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*THE BRAIN AND ITS FUNCTIONS, AND WHAT WE KNOW OF IT.**

BY HAROLD N. MOYER, M. D.,

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Worn out, friend, is every theory,
But green the golden tree of life.

—Goethe.

I shall attempt in this article to present, as briefly as is consistent with clearness, the principal facts regarding the functions of the brain, together with the anatomical and physiological observations upon which they are based. In no field of biological inquiry are the facts of comparative anatomy, physiology and embryology more important than in the study of the higher mammalian brain.

Naturalists had no sooner arrived at the conception of an orderly and progressive development of organic forms, than, as a necessary consequence, was evolved the notion of a progressive and advancing development of function. It is generally admitted, that we can not have a change in the function of a part without a corresponding alteration in its structure. Given the functions of an animal or organ, we can form some idea of its structure; and, conversely, given the structure, we can predicate function with some certainty.

Very low organisms are simple, undifferentiated masses of protoplasm; they are homogeneous, and present no trace of organs of any kind. The earliest approach to a nervous system we observe in the *Hydra*. In this organism the superficial cell is prolonged into a distinct process, and the internal portion being shielded from external irritation, tends to contract only when it receives a stimulus from the external end. A further step in the differentiation of structure we find in the *Beroë* in which a similar apparatus exists, but made up of two cells, the external of which is connected with and sends impulses to the inner by means of a fibre. Advancing in the scale of animal life, we find the sensitive internal cells arranged in a central line corresponding with the long axis of the body. In the lower orders each segment is more or less independent, but with advancing development the different nerve masses become united by connecting fibres. This rudimentary structure becomes cordlike and surrounded by a distinct bony case in

* Being an abstract of an address before the Western Society of Psychological Research, at a meeting held October 5th, 1886.

the vertebrata, but not until we reach as high as the fishes is there any trace of brain proper. In fishes the principal mass of the brain is made up of the optic lobes and cerebellum, while the forebrain, which forms in man nine-tenths of the cerebral mass, is a thin lamina of nervous tissue in front of the optic lobes. In amphibians, notably the frog and alligator, the forebrain is larger than the optic lobes and makes up about one half of the brain. In birds the forebrain is still more developed, has separated, and pushed back the optic lobes, overlapping them to a slight extent. As soon as mammals are reached the preponderance of the forebrain is the most distinctive feature of their cerebral development, while in man and apes the optic lobes and cerebellum have seemingly become emer appendages. Throughout the entire class of mammalia we find an increase in the size and complexity of this organ. Wide differences are to be observed in the same species. In the lower classes of mankind and in idiots this organ is much smaller, and simpler in structure. As we pass from man down, through the next highest orders, we find the convolutions on its surface are simpler in their arrangement, and not nearly so numerous, thus greatly decreasing its superficial area.

The development of the individual brain is in many respects similar to that outlined for the species. All animals are originally developed from a simple cell—the ovum—identical in structure with the lowest form of life—a simple nucleated mass of protoplasm. From this simple structure the various processes of growth go on in an ascending series, ever increasing in complexity. If we examine the brain of a mammalian embryo we shall find all the different stages through which the race has passed represented in that of the individual. At an early period the spinal cord will appear, and a budding out at what will be the head of the embryo, soon shows traces of the optic lobes and cerebellum, and a further expansion shows the rudimentary forebrain. Thus the brain of man will be found to represent at some period of its growth, that of fishes, amphibians and birds.

These then are the principal facts to be learned from a comparative study of the structure of the brain. The great lesson it teaches is the increasing importance of the forebrain as the organ of intelligence and

