewer details; but from day to day he increases his capacity, until in a comparatively short time he is able to display almost incredible proficiency.

Houdin's method of passing rapidly before a shop-window, observing as many objects or details as possible in a single glance, also serves as the basis of many exercises along this line. This exercise may be varied by rapidly noting the details of the dress of a passing person—women usually have already developed marked proficiency in this direction.

Interesting games have been invented for the purpose of developing this particular form of Perception. One of them is performed as follows: Place a number of small objects on a table, under a cloth; remove the cloth for a moment, and let the participants take a single glance at the objects, then replace the cloth. The participants must then each write down what they have observed. At first, they will be found to have observed very little; but after a little practice they will surprise themselves and the observers by their rapidly developing proficiency.

In Italy, the little boys play a game called "Morro," in which the same general principles are employed. One boy exhibits a closed fist, from which he suddenly extends one or more fingers; the other boy must state instantly the exact number of extended fingers, the penalty for failure being a sharp blow. This sounds as if the task were simple—we suggest that you play the game several times before passing final judgment.

In other countries a similar game is played by the children, the principles of which are as follows: The first child places a number of dried peas or beans in his hand; the closed hand is held before the other child, and then suddenly opened; the observing child must name exactly, and without a moment's hesitation, the number of objects in the hand—the penalty being a sharp slap on the cheek. Games of this kind develop marked powers of rapid sight-perception on the part of the

gamins playing them, which powers are often of benefit or service to them in the later years.

Kipling gives an interesting and instructive illustration of a similar game in his story entitled "Kim." The boy, Kim, and a native boy, are being trained by a master-hand for the Indian Secret Service. Old Lurgan Sahib, the instructor, places fifteen jewels on a tray, and bids the two boys to take a rapid but careful glance at them—the tray then being withdrawn.

Kim, a novice, reports that he has seen on the tray five blue stones, one big, one smaller, and three quite small. He says that there were four green stones, and one with a hole in it; also one yellow stone that he could see through, and one stone like a pipe-stem; also two red stones, and one ivory object, little and brownish—this is as far as Kim can go.

The native child, who has received some previous training along the same lines, reports that on the tray he has perceived, first, two flawed sapphires, one of two ruttees and one of four, as he should judge; the four ruttee sapphire is chipped at the edge; he saw also one Turkestan turquoise, plain with green veins; also two other stones inscribed, one with "the name of God" in gilt, the other (which had come from an old ring) being cracked across so that the inscription could not be read. He saw also five blue stones; four flawed emeralds, one drilled in two places, and one a little carved—their weights be-

ing three, five, and four ruttees, respectively, so far as he could judge. He also saw one piece of greenish amber, and a cheap cut topaz from Europe; one ruby of Burma, of two ruttees, and without a flaw; and one ballas ruby, flawed, weighing two ruttees; also a carved ivory from China, representing a rat sucking an egg; and, finally, a ball of crystal as big as a bean, set in gold leaf.

Old Lurgan Sahib, comforting the chagrined Kim, tells him that "the secret consists in doing it many times over, till it is done perfectly, for it is worth doing." In this game there is material for an almost unlimited variety, and consequently of an almost unlimited interest—the latter being an important element of such game-exercises.

Another game-exercise along the same general lines is that in which the participants are seated before a screen or curtain. The person behind the curtain (or screen) tosses up an object which, of course, is seen only for a moment by those in front; the latter write down a statement of what they have seen, the one having the best total average winning the game. In case of skilled players, several objects may be tossed up at one time.

Another game is that in which the observer is asked to name correctly the total number of spots on a domino displayed for a moment; then of two dominoes, and then of a greater number as the skill of the players increases. Similarly, the observer may be asked to name cor-

rectly the color, suit and number of spots on a playing card shown him for a moment; the number of cards then being added to. Likewise, the observer may be asked to name as many words as possible of a printed page presented to his view for a moment.

The principle in all such formal methods of exercise or game-exercises in Rapid Sight Observation, is the same, viz., that of observing rapidly and comprehensively an object or number of objects presented to the view for a brief period of inspection. Skill is attained only by practice and experiment. A surprising degree of skill and efficiency in this direction results from even a moderate amount of practice and exercise. As we have said, the element of Interest should be introduced into the exercises so far as is possible, for it is the keystone of the arch of Observation.

Exercises and methods designed for the cultivation and training of the power of Comprehensive Sight Observation proceed along the same general lines indicated in the preceding pages, i.e., along the lines of practice and exercise of the perceptive faculty involved, proceeding from the simple to the complex, from the easy to the more difficult feats. In this class of exercises, however, the element of time—of rapidity of perception—is not the dominant one; the element of comprehensiveness, completeness, and inclusiveness is the important one. The idea here is not

"how rapidly," but "how thoroughly" one perceives and observes. The following typical exercises will illustrate the general principle involved in all methods of this class.

Go into a room in which there are no other persons present, taking your time for the observation. Note the details of the room and its furnishings, writing down on paper that which you observe. Take note of the approximate size of the room, its shape, the location of the windows and doors, the alcoves (if any); then note the details of the papering, the color of the wood of the doors, window-frame, and panel; note the furniture and pictures, the carpets or rugs, and similar items of furnishings or decoration. In short, note anything and everything concerning the room and its contents. A day or so later, repeat the process; you will find that many little things have been omitted from your first list. Remember the experience of Agassiz's pupil—your's will be similar.

Or, following the same general plan, carefully observe some small object—again bearing in mind the pupil of Agassiz and his method. Some time after, repeat the process and discover how many points you missed the first time. Or, in the same way, take a short walk, mentally noting the buildings, details of paving, and the thousand-and-one things which you perceive when your attention is directed toward them. In all probability you will discover that you have really

known very little about the house in which you live. Try to draw a rough picture of it, including the location and shape of its doors and windows, its rooms, its cornice, its steps, its porch, its chimneys—you will be surprised to discover how little you had previously observed conserving the house, though you may have lived in it for many years. Or, again, walk through a park or bit of woods, noting the different kinds of trees and plants coming under your interested observation. In all of these exercises you will do well to use the pencil for writing down names, and for drawing outlines, maps, etc.,—the pencil is a wonderful aid to Perception.

Refer to the previously mentioned statement of Maupassant, in which he tells how Flaubert instructed him in the art of observing persons and things; note his statement that **there are no two things exactly alike—each thing is a little different.** Then try to discover by observation those particular distinguishing points of difference. Note also Chester's advice to would-be writers—in it the same principle is emphasized. Another writer has said that **"every individual may be described in a single paragraph."** Try to so observe that you may write that paragraph concerning the person under observation! Start a "paragraph record" of your friends and acquaintances. It will be extremely interesting, and very instructive. We might fill page after page with exercises and

methods of practicing this form of Perception and Observation through the Sense of Sight, but the general principle involved in each would be the same; we have sought to impress this principle upon you in the foregoing statements and typical exercises.

In practicing the above suggested exercises, or any of your own along the same lines, you must not lose sight of the general Rules of Observation stated in the preceding section of this book; these rules apply in all cases coming under your observation. Above all, remember the tale of the pupil of Agassiz:

Hearing Observation. In developing and training Perception and Observation through the channels of the Sense of Hearing, the general principles of Sight Observation should be observed—the only difference being that instead of “seeing” things attentively you “hear” them in that way.

Listen to what is going on around you, when you wish to exercise and practice in this way. There are plenty of things to hear, if you will turn your Attention to them. Refer to the previous section of this book in which we have called your attention to the efficient auditory-perception of persons in different occupations requiring the same—this will give you a clearer idea of the character of the tasks you should set yourself in this work. You will not suffer from lack of material for your exercises, never fear. You will

learn something by closing your eyes and trying to locate and "know" things through the attentive Sense of Hearing.