conscious nerve action. For it will be found that the mental capacity of the animal depends entirely upon the perfection and amplitude of this organ. This being the case it follows that in this organ we must look for those functions not possessed by animals in whom it is only slightly developed. While all the elements of nerve structure found in animals still persist in man, yet they are not so complete. The sense of smell, so perfect in the dog, is comparatively wanting in the human. The optic lobes, so large in birds, correspond to a perfection of the visual apparatus unknown in man. In the progress of evolution the increasing intelligence and conscious adaptation, has rendered them less and less necessary to the well being of the individual; hence their atrophy. Experiments performed on the brains of living animals and those made by the hand of disease on the human brain, confirm the conclusion that the forebrain is the organ of the mind and the true seat of intelligence. If a pigeon be deprived of its forebrain it is still capable of responding to sensory stimuli. It will sit quietly on its perch, giving little evidence of life. If, however, a bright light is moved near the eyes, the head will follow, and if the surface on which it is placed is tipped it will slowly mount toward the upper side. A pigeon so conditioned has simply lost the memory of things—it still sees the bright light or hears the sound, but it excites no feeling of alarm, as the sense of danger is gone. The same experiment in a frog is followed by less disturbance owing to the decreased importance of the forebrain. Such a frog croaks with pleasure when his back is stroked, swallows when food is placed in his mouth, and leaps when irritated. In case an obstacle is placed immediately in front the leap is to one side to avoid it. Professor Burt G. Wilder, of Ithaca, has a living frog that has been deprived of its forebrain over eight months.

Having thus briefly and imperfectly outlined the structural development of the nervous system we turn to a brief consideration of its functions.

In protoplasm, termed by Huxley the physical basis of life, we must look for the germ of the future brain. In the amoeba, the simplest expression of life, analogous to the ovum in which all life begins, we may study the vital activities of protoplasm in their simplest expression. The amoeba is

very simple in its structure, consisting of a single cell of jelly-like consistence and having no special organs. Locomotion is accomplished by thrusting out a bud-like process, which gradually expands as the semi-fluid contents flow into it. This process is repeated again and again, thus effecting a slight change in location. Digestion is equally simple; a particle of nutrient matter is found and the amoeba immediately proceeds to flow around it. Reproduction is accomplished by simple fission; the two halves forming independent beings with all the attributes of the original. If one of the projecting processes of this minute body be touched with some irritant it is immediately retracted, showing the animal is *sensitive*. Thus we see outlined in the single cell the four great functions of the animal kingdom: locomotion, nutrition, reproduction and sensibility. As soon as we reach a little higher in the scale, and find animals made up of more than one cell we find certain of them especially adapted to the performance of certain functions. A digestive tube is formed, other cells take on the function of locomotion, still others that of reproduction, and finally certain others become more sensitive and form the rudiments of a nervous system such as we described as belonging to *Hydra*, and which is but little in advance of the simple irritability of protoplasms. The next step in function may be observed in an oyster. Here there exists but one or two nervous centers and a single muscle. This mechanism is called into action by an irritation carried along the afferent nerves to the center and from there *reflected* to the muscle by which the shell of the oyster is firmly closed. Such function as this may be termed reflex action. As a further step we may observe an angle worm draw into his hole when the sun shines brightly, and the too rapid drying of the skin impedes respiration. This action has one added factor and for the want of a better, may be termed sensory motor. The final step in our ascending scale will be the addition of consciousness. Nerve action, accompanied by consciousness, will serve then to define and bound our knowledge of the brain and its functions. We know nothing of the brain but this, and what may lie beyond is pure fancy or speculation. Nor is there any fast line separating these different classes. It is impossible to say that at this point reflex-action ends, and sensori-motor

function begins. To this animal we will accord conscious nerve action and to that other it will be denied. Indeed all these lower functions persist in the highest animals, as witness the spasmodic closure of the eye-lids on the approach of an irritant. An action wholly unconscious, in which the brain may take no part, and which is provided for by a reflex mechanism outside of the central nervous system. Again a sleeping person will brush a fly from his face—a purely sensory motor phenomenon in which consciousness takes no part.

The forebrain may be likened to a hollow cone, into which the sensory paths pass to terminate in the vast array of cells at its surface and from which proceed the volitional impulses by which the varied activities of the individual are carried on. Its surface is mapped out into different regions to which are assigned definite functions. Generally speaking, the posterior portion has to do with the reception and storing up of sensory impressions, while the anterior portion is directly concerned with motion. These functional areas are not, however, so distinct as some would have us believe, and there is pretty good evidence that when one portion of the brain is destroyed, if the injury be not too extensive, the adjacent portion may become "educated" and carry on the work. The great function of this organ is to receive and store up the impressions brought to it by the peripheral organs of the nervous system. It is manifest that without this capacity there could be little intelligence or judgment and this is the peculiar and distinctive function of the forebrain. In other words, memory may be regarded as the one basic function of the mind, as without that all other psychical phenomena are abolished. It may be defined as the impression of a sensation registered in the cells at the surface of the forebrain and which is capable of being revived and projected into the field of consciousness. If we dissect away a small portion of the center in which visual impressions are recorded we produce a condition of "psychical blindness" i. e., a loss of the memories of sense impressions from the eyes. The animal's vision is quite as good as it was before, but the interpretation of what is seen is faulty. If the experiment be performed on one side of a dog's brain the center for the *opposite* eye is impaired. When the eye on the same side as the lesion, that is the eye in connection with