Study the voices of persons, noting their accent, tones, and personal characteristics. You may learn readily to determine the nationality of different speakers, and even to tell from what particular part or section of your own country they have come. Study the sounds of the footsteps of different persons; you will soon discover that there is "character" in footsteps, as well as mere physical habit. When you attend concerts and musical recitals, practice listening to one particular instrument, shutting from your Attention all the other instruments. In short, if you wish to cultivate and train your powers of Hearing Observation begin to take an interest in sounds, tones, voices and other forms of impressions concerned with the Sense of Hearing; this will set into operation the Attention, which in turn will awaken new Interest, and so on. Interest is the first step, and probably the most important one.

Tasting and Smelling Observation. We do not think it necessary to go into details concerning the cultivation and training of the power of Taste or Smell Perception and Observation. The general principles previously mentioned apply equally in the present case. Interest, Attention, Use, Practice, and Exercise—the employment of these will bring the desired end and result. An interesting experiment in Taste Perception is that

in which, while a bottle of perfume is held under his nose, a blindfolded person is asked to distinguish between the taste of several familiar foods placed in his mouth; the distraction of his Sense of Smell from the food will be found to affect materially the clearness of his Taste Perception. Testing the Sense of Smell when the person is blindfolded will also show how poorly that sense is developed in most persons; and at the same time will furnish an excellent method of developing and training that particular sense-perception. Blindfold an habitual smoker who is a good judge of tobacco, and also place cotton-batting in his nostrils; then let him try to report the quality of the tobacco he is smoking, by taste alone. The result in most cases is surprising.

Touch Perception and Observation should proceed along all of the several lines mentioned in our previous consideration of the Sense of Touch. You should learn effectively to distinguish between the different perceptions in the following classes, viz., (1) the perception of minute objects or parts of objects; (2) the perception of the details of composition, arrangement, or relations of the parts of objects, including the qualities of hardness, softness, roughness, smoothness, etc., and (3) the perception of differences in temperature.

In this connection, practice and exercise directed toward the cultivation and training of the "Muscular Sense" is important and inter-

esting. Such exercises and training may proceed along the lines of developing the perception of weight, size, pressure, resistance, form shape, etc., and as well in the development of skill in using tools, instruments and similar appliances. Manual training in all of its forms is valuable training, not only in itself and for its immediate results, but also by reason of the fact that it tends to develop and train certain very important brain-areas, and thus to render one more generally efficient along many lines of mental work and activity.

Expectant Attention. Your consideration of the subject of the training and cultivation of Efficient Perception and Observation will be incomplete if you fail to note the part Expectant Attention plays in the process of Perception. Let us illustrate Expectant Attention as follows: You have read the preceding page; did you notice whether the letter "m" occurred frequently or seldom in its lines? Did that letter appear there at all? You cannot answer these questions without referring to the page itself—you were not "looking for" "m's," and so cannot with certainty say anything concerning the appearance of that letter on that particular page. Now then, glance over the page, with the letter "m" in mind, and note how this letter literally "stands out" in each line. Why? Because you are "looking for it"

this time—your Expectant Attention has been directed toward it.

The above illustrates the principle of Expectant Attention, i. e., that "we see that for which we look," and which "is in our mind." The moral is: "Keep in mind that which you are 'looking for'." This is the mental preparation for the perceptive task—and should be noted and applied in every deliberate act of Attention and Perception, as well as in all manifestation of Observation.

As Kay says: "The mind, as well as the eye, perceives only that which it possesses the power to perceive." You daily fail to perceive many things simply because you have not prepared your mind to "look for them," and to recognize them when they are found. In such cases, you are really "absent minded" so far as those unperceived things are concerned. You will do well to fix this fact in your memory and understanding—it is an important one.

VII

THE SCIENCE OF APPERCEPTION

In our foregoing consideration of the subject of Perception we have confined ourselves to that general phase of the subject which is concerned chiefly with the perception of the qualities, properties and attributes of the objects under consideration. That phase of the subject comprises practically all that is usually included in the category of Perception.

But of late years psychologists have been inclined to include also in that category a form of apprehension and cognition which is concerned with the discovery of the relations and associations of the observed things. Although some would hold that such mental processes more properly belong to the category of Reflection than to that of Perception, the tide of psychological opinion seems to be running in the direction of the latter-day classification just mentioned. This additional phase of Perception is known as Apperception.

Apperception is defined as: "Perception called forth by the relations existing between the external object and other objects already known." Another definition is: "Perception arising from the likeness or association of the

observed object with other objects previously perceived and known." A third definition is: "Apperception is the discernment of the relations and associations between a newly perceived thing and one previously perceived; it is the blending of perception and association."

Perhaps the following illustrative story will convey the idea better than do the formal definitions. A boy, concealed in a tree, watches the passersby. One passerby, noticing the tree, remarks to a friend: "What a fine stick of timber!" The boy says to himself: "Good morning, Mr. Lumberman!" The next passerby says: "Mighty good bark on that tree!" The boy mutters: "Good morning, Mr. Tanner!" The third man says: "I'll bet there's a squirrel's nest in that tree!" The boy whispers: "Good morning, Mr. Hunter!" In the above story, each passerby perceives the same general external aspect of the tree; but in addition, each **apperceives** those certain related or associated elements possessed by the tree which particularly concerns him because of his interest or interests. Each **apperceives** the tree according to the relations and association arising from his own most interesting experiences. And finally, the boy is seen to have **apperceived** the tree in its qualities as a hiding-place, according to his own previous experience and their related associations.

In the broad sense, for that matter, all the higher acts of Perception are really also acts of Apperception. This because each higher perceptive act or process involves memory, association, thought and imagination, as well as Simple Perception. Apperception blends into Reasoning and Logical Thought so closely that it is often difficult to distinguish between the two respective processes. Moreover, your perceptions are nearly always more or less colored by your apperceptions. You see things in their relations to and associations with your previous experience, rather than as they really are apart from the latter. You build associative links to things, and thereafter find it difficult to detach the latter from their relations and associated things. Apperception often tends to cause you to entertain preconceived ideas and prejudices for or against things under observation; this too frequently interferes with true efficient Perception on your part. Apperception is an excellent servant, but a very tyrannical master—often a very unjust one.

An understanding of Apperception will explain many things which have heretofore perplexed you. It will give you the solution of that perplexing question as to why different persons readily find entirely opposite qualities and properties existing in the same thing—their respective reports frequently differ so

greatly as to be most difficult to reconcile them intelligently. Apperception, untrained and unrestrained, causes persons to "find just what they expect to find." A man harboring certain preconceived notions concerning a particular subject or object will most likely apperceive in it just those qualities or attributes which agree with his particular notions; while another man with opposite notions will apperceive facts quite opposite to those apperceived by the first man. Each finds that for which he looks, and which he expects to find; and each ignores or fails to apperceive the opposite set of facts or conditions.

Interest, self-interest, preconceived notions, prejudices, previous associations, previous experiences—these tend to color your Apperception, and to cause you to see through their colored glasses instead of through the clear colorless glasses of Truth and Reason. You will find yourself inclined to see things, not as they really are, but according to their degree of agreement or disagreement with your previous associations and experience, or with your prejudices and preconceived ideas. Other facts connected with them will almost seem not to exist for you, unless you are careful. A fact related to your previous experience will tend to outweigh a half dozen equally valuable facts with which you have had no previous experience. This will doubtless be all right if

you wish to become a bitter partisan, or an enthusiastic advocate of some particular cause or interest; but it will not be right for you if you wish to become an honest, consistent, logical thinker. If you seek Truth for the sake of its truth, then you must always be on the look-out for this phase of Apperception, for it is always at your elbow playing the part of the tempter and deceiver.

But, as we have said, Apperception is an excellent servant, although a poor master. You may set it to efficient work as a servant by impressing it with the strong idea of the general direction of your search for knowledge—by fixing strongly upon it the idea of the special or general class of information for which you are seeking, and then bidding it to discover facts in accord and harmony with them, and with the things which will aid and serve your general purpose and aim. Apperception so trained will invariably and inevitably seek out the desired related or associated facts for you whenever they abide in the object or subject under observation or investigation. It will always seek to discover for you the facts related to or associated with your main purposes and aims. It will do this by the force of Interested Attention, Concentration, and Sub-conscious Mentation.