the portion of the brain that is intact, is bandaged, the dog so conditioned wanders aimlessly around the room. Obstacles in his path are avoided as well as formerly, but food is not recognized until it is scented. In case he had been previously taught to give his paw, when the hand was passed before the eye, he no longer does so. When the word "paw" is spoken he responds in the usual manner. At sight of the whip he no longer retreats to the corner. The memory of the significance of objects seen is wanting. Impressions of a similar sort that reach a portion of the brain that is still intact centers for hearing or smell, excite an appropriate response. A similar operation performed on the centers devoted to the sense of hearing results in "psychical deafness." Another fact bearing on this theory of the localization of function in the brain is furnished by the complicated structure of the centers for language in the human brain, an arrangement that does not exist in animals. In the dog whose memory of odors is remarkable, we find a similar extent and complication of the centers connected with the olfactory nerves.

From these facts we are justified in regarding the forebrain as the final step in a projection system. The sensitive plate on which the sensory images of the world are registered. But it is more than this, it has the power of originating a conception within itself, not apart from, but based upon sensory impressions. This has been clearly pointed out by Meynert,* who has conclusively shown that the perception of space can not, from the nature of things, be a sense impression. Space can form no visible image on the retina, and, if it can not do so the forebrain as a simple projection of sensory images could form no idea of space. The theory constructed by Meynert is, that in observing three objects, stars for example, there is only one of them seen distinctly at the same time; that is, the central portion of the retina being the most sensitive, a movement of the eye-ball must take place to bring each of the stars successively on its most sensitive part. Now he regards the so-called motor (anterior) portion of the brain as sensitive to muscular movements. It records the contractions of muscles, and may be regarded as the

* I wish here to express my indebtedness to Meynert, Ferrier, Munk, Ross, Krafft-Ebing and others who have been liberally drawn upon in the preparation of this short and imperfect resumé.

seat of "muscle memory," analogous in every respect to the centers for the ear, eye, and speech. The idea of space is evolved in the brain primarily from muscular movement associated with sensory impressions. In the above mentioned instance the movement of the eye-ball necessary to adjust perfect vision associated with the registration of three stars gives the idea of space between them. If two stars are at such distance that the rays of each fall upon the central point of the retina they are perceived as one, though it is highly probable that the rays from each excite different portions of the retina, but the objects are so distant that no muscular contraction is required to bring them distinctly into the field of vision, so that the two stars are perceived as one. If we widen the convergence of the visual rays by means of a telescope, then the circumstances are changed; a muscular movement is required to see each object distinctly and space is perceived. This theory is still further supported by our conception of space—we can not conceive it to be endless, at the same time we can conceive of no boundary beyond which it does not exist. This paradox is easily explained if we regard the conception of space as originating in the brain. Now, if it is admitted that the idea of space can be formulated by the brain, it is manifest that a vast array of conceptions may arise in the same manner. The earliest sense impressions of the infant will be from the surface of the body, and one of the earliest conceptions would be the extent and relations of the body; later when the incidence of the environment became more pronounced, would arise a clear conception of the relation of the environment to the impressions from the body which would give rise to a distinct idea of individuality. The ego, or self-consciousness would be formed in the same way—the sum of all recorded sensory impressions. Indeed, some such theory as this regarding the association of ideas in the brain is absolutely essential if we would explain the defects in mentality as exhibited by lunatics. In these we have a faulty system of association, dependent on a diseased condition of the structure. Their ideas are incoherent, and delusions are developed as a result of imperfect interpretation of sensory impressions forming the memory. It also readily explains the varied mental acquirements of different individuals. The perfection of the brain will

depend upon the number of cells (i. e. the size of the brain) and on their quality, the power they have of registering impressions distinctly and easily; in other words, the perfection of memory also, upon the perfection of the mechanism by which they are brought in relation. The judgments will be clear and accurate in proportion to the number of impressions projected into the field of consciousness and correct inferences drawn.