Moreover, by your understanding of the principles of Apperception you will be able to

acquire knowledge of the right kind, and in a logical manner. By learning the correct basic principles of any subject which you wish to master, and by setting these before your Attention in the proper manner, you tend to arouse the power of Apperception, and to direct it toward the building of a logical and scientific structure of Thought upon the solid foundations which you have exhibited to it. In such cases, Apperception will eagerly search for facts with which to build the structure; it will seek for them in almost every act of simple Perception. It will seek in every experience something which will "fit into" the structure. It will seek this material as the essential facts of experience, and will lightly pass over the non-essentials. Trained and well-directed Apperception stands by, always eager to pounce upon any presented facts which it believes to be directly associated with and related to the general structure of your thought and feelings.

If you wish for an actual illustration of this action on the part of the faculty of Apperception—this power which seeks to aid and assist you in your pursuit of knowledge and information, you will find many such within your own everyday experience. A little exercise of the memory will show you that whenever you have begun to become specially interested in an object or subject there has begun to be manifested a peculiar awakening of "something

within you" which displayed great eagerness to discover and uncover facts, details, relations and associations concerning the subject or object of your interest. You will find that your Attention frequently was suddenly directed to and caught by some item in a newspaper or magazine, or some portion of a book, which had a direct or indirect relation to or association with that subject or object. In fact, you will find it was difficult for you to pick up any newspaper, magazine or book without finding such related or associated information—even though you might have read its pages several times before, without discovering any such thing in it. You will find that your World of Experience then extended its boundaries rapidly in the locality of that special object or subject of your interest. A new world of facts was discovered by you; and a new body of relations and associations was uncovered for you.

That "something within you" is an excellent servant—an untiring worker in your interest. It will work even while you are asleep—for it proceeds along subconscious, as well as conscious, lines of activity. This power of Apperception once set to work by you in a definite direction, and with a well-defined purpose, will call to its aid the powers of Memory and Constructive Imagination as well as those of Perception and Observation. It will be well for you to come to an understanding with your

faculty of Apperception, and to issue your commands to it. But you should always retain the mastery of it—for while it is an excellent servant, it will develop into a tyrannical master if you surrender control to it. It is but a tool and instrument for the use of that Master which you, Yourself, should always be in your World of Experience. .

The faculty of Apperception is essentially concerned with the establishment of relations and associations between a newly perceived fact and other facts previously perceived and already known. Apperception is a "relating activity." Apperception has well been described as "the combining activity of the mind that brings order and harmony into our mental life by transforming the consciousness of related facts into 'the consciousness of relations'." Perception brings to you the apprehension of particular facts actually related and associated; but Apperception is required before you may discern such relationship and association. When it is remembered that Thought is concerned largely with the discovery of the relations between different particular things, the importance of Apperception begins to be realized.

Apperception also may be said to be that phase of Thought by which you "perceive and discern" the relations existing between the different items of knowledge existing in your in-

ner, World of Experience. Two separate known facts may have places in your World of Experience, having been placed there by Perception; but you may not be consciously aware of any relation or association existing between them. When your mind "wakes up" to the fact that the two facts are related in certain ways, and that there is a logical association existing between them, then you have exercised the faculty of Apperception. Or again, you may perceive a new fact, but have not as yet become aware that it has any logical or practical relation to other facts previously known to you; in such case, also, Apperception supplies the missing connection, and the two facts become welded in your Thought.

Men had perceived many facts concerning electricity; but Apperception was required to relate these facts to lighting, heating, motive-power, transmission of messages, etc. Coal had been perceived ages before it was apperceived as related to the subject of heating. Petroleum had been perceived long before it was apperceived in its relation to the subject of lighting, heating, motive-power, etc. Certain gases were perceived long before it was apperceived that they bore an important relation to raising a balloon. Wool was perceived long before the primitive man apperceived its relation to warm covering for the human body. The heat generated by friction was perceived

long before some one apperceived its relation to fire-producing activity. The progress of the human race has resulted largely by reason of man's faculty of Apperception—the power of discovering new relations in things. The future progress of the race depends largely upon the further exercise of the faculty of Apperception in the direction of additional discoveries of new relations between things already perceived.

The progressive man is ever on the lookout for the discernment of new relations concerning the things already perceived by him. All discoveries in science, and all inventions, are the result of this discernment of new relations by the exercise of Apperception. A prominent college professor was wont to advise his pupils: "Be ever on the hunt for relations. The only progress possible is that arising from the discovery of new relations. No matter what is a man's occupation, his success depends largely upon his close study of relations. A faulty knowledge of relations frequently results in failure. Whenever you learn a new thing, apparently unrelated to any other part of your knowledge, make haste to establish relations and associations for it."

Your degree of knowledge of anything depends materially upon your knowledge of its relations and associations. In fact, about all that you can ever hope to know concerning

anything is (1) its qualities and characteristics; and (2) its relations and associations. You "know" a thing only as you "know" these two classes of facts concerning it. The first class is known to you through Perception; the second, through Apperception. Apperception is the connecting link between Simple Perception and Simple Thought; it partakes of the nature of both of these mental powers, which it likewise connects and binds together in the mental processes.

Apperception is manifested in two general ways, the active principle of both being the same. These two ways are as follows: (1) the way of Experimental Observation, in which you "set things to work," in which you test them under varying circumstances, in which you "try them out" and conduct experiments with them—all on the physical plane, though under your mental Observation; and (2) the way of Constructive Imagination, in which you perform various experiments with things, similar to those above noted—but this time on the mental plane instead of the physical.

In the first of the above noted ways, you do your work with your hands and in the world of matter; in the second way, you perform the work "all in your mind," and with the aid of the mental faculties alone. The inventor on the physical plane employs both of these ways; the inventors on the mental plane—the great

planners, designers, constructors who see first the thing as "ideal" to be afterward materialized as "real"—these men employ the second way, principally. But, in either case, the "raw materials" of Apperception are furnished by Perception—they can come from no other source.

When one holds before his mind a definite, clear and strong ideal which he insistently desires, confidently expects, and persistently wills to become materialized into reality, then he sets into activity the powers of Apperception in behalf of the realization of that ideal—toward making that ideal become real. Then, as a writer has well said, "your apperceptive conceptions stand like armed soldiers, within the strongholds of consciousness, ready to seize upon everything likely to prove of service to the great cause." Without the definite, clear, strong positive ideal, these soldiers are asleep, and accordingly fail "to seize upon" the valuable related facts, and you never become conscious of them. When Apperception is aroused, you become aware of a great world of related facts of which you had previously been unaware. But without the incentive of the ideal, or "subject held in mind," Apperception will not be aroused; in such case "your apperceiving conceptions will have been asleep, and their natural prey will have escaped them."

The field of Apperception must be cultivated by Interest, Definite Ideals, and Fixed Purpose, before it will bring forth its crop of related and associated ideas and facts. Teachers realize this when their leading authorities bid them to "prepare the mind of the pupil for the efficient assimilation of the knowledge to be imparted to them"; and that "we must prepare the minds of our pupils for the apperception of concepts; we must help them to array in their minds their apperceiving conceptions"; and "let us put a definite question before them which is the definite aim of the lessons to answer." Also, "We must bring out of the memory and experienced perceptions of the pupils everything that bears upon the lesson; this can be done best by asking them questions, because in this way we secure the greatest amount of mental activity on their part." You will do well to note the above suggestions concerning the knowledge-extracting power of questions.

While it is true that the present volume has for its sole field the consideration of Perceptive Power—the associated subjects of Creative Power, Constructive Imagination, Subconscious Mentation, etc., forming the respective fields of companion volumes—yet we feel that we should at least call to your attention the general principles of the application of Apperception in the other mental processes to which

we have just referred. The following paragraphs will be devoted to that purpose; the careful consideration of what is stated in them should at least set you on the right road, and point out the way toward further training along those particular lines if you should so elect.

Those who have accomplished great results by the employment of Apperception along the lines of Ideation and Constructive Imagination, report that they owe their success largely to an observance of certain fundamental rules which may be stated as follows:

I. Fill the mind with the "raw materials" furnished by the Perception of the important facts in your special field of endeavor and work. In the present book the accepted methods of accomplishing this stage of the process have been pointed out, and practical working plans presented to you.

II. Create a strong, clear, positive, definite "ideal" of that which you wish to accomplish—accompanied with a positive, definite purpose to attain and accomplish the materialization of that ideal. Set before your mind the definite question which you wish to be answered; make the demand that your mind shall answer that question by means of bringing out from the great storehouse of Memory the related and associated concepts and facts which have been placed there by Perception; and by means of causing the Constructive Imagination to pic-

ture these concepts and facts in new orders, combinations, and arrangements, so as to conduct an effective process of mental testing, trying-out, and experimentation.

III. By means of your Definite Ideals, Insistent Desire, Confident Expectation, and Persistent Determination, set into operation the activities of the great planes of Subconscious Mentation which are at your disposal, and which will readily respond to the demand. By doing this you will start that process of "unconscious rumination" which all great inventors and discoverers in any field have experienced. Place before your subconscious faculties the questions which you wish to be answered—the questions concerning the new relations and associations between certain known facts and others not as yet recognized as related to or associated with them.

IV. From time to time, indulge in the mental process of Reverie—"go into the Silence," as some of our metaphysical friends call it—not into a condition of day-dreaming, but rather that of a state of "shutting-out outside perceptions" so as to concentrate the Attention upon the inner field of Apperception. Some advise that this process should be undertaken at the same hour on each successive day, until the problem is solved; others hold that the subconscious faculties themselves will serve notice upon you that they are ready to "report prog-

ress." In either case, at such times you should "roll over in your mind" the question before you; discovering just what relations and associations you know concerning the thing in question, and seeking to discover at least the general direction of other relations and associations. Experiment, test, and "try out" mentally any arrangement, plan, process, or combination which may present itself to you. You will find that from the subconscious realms of your mentality there will at times "flash out," or "pop out" some entirely new plan or idea involved in the general question. When you have "ruminated" sufficiently to exhaust the material presented to you in this way, you should bring the sitting to a close; and once more dismiss the entire subject from your conscious field of mentation, with a parting demand upon your subconscious faculties to "do some more work on this question."

V. The above successive processes of conscious "stock-taking," and "subconscious rumination," should be continued until you feel that you have exhausted the subject for the time being. Then, take a rest—at least so far as is concerned your conscious field of mentation; your subconscious field will continue at work, as you will discover when you consult it again after your interval of rest. If this process and method should seem somewhat fantastical to you, rest assured that the reports coming from

some of the most practical and "hard-headed" workers along the lines of invention and discovery, in many different fields of human endeavor, show that they have followed some such plan and method—although they may use different terms in which to express it.

The essence of the above rules may be expressed as follows: In your World of Experience you have stored away thousands of facts and ideas composed of the raw materials of your Perception. They are all there, though you may have apparently forgotten many of them; all that is needed is the discovery and discernment of the connecting links of Relation and Association—these will prove to be the "loose ends" by means of which you may unravel the ball of Subconscious Memory. By employing the above methods of Apperceptive Subconsciousing, you will bring to the surface of consciousness these missing facts and ideas; and in addition, your Constructive Imagination will work over into new combinations and arrangements of Relation and Association the materials "sent up" from the subconscious storehouse of Memory. But, last as first, the materials supplied by Perception constitute the entire materials of which your World of Experience is constructed. Remember that here, as elsewhere, "you can get out of anything only what has been put into it." Therefore, proceed to cultivate efficient Apperception by first de-

veloping efficient Perception. The working materials of Apperception are but the combined elements deposited in the Subconscious by the processes of Perception. Apperception can uncover only that which has previously been registered in the mind by Perception. Apperception works up the raw materials of Perception into more complex forms of Percepts or Concepts.

VIII

THE POWER OF ATTENTION

We wish now to direct your attention to that wonderful power of the mind which is known as "Attention," and to indicate to you certain fundamental laws of its activity.

Attention is defined as: "The mental act, process, or faculty of application to any object of sense, representation, or thought"; or, "The act of concentrating the mind on any object of sense, or on any mental conception." A more technical definition is: "Consciousness concentrated in order intellectually to conquer a particular object or subject."

The scientific conception of Attention is well illustrated by the following celebrated statement of Sir William Hamilton: "Attention is consciousness—and something more. It is consciousness voluntarily applied, under its law of limitations, to some determinate object; it is consciousness concentrated. * * * Attention is consciousness applied by an act of will, or desire, under a particular law. This law, which we call the law of limitation, is, that the intention of our knowledge is in the inverse ratio of its extension—in other words, that the fewer the objects we consider at once,

the clearer and more distinct will be our knowledge of them. * * * An act of Attention, that is an act of concentration, seems as necessary to every exertion of consciousness, as a certain contraction of the pupil is requisite to every exertion of vision. Attention is to consciousness what the contraction of the pupil is to sight; or to the eye of the mind what the microscope or telescope is to the bodily eye. The faculty of Attention is not, therefore, a special faculty, but is merely consciousness acting under the law of limitation to which it is subjected. But whatever be its relation to the special faculties, Attention doubles all their efficiency, and affords them a power of which they would otherwise be destitute. It is, in fact, as we are at present constituted, the primary condition of their activity."

Attention, then, is that action of the mind whereby it brings into consciousness any subject or object to which that action is directed. It is the focusing of consciousness; or, some prefer to say, it is a detention in consciousness. The sun's rays may be scattered over a large surface, and its heat scarcely be perceptible; or, on the other hand, they may be focused through a sun-glass to such an extent that they burn a hole in a piece of hard wood. In the same way, you may spread your consciousness over a number of objects, and thus become but dimly aware of any of them; and, on

the other hand, you may concentrate and focus your consciousness by an act of Attention, so as to become most intensely and most vividly aware of the facts concerning that object. As Hamilton has said in the above-quoted statement: "The fewer objects we consider at once, the clearer and more distinct will be our knowledge of them."

Psychologists usually divide the activities of Attention into two general classes, viz., (1) Involuntary Attention, and (2) Voluntary Attention.

Involuntary Attention is that form of Attention which you give to the passing objects which arouse your interest or curiosity, or even by your "passing notice." Your Attention is attracted easily to such objects or events, without any effort on your part. This form of Attention is an almost automatic, instinctive, or purely reflex action arising from the stimulation of the senses or appeal to the feelings. No effort of the Will is required in such cases; in fact, it often requires a distinct effort of the Will to direct the Attention away from such distracting sensations or feelings.

Young children—even infants—and the lower animals manifest Involuntary Attention to a marked degree; in fact, it is held that very young children are incapable of any other form of Attention. Uncultured persons manifest but very little Attention other than this. Many

persons who have failed to cultivate Voluntary Attention properly get but slightly beyond the stage of Involuntary Attention at any time; they may habitually manifest such reflex conscious action; almost any passing stimulus will take their Attention away from their work or tasks.

Involuntary Attention is awakened chiefly by one or more of the following general causes: (1) Present Enjoyment or pleasurable sensation—the attentive process continuing merely so long as the sensation affords pleasure (the same rule applies to Pain and, painful sensations); (2) Curiosity, or curious interest—the attentive process continuing merely so long as the curiosity remains unsatisfied; (3) Novelty, or unexplained objects or events—the attentive process continuing merely so long as the explanation is lacking, or until the novelty passes away; (4) Sudden Impressions upon the senses, such as sudden and startling movements, sights, or sounds—the attentive process continuing merely so long as the sudden and startling quality of the sensation persists; (5) Intensity of Sensation, such as that arising from a flash of lightning, an explosion, loud speaking or cries, or any similar intensely exciting object or event reported by Sensation.

The distinguishing characteristic of Involuntary Attention of any and all forms is this: It is called forth by the influence on the mind

directly exerted by an external object or event itself—it is not directed by conscious Will, its activity is practically automatic, instinctive or reflex, and not voluntary or deliberate.