All actions are either aggressive or repulsive. The first sensation of an infant is hunger, and the appropriate aggressive movements to appease it follow as the first act of independent life. The infant reaches out and carries everything to its mouth, whether appropriate for nourishment or not; if a ball be placed within its grasp, coated with some bitter substance, it is carried to the mouth, but at once rejected. The child cries out, and the offending substance is thrust from it. The experiment need be repeated but a few times before a relation is established between the sensation of a ball placed in the hand and the disagreeable taste, resulting in its rejection before being carried to the mouth. These association paths are illy defined in the child's brain, and such a relation is soon forgotten unless often recalled.

All actions have for their purpose the pursuit of pleasure, or some real or fancied good, and the avoidance of pain. Generally speaking, aggressive movements are the result of pleasurable sensations; on the contrary repulsive movements are the result of painful impressions or the effort to avoid pain.

According to the quality of the judgments will the moral nature be good or bad. One whose brain is well developed and can fully appreciate the nature of his acts, both immediate and remote, will form good moral judgments, sacrificing the instinctive aggressive actions of immediate pleasure for remoter good, the same as the infant learned to reject the ball by overcoming the first aggressive movement of hunger by the thought of a remoter pain. It is in the simplest acts of the mind that we must seek the solution of the more complicated.

With this, which some may regard as a materialistic conception of the brain and its functions, many members of the Society may have little sympathy. You can not, however, doubt its utility. On it is founded the diagnosis and treatment of diseases of

the brain. To it we owe the incalculable benefit to the insane growing out of the conception that insanity is a disease of a material organ, and not due to a perversion of the will to be treated with stripes or to demoniacal possession to be exorcised by prayers and sacrifices, methods of treatment which we are sure would be repudiated by those who are not prepared to accept the fundamental doctrines of this paper. Another example of the humanity of this age outstripping its creed.

At one hand we have the simple activities of protoplasm, at the other the sublime mystery of the human soul. To whom it shall be given to penetrate the secret of one will have unlocked that of the other. The work of this society lies at one end of this scale. You have chosen the brain of man in its highest manifestations for your study. Already many facts have been observed that we can not bring into the orderly sequence I have laid down to night. It may be that none of us will see them marshalled in the array of science. Remember that it took many years to classify the variations of the magnetic pole and to learn the order and sequence of what seemed unaccountable deviations. It was accomplished after ten years of labor and the world is now receiving the benefit in the safe navigation of the trackless ocean, and that without a theory of magnetism worth the paper on which it is written. The scattered facts you have gathered in telepathy, spiritism, and allied topics will yet be classified, and may then form a safer guide for humanity than any we yet know of, and that, without a theory of the mind worth the trouble it takes to express.

HEREDITY.

BORN A THIEF.

A Chicago correspondent of *Good House-keeping* says, "One day a woman appealed to my friend to save her son from the punishment that was to be inflicted for a theft he had committed.

"He stole the goods," she cried, "but he is not guilty. It is I who am the guilty one. I should be punished, for, by a force beyond the power of any man to resist, I compelled him to steal."

In explanation of her assertion, she continued.

"When the time approached for the birth of this, my first boy, I wished to

make for him some dainty baby clothes. My husband laughed at my 'nonsense.' For a time I tried to be content with the few plain things I could make from the materials at command, but the wish grew into an uncontrollable longing, accompanied by a feeling that my husband was treating me cruelly. At last, a brusque refusal of money and a stern command that I should let him hear no more about the matter turned my feeling, for a time, into one of positive dislike for the man who seemed to me unwarrantably harsh in his refusal. At last, I began stealing small sums from my husband's pockets, as he lay asleep at night. I felt that I was sinning, that I was a thief, but I could not resist the desire to provide my coming child with what I felt was no more than would be justly due to it. I simply could not overcome my feeling—mothers will understand. When my boy was a mere babe he was a thief, from impulses he was and always will be powerless to resist. Can you imagine what tortures I have suffered during all these years; how constantly I have watched over him, to keep him from committing thefts that are no crime."

If that boy marries it is more than likely that the pre-natal influence that made him a thief will become a hereditary taint; that the man who refused to gratify an innocent and natural longing will have become the founder of a race of criminals, or, at least, a family morally weak, whose lives will be spent in one long, despairing torment of struggle against temptation. For pre-natal influences may become, in later generations, powerful hereditary tendencies. Who can tell how much of the sin, and shame, and crime this world has known has been the result of uncontrolled impulses, inherited from mothers whose usually yielding dispositions have been aroused to rebellion, or whose pure moral natures have been perverted at a time when the impulses of the mother are most likely to make a strong and lasting impression upon her unborn child, perhaps to bless its whole life with a sunny disposition and healthful moral nature; possibly to course its whole earthly existence with passions it can not resist successfully."

Unquiet meals make ill digestions.—*Comedy of Errors.*

There is nothing we receive with so much reluctance as advice.—*Addison.*

HYPNOTIC PHENOMENA.

The November meeting of the New York Academy of Anthropology was occupied with this subject. Prof. E. P. Thwing, M. D., the president, read a review of Dr. Tuke's new work on Sleepwalking and Hypnotism, published by Churchill, London. The author belongs to a family which has for generations been busy with these studies, in their relation to the insane, particularly. The genial temper of the author, his candor and caution, appear in all he writes. He can be learned without being tedious; profound, yet lucid and vivid in statement—free from dogmatism and pedantry. This book, like his "Influence of the Mind upon the Body," is rich in illustrative facts and quotations.

Prof. Thwing remarked that it was well to be busied with nascent thought rather than with effete, decadent ideas. His observations abroad during six summers convinced him of the growing interest shown in the phenomena of the nervous system. Philosophy and science, medicine and surgery, are making constant contributions. The investigations of Dr. Tuke in mental pathology are varied and extensive. In this monograph on sleepwalking he distinguishes between the spontaneous and the artificial. In both, however, the cortical ganglionic cells are inhibited in certain regions while other functions may be exalted. Tactile and visual sensibility are often quickened; nyctalopia noticed; mobility and somnolency with other patients; occasional suicidal and homicidal tendencies in this condition which are not revealed at other times.

Passing to the matter of artificial sleepwalking, Dr. Tuke classifies his data thus: I. Conditions necessary to produce the hypnotic state, to wit: voluntary surrender to the operator; a sudden blow of a gong that is concealed or glare of an electric light thrown unexpectedly on the face, or slower, monotonous, sensory impressions by passes or by sound. II. The stages, lethargic, cataleptic and somnambulistic. The pupils contract and then dilate. There is cerebral anæmia, according to some writers; increased vascularity, according to others. The respiration is often accelerated, as shown by the pneumograph, the tracings of which test the fact of simulation; the pulse is unaltered and the muscles placid or rigid in the different stages of the pro-

cess. III. Subjective symptoms, analgesia, yet tactile sensibility and muscular sense, are continued; special senses heightened or suspended in activity according to the suggestions of the experimenter; a duplicate or divided consciousness, with loss of memory, possibly of personal identity and of volition. Dr. Tuke says that this ideoplastic state finds its analogue in the disordered perception of the insane when dominated by hallucinations. These impressions may persistently remain after waking. The Journal of Inebriety records cases where the victims of tobacco and alcoholism have been successfully treated by creating disgust at their actions, which impression is made to abide in the mind. Consciousness may be partly retained and the perception of automatic action convey the idea of two Egos. Reflex mimicry may exist and the subject faithfully copy all the experimenter does or says. Degrees of hypnotism determine the exaltation or depression of sensation and of the special senses. Patients are educated by repeated experiments, and phenomena developed, perfected and multiplied by practice. Sleep comes quicker, is deeper, and neuromuscular excitability requires little or no massage. As to amnesia, it is absolute, beginning with sleep, or even before, when the light or sound commands attention. Even the fact of sleep is stoutly denied.