Voluntary Attention is that form of Attention which you give to objects or subjects selected or determined by your reason, and which is directed by an act of your Will accompanied by more or less sense of mental effort. It is always consciously directed to some object or subject of your own selection, and is always manifested with at least a slight degree of the peculiar sense of conscious effort which distinguishes all Will-activities. This characteristic sense of conscious voluntary direction and effort is the test between the activities of Voluntary Attention and Involuntary Attention—it is always present in the former, and always lacking in the latter. By many of the best psychologists, Voluntary Attention is regarded as one of the most important, and one of the most characteristic activities of the Will.

Voluntary Attention is one of the leading characteristics of individuals manifesting marked Will Power, men of culture and practical mental development, students who succeed, successful men of affairs, inventors, discoverers—in short, of men and women who are Mental Masters instead of Mental Slaves. It is a mark of experience, reasoning power, and will power. It distinguishes the individuals

of deliberation, of determination, of purposive resolution. To develop it in children is one of the first, and often the most difficult, of the tasks of the teacher. It may be stated as a general principle or rule that: **"Every individual who has accomplished anything worth while in any field of voluntary endeavor, has done so largely by his or her developed and trained powers of Voluntary Attention."** It may be stated with equal certainty that: **"No individual lacking in development of the power of Voluntary Attention ever has accomplished anything worth while in the field of voluntary endeavor so long as such lack persists."**

The distinguishing characteristic of Voluntary Attention of any and of all forms is this: **It is called forth not by the direct influence upon the mind exerted by an external object or event itself; but, instead, by the influence exerted upon the mind by reason of the perceived relation existing between the observed subject, object, or event and something else which in and of itself attracts the thought, feeling, and will by reason of its own qualities.**

There must always be an "attraction" calling forth Attention, it is true; but in Involuntary Attention the attraction is direct, while in Voluntary Attention it is indirect. Involuntary Attention acts in direct response to a simple feeling; while Voluntary Attention acts because of a purpose or determination to do, to

know, or to attain something. Involuntary Attention is elementary and instinctive; Voluntary Attention is derivative and complex, and is an acquired faculty. The former moves to satisfy a simple feeling; the latter moves to accomplish a purpose based upon the satisfaction of a higher, deeper and more complex feeling. The former is superficial and transient; the latter is more fundamental and stable.

From this point, our consideration of Attention shall be confined to Voluntary Attention—for that is the phase and form of Attention which you must develop, cultivate and train in order to attain to that phase of Personal Power which is the subject-matter of this book, i. e., Perceptive Power.

Voluntary Attention and Sensation. In our previous consideration of the subject of Sensation, we have called your attention to the fact that you are conscious merely of a very few of the many reports of Sensation which reach you over the channels of your senses; and that such reports fail to reach the plane of your conscious recognition. As all of these reports are more or less calculated to arouse your Involuntary Attention, why is it that some of them succeed while others fail?

The answer to the last question is that in many cases the more familiar sensations fail to register because of their lack of novelty, their

lack of appeal to curiosity, or from similar failure to satisfy the demands of your Involuntary Attention which we have previously classified. But there is another reason, namely, that your Voluntary Attention tends to shut out and inhibit to a great extent those sensations which are not in harmony and agreement with certain thoughts, feelings or purposes which "your mind is set upon"; and tends to give welcome admission to those which possess the requisite quality of harmony and agreement. You may not be fully conscious of this work of selection—but your Voluntary Attention is aware of it, and is performing it all the time.

There is a constant "struggle for existence" in your consciousness manifested by the sensations flowing in through the various channels of the senses. The law of "the survival of the fittest" decides the struggle—but the "fittest" are always those to which the greatest degree of Voluntary Attention is given by you. If your power of Voluntary Attention is developed, and trained by practice and habit, it will shut out from consciousness those inflowing sensations which are not in accord with "what is on your mind," while admitting and welcoming those which are in accord with it.

It is an axiom of psychology that if Attention is centered upon one of several classes of sensations, that selected class will at once assume greatly increased strength and intensity, while

those opposed to it will lose power and intensity. This is particularly true when the Attention happens to be Voluntary Attention. The moral is obvious. It has well been said that persons of weak powers of Voluntary Attention are practically at the mercy of their sensations—that they belong less to themselves than to any subject or object which happens to attract their Involuntary Attention. It being remembered that **“The intensity of a sensation depends largely upon the degree of Attention bestowed upon it,”** you should choose well the many candidates for Attention which throng the Corridors of Sensation, seeking admission through your Door of Perception.

You doubtless have had many personal experiences in which your Attention was so strongly attracted and held by certain objects or ideas that you became almost totally oblivious to all else that was going on around you. One in a “brown study,” or indulging in a “day dream” often has this experience. An ardent lover frequently becomes oblivious of everything else and everybody else in the world except oneself and the loved one; you remember the old line about “only one world, and only two persons in it,” etc., do you not? Science ignores the indwelling romance, and sees in this phenomenon merely another case of Concentrated Attention and Inhibition of Subordinate Sensations. How often have you become

so engrossed in your newspaper, or in your thoughts, that you have been carried past your railroad station or other destination? The same explanation applies to such cases.

A celebrated French writer intensely occupied with his work was totally oblivious of the terrible happenings of the Massacre of St. Bartholomew, although the centre of the carnage was directly beneath his windows. A noted German philosopher was so deeply buried in his studies that he did not hear the great guns of the bombardment of his college town; and after the surrender of the town he was surprised when the soldiers of Napoleon broke into his room searching for escaped prisoners. Socrates once became so thoroughly engrossed in philosophical thought, when he was in the army, that he stood stock still and allowed the entire army to pass on, without being aware of anything unusual; it was only when, hours later, he solved the perplexing problem, that he discovered that the army was many miles away from where he had been standing; he was forced to march half the night to overtake his company.

Many instances are recorded in which persons have been severely wounded, but who by reason of their intense mental concentration upon something else have not perceived their pain for some time afterward. Public speakers suffering great physical pain have

temporarily inhibited the perception of it by concentrating their Attention upon their addresses. Noted writers suffering from excruciating neuralgia have been known to inhibit continuance of the pain by concentrating upon their work. Many persons have inhibited the pain of minor surgical operations, or of wounds, by intently "thinking about something else." There is every difference between the painful sensation upon which "the mind is kept," and a similar one where "the mind is kept off it," as all physicians know.

It is related of Henry Clay that he once became so intensely engrossed in the delivery of one of his great speeches in Congress that he failed to perceive the repeated prickings of a large pin vigorously applied by a fellow Congressman, this latter performance resulting from a previous request from Clay that he be halted in his speech after a certain time had elapsed. The pin wounds repeatedly drew blood from his leg, but Clay never felt the sensation. Some have held that the stoical endurance of the American Indian, and the spiritual endurance of the martyrs, arose from the same general cause: in the one case the dominant idea of traditional Courage and Endurance occupied the Attention; in the other case the exaltation of Faith was the inhibiting factor; the same psychological principle was involved in each case.

Voluntary Attention in Observation, Thought and Memory. Voluntary Attention is an indispensable factor of intelligent observation and thought. What we actually perceive and observe concerning any subject or object depends almost entirely upon the degree of Voluntary Attention that we bestow upon it. The great difference between the man of great powers of observation and reflection, and the ordinary man, is that the former attentively observes the facts concerning matters which he is investigating and perceives resemblances and differences between them which later form the bases of his reasoning on the subject. Some have asserted that the principal difference between the efficient man and the inefficient one lies in the greater capacity of the former for close, continuous, concentrated Voluntary Attention. Some, indeed, have asserted that in the capacity for Concentrated Voluntary Attention is to be found the secret of genius. Newton was fond of asserting that the sole difference between himself and ordinary men consisted of his greater power of Concentrated Voluntary Attention. It is an axiom of Memory Culture that "Memory depends primarily upon the degree of Attention given to the original impression, and to its repetitions in the process of its recollection."