Finally, the experiments in hypnotism are regarded harmless, as Charcot and Richer affirm. Multitudes declare themselves permanently benefited physically and mentally. Dr. Tuke only suggests that the subject should not allow himself to become so susceptible that sleep comes uninvited. This would argue either an incautious operator or a weakminded patient.

Dr. Holbrook, editor of the *Herald of Health*, 13 Light street, New York City, then read a synopsis of the doings of the recent congress at Nancy, which he had translated from the French. It was an intensely interesting paper, and will probably appear in his monthly. The probable use of hypnotism as a definite factor in the reform of the victims of various vices and inherited perversities is at once startling and exhilarating to every well-wisher of his species.

A man's own good-breeding is the best security against other people's ill-manners.
—*Chesterfield*.

PRE-NATAL IMPRESSIONS.

BENJAMIN YATE.

The dawn of the Light of Science singularly resembles the natural dawn, the first effects of which is to increase the mists and render objects even more obscure than they were in the darkness of night; and it is not until the sun is high in the heavens that the mists roll away and things are clearly seen.

So it is with the investigations of science. At first myths, superstitions, and occult beliefs were looked upon as puerile and grotesquely absurd. As investigation progressed, however, it became evident that many superstitions were based on scientific facts, whilst the myths were merely poetical versions of the operations of nature.

The presence of ravens was a bad omen because these birds are always attracted by decaying matter; the guttering candle making the winding sheet in the old tallow dips showed a draft, dangerous at all times, but more so to the sick. The countless myths based upon light and darkness, Summer and Winter, under the guise of human beings, are too well known to need recapitulation and there is no doubt that we owe the doctrine of metempsychosis to pre-natal impression. Persons in the earlier ages, conscious that they had a feeling of previous acquaintance with places that they had never visited, conceived the idea that they must have inhabited other bodies and have passed another life previous to this one. The natural idea of reward and punishment further elaborated it into the good rising higher, and the bad descending into the lower life. Those who have read Eastern Mythology will remember the graphic description of the Hall of Judgment and the Djinn who were the arbiter of the next change in the location of the soul.

For many years this doctrine only provoked a smile from the learned; but now that investigation into natural mysteries has progressed, it has been proved that the ancients had at least some basis for this belief viz., pre-natal impression. The December, 1885, number of MIND IN NATURE contained an article by Doctor H. D. Valin, of a strange instance of pre-natal impression. His mother revisited the village where she had been brought up a few months before his birth; she died, leaving him an infant; but twelve years after, on his accidentally visiting the place, he felt

that it was perfectly familiar, though no one had ever described it to him. By many this was regarded if not as an actual myth, at least a considerable exaggeration. However, the August number of the *Atlantic Monthly* contains another curious instance of a man who was always humming to himself a curious melody in a minor key. He was astonished to find, on crossing the Atlantic that it was a Welsh air. His mother was of Welsh descent some six generations back. The writer has also a similar experience to Dr. H. D. Valin. In the first place, having been adopted by his grandfather, he did not remember his mother, having left her at the age of two years, so that the following impression could not have been caused by unconscious remembrance. From his youth he constantly dreamed of a land-locked bay, with a town in the background and two promontories on either side. In fact, he was so well acquainted with the place that even in dreams he recognized it as the place he had often seen before. Starting to travel at the age of seventeen, he visited many different bays and harbors always looking curiously at each new port to see if it was the place of his dreams, of the existence of which he had no doubt. About twenty-five years after the first dreams, one afternoon on entering the bay of Cork, he at once recognized Queenstown the town in the rear, and Spike Island and Haulbowline the two promontories as the place so often dreamed of. On enquiry he learned that his mother left this port a few months before his birth and expressed a foreboding that she should never return to her birth-place again, which foreboding was unhappily realized. Doubtless this must have been the cause of imprinting a mental likeness of her much loved home on her unborn babe.

W. S. P. R.

At a meeting of the Western Society for Psychical Research, held at the club room of the Sherman House last evening, a paper was read by Ursula N. Gestefeld on "What is Christian Science?" The position of the speaker upon the subject was defined in a comprehensive manner, and while few would accept the extreme views advanced, no one, after listening to the lecture, would wish to deny their truth without investigation.—*Inter Ocean, Nov. 3.*

An abstract of Mrs. Gestefeld's paper will appear in our January number.

DARWINISM AND MIND IN NATURE.

REV. WILLIAM TUCKER, D.D.

Does all nature reveal mind? Does every part of the material universe reveal to the student of nature intelligence? All nature certainly does not reveal the action of the human or animal mind; it must therefore reveal the action of the Divine mind. It is well said that organic beings have been formed on two great laws: i. e. unity of type, and adaptation to the conditions of existence. The special teleologists, such as Paley, occupy themselves with giving illustrations of the latter only. The morphologists build on the unity of type, or the fundamental agreement in the structure of each great class of beings, which is quite independent of their habits or conditions of life. Philosophical minds have invented many theories to harmonize these two laws. Mr. Darwin proposes a natural method. Species are alike in type, because they are physically related to each other by derivation and descent. The conception of a physical relation between all species does not deny an intellectual connection as the result of the out-working of an intelligent plan.

The physical law of inheritance may be but the means employed, and the method used to carry out the intellectual law of unity and harmony in nature. Mind in nature works by means, observes fixed and uniform methods, and employs material instruments in developing his plans, and attaining his ends in creation and providence. Natural selection, the law of inheritance, hereditary transmission, and the survival of the fittest, may be, and are, if true, only so many natural means, uniform methods and material instruments used in the attainment of the grand end of adapting nature to the constitution and wants of man, and making it by this sublime unity the revelation of one self-existent and omnipresent mind. The great lesson of science is that matter was made to subserve the wants and purposes of mind; therefore all the analogies of nature and art would lead us to conclude that all physical unity is but the material expression of mental unity, and a law of physical relation by inheritance between species is but the method of revealing unity of plan and purpose in the universe. Agreeing that plants and animals were produced by Divine fiat does not exclude idea of natural order and what we call second causes.

The record of the fiat as given in Genesis would indicate the Divine method of calling into existence plants and animals was natural. There was a supernatural cause operating in creation, but a perfectly natural method. Evolution or development is the natural method, God is the supernatural cause. Thus teleology and morphology—the union of type and variety, and function of organism are made to harmonize, and the natural and the supernatural factors in the universe are seen to be as one. Nature is God's method, the universe is God's instrument, and man as God's child is fitted to study and understand the Divine method, and admire and use the Divine instrument. The first gives us science, the second art.

If Mr. Darwin, as a student of nature, has reached correct conclusions, it does not logically follow that the natural causes through which species are diversified operate without an ordaining and directing intelligence, and that the orderly arrangements, and admirable adaptations revealed in nature are without design. These arrangements and adaptations are not to be regarded as void of intelligence and design, because natural and orderly; for the growth of human intelligence is natural, and order and not disorder is the law of reason. The fact is that we infer design from the structure and adaptation of an organism without regard to the manner of its production.

The question suggested by adaptation is not how the organism was created, but why; and its evident fitness for a certain function shows purpose in the structure which we recognize, regardless of how it came into existence. The method of creation through the operation of natural forces and process of evolution will not explain either the efficient cause of the organism, or the purpose of its adaptations. Evolution is a method, and the existence of a method reveals a cause operating in a certain way and for a certain purpose; for methodical action is rational action, and there is always a purpose in rational action. The adaptation of the organism to function shows an intelligent purpose, and with that as a necessary inference an intelligent cause. Evolution then as an orderly natural method, points to a supernatural cause and indicates a rational purpose, as such a method can not exist without such a cause, and for the attainment of such a purpose. Nor does the fact that the variation of species is the result of natural selection elimi-

nate from nature the element, supernatural mind. As natural selection and natural inheritance are purely methods, and in no sense causes, and as methods must have efficient causes, and as intelligent methods intelligent causes, it follows that mind and will are necessary to account for natural selection.

Wherever these methods are observed in nature, there is revealed the cause in active operation, and the manifestation of such a natural order as evolution proves the presence and action of an ordaining mind and will. Evolution, if true, is but the out-working of the Divine plan, and reveals the presence of the Divine as well as the human mind in nature. The recognition of this fact is necessary to a rational interpretation of the phenomena of the material and spiritual universe.