As might be expected from the foregoing, it has been found that one of the most marked

characteristics of a weak mind is that of a lack of ability to concentrate the Voluntary Attention upon a subject or object for any marked length of time, or with any marked degree of intensity. Medical science informs us that imbeciles and idiots are practically destitute of the power of Concentrated Voluntary Attention; and that in certain forms of mental disorders one of the most characteristic symptoms is that of steadily weakening Voluntary Attention. In old age, when the mind begins to weaken and fail, it will be noticed that the aged person is able to remember quite well the events of his early years, but that he is unable to concentrate sufficient attention upon present happenings to fix them in his memory. In illness, the power of Voluntary Attention often is temporarily weakened.

The following several quotations from eminent psychologists may prove of interest in this connection.

Hamilton says: "Attention constitutes the better half of all intellectual power." Brodie says: "It is Attention, more than any difference in the abstract power of reasoning, which constitutes the vast difference which exists between minds of different individuals." Butler says: "The most important intellectual habit that I know of is the habit of attending exclusively to the matter in hand. It is commonly said that genius cannot be infused by

education, yet this power of Concentrated Attention, which belongs as a part of his gift to every great discoverer, is unquestionably capable of almost indefinite augmentation by resolute practice."

The Laws of Voluntary Attention

The following are the most general and important Laws of Voluntary Attention:

I. **The Value of Interest.** Attention attaches itself more easily to interesting subjects or objects; it rebels against attachment to uninteresting subjects or objects. The greater the degree of Interest that exists, or can be created, in a subject or object to which it is desired that Attention shall attach itself, the greater the ease with which Attention is directed toward such, and the greater the ease in holding it there. But, where Interest is originally lacking in the subject or object of Attention, it may be created by associating these with other subjects or objects in which Interest abides; or else by examining the original subject or object for possible points of Interest, the latter usually being discovered in the course of the examination, or else being awakened by the latter.

II. **Variety of Stimulus.** Attention tends to decline and weaken if the original stimulus remains unvaried, and becomes monotonous. Novelty in an object or subject tends to awaken Interest, and thus to give intensity to At-

tention; when the novelty vanishes, Interest wanes, and Attention loses its stimulus. The remedy is found in so conducting the observation as gradually to unfold new attributes in the subject or object; or else by changing the viewpoint, so as to present the subject or object from a new angle of Interest. The discovery of new attributes, properties, qualities, or associations in objects or subjects under consideration will usually awaken new Interest, and as a consequence, renewed Attention. Such process of awakening new Interest, at the same time, tends to vary the stimulus and to add variety to the mental task.

III. **Physical Strain.** When Attention is directed constantly toward a certain object or subject for too long a period of time, the nervous system (including the brain-cells) become wearied and their efficiency becomes temporarily impaired. The remedy for this is found in the method of dividing the subject or object into mental sections or classes, each class or section being observed, examined or considered separately; the Attention then being directed to the next section or class when signs of weariness manifest themselves. By "breaking up" the process in this way, you obtain not only the relief from the physical strain, but also add new interest, varying stimulus, and a better impression upon the memory.

IV. **Resting Attention.** When Voluntary Attention becomes wearied from too constant application to a certain task, it should be rested. But it is not necessary to give it the "rest" of an entire absence of Attention to any object or subject, as in sleep, drowsiness, or similar states—though of course a normal amount of sleep is necessary for health and efficiency. The Voluntary Attention, or rather your powers of Voluntary Attention, may be effectively rested by several methods, the two most important are the following: (1) by directing the Voluntary Attention into entirely different channels, or (2) by withdrawing the voluntary effort and allowing Involuntary Attention to occupy the field for a time. The reason for each of these methods is given in the following paragraphs:

(a) By directing the Voluntary Attention into different channels you bring variety, new interest, and a new stimulus into play; the mental spirit of Attention is invigorated and re-energized, and your physical nervous system and brain-cells are rested by reason of the change of the direction of the Attention. Many busy men rest themselves by changing their mental tasks from time to time under this method—by "thinking of something else."

(b) By allowing Involuntary Attention to exert itself for the time, such as by looking out of the window, light reading, taking a walk,

playing an out-of-door game, attending a play or "movie picture," you obtain rest under this second method; this also being true if you indulge in a reverie, or day-dream, allowing imagination full sway for the time being. Some of the brightest thinkers have rested themselves after periods of intense application of Voluntary Attention, by reading light stories or detective tales; by playing simple games or romping with the children; or by similar forms of diversion.

IX

MENTAL CONCENTRATION

You have heard much of the value and importance of Mental Concentration. You have in a general way realized that it plays an important part in all perceptive and reasoning processes. You doubtless have felt at times that you lacked the power of Mental Concentration—or, at least, that it would be well if your powers of this kind were more highly developed. You have felt strongly, particularly when your mind has manifested a decided tendency to wander away from the subject or object under consideration, that a greater degree of Mental Concentration on your part would be very desirable. But, in all probability, you have never stopped to consider just what this power really is. We trust that when you have finished the reading and study of this part of our book you will have a clearer and more definite idea of the nature and meaning of Mental Concentration; and a better understanding of the methods whereby it may be developed and employed.

The term, **Concentration**, in its general sense, means: "The act or process of bringing, coming, approaching, or directing toward a com-

mon point or centre; or of bringing to or meeting in one point." Mental Concentration, then, is bringing and holding the mind to one point; of focusing its powers upon a central point. As the average person would express it, it is "keeping one's mind on the subject"; the ancient Oriental philosophers called it, "keeping the mind one-pointed."

Mental Concentration, however, is not a special faculty or power of the mind. It is simply a high degree of Voluntary Attention. It is Voluntary Attention manifested in a positive manner, in a quite definite direction, and with a clearly defined purpose. Indeed, in all forms, phases, or degrees of Attention there is a certain manifestation of Mental Concentration—the holding of the mind "one-pointed." Even in Involuntary Attention there is some degree of focused Attention, and the "shutting out" of other sensations and perceptions; for example, the child gazing with fascination upon the passing procession, upon the organ-grinder and his monkey, or upon the window of the toy store or candy shop. In Voluntary Attention there is a still greater degree of Mental Concentration—a greater contraction of the field of consciousness, and a greater limitation of the scope of observation.

In the popular conception, the idea of Mental Concentration is usually associated with the process of holding the mind rigidly and immov-

ably fixed upon some one point. This conception is erroneous: such a process would soon result in a state of self-hypnosis, and hypnosis would then be the achievement of the highest degree of Mental Concentration. Such process would have as its end and aim the "thinking of nothing," for the Attention so held would speedily develop a state of dim consciousness, soon passing into semi-consciousness, and finally into unconsciousness. Mental Concentration, in the true sense, is not this process of "thinking of nothing," but rather that of intensive thinking of some one subject or object, in its various phases, accompanied by an inhibition or "shutting out" of other impressions and other thoughts.

Mental Concentration consists of the three following elements, viz., (1) The application of earnest Voluntary Attention upon one particular subject or object; (2) the application of Perception, Observation, Apperception and Thought upon that subject or object, with the determined and definite purpose of extracting from it all possible information concerning its qualities and relations; (3) the restriction and limitation of the field of Attention by means of a determined inhibition or "shutting out" of other sensations, perceptions, and thoughts. This third element, usually ignored in popular thought on the subject of Mental Concentra-

tion, is really the characteristic and most essential element involved in the process.

Mental Concentration calls into action the power of the will; for that matter, Voluntary Attention, as its name indicates, is distinctly an act of will. Mental Concentration, as we have said, is merely an intensive form of Voluntary Attention—it is Voluntary Attention, “only a little more so.” In ordinary Voluntary Attention, the will acts so as to direct and hold the Attention upon a particular subject or object; in Mental Concentration, the will manifests itself especially in the coordinate action of keeping out of the field of consciousness other impressions, perceptions, and thoughts. In this dual-action there is obtained (1) “keeping in mind” the selected subject or object; and (2) “keeping out of the mind” all other subjects or objects.

Mental Concentration imposes “a continuity of Attention to the same subject.” But this “continuity of Attention” is by no means fully insured by the mere act of “keeping in mind” the selected subject or object of thought; it requires also the “keeping out of the mind” all disturbing or distracting influences. If the will relaxes its hold upon the Attention, then the latter is quite likely to be attracted to and carried away by some of the countless thoughts, ideas, or notions which constitute the “stream of thought,” and which are brought into con-

sciousness by means of the Law of Association. In order to secure efficient Mental Concentration, the will must be trained to prevent the Attention from being seduced, allured, enticed, decoyed, inveigled, and led astray by attractive "passing thoughts."

Gordy brings out this idea very clearly in the following passage: "As you use your will to give your attention to geometry, although it attracts you less than a number of other subjects, so if you really study it, you will use your will to prevent your mind from being dragged away from it by the interests that are constantly importuning you. He who possesses this power in a high degree possesses in a high degree the power of Voluntary Attention—to give steadiness to the mind, to prevent it from going capriciously here and there under the influence of the interests that happen to be present at the particular moment."

The Secret of Mental Concentration, then, is seen to consist of the manifestation of its essential characteristic—the added characteristic superimposed upon those of ordinary Voluntary Attention—namely, that of "keeping out," "shutting out," or inhibiting the influence of distracting, disturbing, and diverting "outside thought," or "other ideas." Voluntary Attention, once directed and held by the will upon a certain object or subject, will readily permit the efficient activity of Perception, Appercep-

tion and Thought, provided that by Mental Concentration the "other" or "outside" attractions are "shut out" and "kept out" of consciousness. We ask you to consider carefully, and to fix in your mind, this fact of the importance of the "shutting out" and "keeping out" process. If you will acquire the "knack" of this "keeping out" and "shutting out" process, you will have mastered the art and science of Mental Concentration—for Voluntary Attention will "do the rest" for you.

A writer on the subject of practical psychology has aptly compared this "shutting out" process to the act of placing "blinkers" on a horse. The "blinkers" prevent the horse from seeing things which are likely to disturb, distract, or divert his Attention from his business of life; they "shut out" and "keep out" the sensations and perceptions of "other" and "outside" things. They narrow his field of Attention, and therefore limit and concentrate his area of present consciousness. They render him practically blind to distracting, diverting and disturbing sights; hence they are sometimes called "blinders," and are defined as "leather screens on the bridle, serving to hinder a horse from seeing objects at the side." If you wish to develop your power of Mental Concentration, you should acquire the knack of applying these mental blinkers or blinders, and should habituate yourself to their employment

at times in which concentrated thought is desirable.

Mental Concentration is a valuable instrument of efficient Perception, Observation and Thought. Its value arises from the fact expressed in that axiom of psychology which states that, "The fewer the objects observed at one time, the greater is the intensity of the concentrated Voluntary Attention employed in the observation." It greatly magnifies the powers of the perceptive and reflective faculties of the mind, because it diminishes the area of the field of Attention. It gives a steadiness to the mind, and bestows a wonderfully increased power of accomplishment upon the faculties involved in the mental processes. In one way, Mental Concentration may be compared to the microscope which makes mentally visible the minute details of the observed object; in another way, it may be compared to the telescope which brings the observed object nearer to the eye of the mind.

The best way of beginning to develop Mental Concentration is that of acquiring the habit of thinking of, or doing, but "one thing at a time." Such habit, in itself, is valuable and tends directly toward efficiency and economy of thought; the opposite habit results in squandering time and energy. Many prominent men have testified to the value of attending to but one thing at a time—giving to it the undivided

Attention for the time being, then withdrawing that Attention completely and focusing it upon the next thing to be observed or considered.

Luys says: "It is necessary in Mental Concentration that one single impression at a time shall be imprinted on the sensorium, and that the elements of the sensorium themselves shall be in a kind of silence and receptive calm." Kay says: "It is as one is able to shut out every other object from the mind—every idea, even that of self—that he attains the highest degree of mental power. If we would possess the power of concentrated attention to a high degree, we must cultivate the habit of attending to what is directly before the mind, to the exclusion of all else. All distracting thoughts and feelings that tend to withdraw the mind from what is immediately before it are therefore to be avoided."

This habit of attending to but one thing at a time has, also, another valuable feature, i.e., that of enabling you to put "out of your mind," to "shut out" and "keep out" of mind the subject or object which you previously have been considering but which you have now laid aside for the time being. By means of this habit, you are enabled to put that subject or object into its appropriate compartment of the mind; to shut that compartment and to keep it closed until you once more wish to examine its con-

tents. With all the other mental compartments closed, you will be able to examine, consider and decide upon the contents of the particular one which you have now before you.

This ability to put aside subjects and objects of thought when one is through with his present consideration of them—this shutting the particular compartment of the mind containing them—is one of the marked powers of men and women who have attained prominence in the various fields of human endeavor. Many prominent persons analyzing the causes of their success in efficient Perception, Observation, Thought and Action, have attributed it largely to this power which they have acquired by practice and through habit. To be able to “take your mind off a thing,” when you are through with it, is quite as important as to be able to “put your mind on a thing,” when you wish to observe or consider it.

We advise you to acquire, by practice and exercise, the faculty and habit of attending to but one thing at a time; and that of passing from that thing to another (when you wish to do so) with ease and facility, but never carrying the “loose end” of thought of one thing over into the thought of the next thing. Napoleon, that great master of Mental Concentration, frequently said that his mind was like a great chest of many drawers: when he wished to consider the contents of any particular draw-

er, he pulled it out; when he was through considering these he closed the drawer—and then kept it closed until he wished to open it once more for a definite purpose. He was careful not to mix the contents of the respective drawers; and he never had two drawers opened at the same time. The senior J. Pierpont Morgan is said to have developed by training a similarly efficient mind; when he was considering a subject he regarded it with absolute Mental Concentration; when the consideration was concluded, he dismissed it completely from his field of conscious Attention, and turned to some other subject.

Granville said: "A frequent cause of failure in the faculty of Concentrated Attention is that of striving to think of more than one thing at a time." Beattie says: "While employed on any one subject, our thoughts should not wander to another. This rule holds good of our rest, play or recreation, as well as of our work. When we go to the fields of exercise, we should leave all our speculations behind; otherwise we will fatigue the body and distract the mind, and will confirm ourselves in those habits of Inattention which, when persisted in, constitute what is called an 'absent minded' person."

What at first may seem an exception to the rule of Mental Concentration is found in the fact that often one finds himself better able to concentrate upon a subject or object when his

Attention is faintly stirred by something else—by something of but slight interest, such as, for instance, a dull sermon, a piece of light music, or the voices of persons engaged in idle or light conversation.

This apparent exception, however, when rightly understood is really a verification of the rule rather than an exception to it. It is explained by the well-known fact that a slight stimulus often serves to attract feebly and hold lightly the idle, Involuntary Attention—to “keep it busy”—thus preventing it from being attracted by stronger and more active sensory or representative stimuli which would tend to distract, divert and disturb the Voluntary Attention from its definite task.

We once heard a lady explain this process as follows: “It is like giving the baby an empty spool to play with, in order to keep it out of mischief!” This furnishes the explanation of the familiar phenomenon of a person whittling a stick, or drawing figures on a sheet of paper, in order better to “think about” a thing under consideration. It also gives the reason for the fact that many a time, while listening to a dull sermon, uninteresting lecture, or tiresome play, one is able to “think out” certain problems or questions which have previously been “too much for him.” Thus the dull preacher, or his brother in other fields of public work, often is a blessing in disguise; though few such

would appreciate a testimonial to this effect.

In the earlier stages of our present consideration of this particular subject, we directed your attention to the fact that Mental Concentration is not a state of "thinking about nothing," but rather is one of intense "thinking about something." That "something," however, does not consist of some one indivisible point of thought or perception—if it were this, then the conscious Attention would soon flag, and a state of lessened consciousness, such as drowsiness or even sleep would intervene: continued focused Attention upon an "indivisible point," or upon any other abstract thing, would result in at least some degree of self-hypnosis, unless sleep asserted itself. The "one thing" must be a concrete thing, i. e., an actual thing made up of parts, elements, factors.

Hazlitt says: "Concentration does not, as popularly supposed, mean keeping the mind fastened on one object or idea or in one place. It consists in having a problem or purpose constantly before one. It means keeping our thought moving toward one desired end."

Mental Concentration is not like a stagnant pool of water. It is not motionless; it is in constant and continuous motion—intense motion. It is like an active, swift whirlpool, abiding in one place or point in the "stream of thought"; its whirls draw to it all that it needs from the

mental waters around it. It moves, is always moving, yet it moves not from its own place.

This leads us to a reference to the Laws of Attention set forth in the preceding section of this book; for in the understanding and application of those principles is to be found the effective "working method" of Mental Concentration. These Laws of Attention, stated briefly, are as follows: (1) **The Law of Interest**, whereby the presence of a lively Interest is a necessary factor of the manifestation of Attention; (2) **The Law of Variety of Stimulus**, whereby the element of Novelty is a necessary factor in the manifestation of the continuation of Attention; (3) **The Law of Physical Strain**, whereby the element of "breaking up" the object or subject of Attention is necessary in order to avoid the exhaustion of the nervous mechanism employed in Attention; (4) **The Law of Rest**, whereby the element of variation in the direction of the Attention is necessary in order to comply with the requisites of the respective Laws of Interest, Variety of Stimulus, and Physical Strain. Reference to the detailed statement of the Laws of Attention (appearing in the concluding pages of the previous section of this book) is advised at this stage of your study of the present phase of Voluntary Attention—the phase of Mental Concentration.

Now, then, in your practice of Mental Concentration, you will find it practically impossible to observe these Laws of Attention if you attempt to concentrate continuously upon an abstract idea, i.e., upon the idea of a subject or object lacking concreteness, divisibility, and analysis into parts, elements and factors; for this reason, such attempted continued Concentration of Attention results in lessened consciousness, or even in sleep, self-hypnosis, or unconsciousness of some kind. But when your subject or object is concrete, and therefore capable of analysis into parts, elements, or factors, then you will find it possible and comparatively easy to observe these Laws of Attention, and, therefore, to apply efficiently the principle of Mental Concentration.

The best way to proceed to apply these laws and principles is to divide your subject or object under consideration into its several parts, elements, and factors; then to proceed to consider each of these constituent groups in regular logical order, passing from one to another when weariness, lessened activity, and decreased power of concentration manifest themselves. In this way, and in this way alone, is it possible for you to maintain Continuous Interest, Variety of Stimulus, avoidance of Physical Strain, and to obtain Rest for the Attention. The Variety of Stimulus provides a Continuous

Interest, avoids Physical Strain, and provides Rest for the Attention.

Here, also, we ask you to refer to that section of this book entitled "Observation and Experiment," and to note the "Rules of Observation" therein presented. Note, especially, the reference to "The Whole and the Parts," "Combined Observation," "Visualized Observations," "Naming Observations," and "The General Rule." These Rules of Observation should be observed by you in your practice of Mental Concentration. The rule of "The Whole and the Parts" points out the course to be pursued in your Mental Concentration if you would observe the Laws of Attention—and observe them you must, if you wish to attain efficient Mental Concentration.

You should concentrate first on the more general aspect of the subject or object under consideration—the thing as a Whole. But this "whole" must be a real Whole, made up of parts, elements and factors, and not merely an abstract Whole thought of as existing "in, of, and by itself." For instance, if you wish to concentrate upon the subject "House," you must concentrate upon an actual house, a real house, (either one in existence, one which has been in existence, or one which is possible of being in existence), made up of all the constituent parts of a house; not of the abstract idea of "House." It must be "a house," and not

merely "House"—the latter being a mere word, name or term, and not a representation of a real or possible thing. Read over this statement until you "get it"—until you "catch the idea." Abstract things have no real existence outside of abstract thought—only concrete things actually exist, or can so exist. Abstract ideas, in the words of the popular humorist, "are all right, but they don't mean anything!"

From your concentrated consideration of the Whole of your subject or object, then proceed to concentrate upon the leading parts, elements or factors of that Whole. Exhausting this, or feeling fatigue or loss of interest, then proceed to a minor or subordinate class of parts, elements or factors; and so on, and on, and on, until finally you have given concentrated attention to all the parts, elements, and factors of that Whole. This may take more than one "sitting"—in most cases it will require many such. Keep at it, however, until you have sucked the juice from the orange, or extracted the meat from the egg.

Let your ideal end and purpose be to exhaust the subject or object of all possible information concerning all of its qualities and relations. Let your method be to work from the Whole to its Parts—from General to Particulars. Pursue the investigation along the lines of Analysis, i.e., that of analyzing, dissecting, separating, taking apart, resolving and re-

fining the subject or object into its constituent, composing, correlated parts, elements, and factors—and into the disclosure of its relations and associations. The nearer you come to this, the closer will you be to the attainment of your ideal end and purpose, aim and intention. You will be helped in your task if you will hold before you the concrete, actual illustrative example of the pupil of Agassiz, of whom we have told you.

* * * * *

Finally, never overlook the all-important fact that "Interest is the arouser and maintainer of Attention"; and its corollary: "Interest may be aroused, increased, and maintained by Attention." The endless chain of Efficient Observation and Perception is composed of these links: Interest-Attention-Interest-Attention-Interest-Attention-Interest-Attention-Interest, and so on *ad infinitum*. Interest always precedes Attention; and Attention always precedes Interest. Like the familiar argument in the old-time debating societies, in which the question of "Which comes first, the Chicken or the Egg?" is never answered—so is it impossible to say which "comes first," Interest or Attention! It is like the old song: "We're here because we're here because we're here because," etc. There is no beginning, and no ending—the endless chain is endless because it has no ends, i.e., because it is like a ring or

circle, having no point of beginning or ending.

And now, once more let us remind you that you are the Creator of your World of Experience. You create it with that instrument which you call your mind. Create it well—the best that is within you should be devoted to the task. Build it strong—build it wide—build it high! Be not content with the narrow expanse of the World of Experience of the average man—build it wide, and then continue to widen and expand it so long as you live. Be not content with the lowlands of Knowledge, and with the limited view to which you are restricted by life on the lower planes of Perception. Insist upon ascending the Mount of Achievement, around which winds the Path of Knowledge. At each turn of the spiral road you will obtain a fuller and wider view of the surrounding country—a more comprehensive vision—a truer perspective—by means of which you may more intelligently, and more justly, estimate the comparative proportions and value of the things on the plains (or planes) below. So build your World of Experience that, when it is completed, you may be able to gaze upon it and say: "It is a good and well-built world. I have done my best. The best that I have found within me is represented in it!"

* * * * *

In conclusion, let us remind you that in the development and cultivation of Perceptive

Power, as in every other task set by human desire and executed by human will, you will proceed more satisfactorily if you will bear in mind and act upon the principle of the Master Formula of Attainment which forms an important element of the instruction contained in the "Personal Power Books" of which the present volume is one.

The Master Formula of Attainment is as follows: "(1) Definite Ideals; (2) Insistent Desire; (3) Confident Expectation; (4) Persistent Determination; (5) Balanced Compensation." Reduced to popular terms, it is as follows: "You may have anything you want, provided that you (1) know exactly what you want, (2) want it hard enough, (3) confidently expect to obtain it, (4) persistently determine to obtain it, and (5) are willing to pay the price of its attainment."

The cultivation and development of Perceptive Power also meets the requirements of the Touchstone of Positivity which is frequently referred to in the several books forming this series. The Touchstone of Positivity is the following Test Question applied to any and every undertaking contemplated by you: "Will this make me stronger, better, and more efficient?"

That well-developed and cultivated Perceptive Power will tend to make you "stronger, better, and more efficient" is self-evident. That

you will be able to develop and cultivate Perceptive Power is assured, provided that you "know exactly what you want, want it hard enough, confidently expect to attain it, persistently determine to obtain it, and are willing to pay the price of its attainment."

FINIS.