VITALIZED HANDKERCHIEFS.

A lady in New York City recently sent her handkerchief to a preacher in Newark, asking to be cured of dyspepsia and to be a good Christian. She says in a religious journal: "I am sure that sending the handkerchief has made me better." It is easy to call this a delusion of the imagination, but the result is the main thing. Dr. Thwing of Brooklyn three years ago had a patient, who suffered from severe morning headaches. He, "seeing that she had faith to be healed," took her handkerchief in his hand, and told her that when next she had trouble with her head, to apply the handkerchief to the place and it would at once be relieved. At the next meeting she bore grateful testimony to the fact, and added that she had loaned it to another sufferer, who was also healed. He sent one to England last October, to one B., whom he had formerly treated there and with the same directions. November 9th the patient was heard from. Seized one day with a pain in the head which was terrific, B. took the handkerchief cure, and the subsidence of pain was immediate. "What a relief it was no one could possibly tell!" In both these cases, it need hardly be said, the treatment was gratuitous, and wholly divested of mystery, the parties being told that it was simply their expectation that "vitalized" their pocket handkerchiefs. If all were as candid, science would not suffer, but mountebanks would be bankrupt.

Prudent men lock up their motives.

SECTARIANISM.

URSULA N. GESTEFELD.

With the advent of the new "science" was to come, we were told, emancipation from the beliefs which were the result of ignorance, which were the bonds which held us fast in the consciousness of sin and suffering; and this freedom was for all who saw and understood the truth which the "science" revealed.

To this freedom hundreds, and probably thousands can to-day testify; but if they testify to "the truth, the whole truth, and nothing but the truth," they must admit that it is as yet but a comparative freedom. The state of consciousness, which is the result of the new understanding is freedom when compared with the old bondage; but it is still bondage when compared to what the state of consciousness should and eventually must be, when we have attained to the "freedom of the sons of God."

Since what is known as "Christian Science" was given to the world, various parties, schools, and factions have sprung up, all claiming to hold the only correct views; all saying to the lookers-on: "Come into *my* fold; if you go into any of the others you will make a mistake."

Does not this savor of sectarianism? And does it not impinge upon this freedom which should be ours?

When an individual applies to any one college, institute, school or association for a course of instruction as given there, with the idea that there and there only the truth is to be found, and that assertion is also made by those who give the instruction, a mistake is made on both sides; there is no college, school, or institute which has in its keeping the whole truth; there is no instructor able to impart it; for the entire absolute truth can not be grasped by any man to-day. All truth is a revelation, and the mind of man receives it by degrees.

All that anyone can impart is what he first perceives, and then understands; and so understanding is able to put into such phrases as shall make his perception visible to others. All that anyone can secure is according to the limit of his capacity, and each one must for himself enlarge that capacity.

Helpful, beneficial, and needful as instruction in this science is, it is not all of the work to be done, by far. Instruction

simply points the way; everyone for himself must walk therein; and he only can walk calmly, confidently, and assuredly who claims and exercises his absolute freedom of thought; who follows after and holds to that which is perceived by him while exercising that freedom; not to that which is held before him by another because that other says: "It only is true, and therefore you must accept it."

This is the same spirit which has made so wide a division in the churches. There, all alike, are worshipping the one God; and all seeking the same end—the salvation of their souls. But the Covenanter says the Episcopalian is wrong, the Presbyterians say the Universalists are lost, and the Catholic denies all Protestants admission to that heaven of which St. Peter holds the key. Why? Because each one is right, and all others consequently wrong. The creed of each sect contains just the truth, and if those creeds differ, so much the worse for the rest of them, for "all are wrong but ours."

The result of sectarianism in religion has been the rebellion of all liberal minds, from the dogmatic beliefs and opinions which have been advanced in the name of religion as truth, and which have caused those minds to seek elsewhere for it; and if sectarianism is to prevail in this new science of mind, many of those now attracted towards it will stop short before sufficient advance is made for them to understand for themselves, repelled by the differences between those who claim to see and know, and by their mutual accusations.

At present, too great claims are made upon the one side, and too great expectations are entertained upon the other.

All advance is made by those who question; not by those who accept another's conclusions without attempting to verify them. But many of those who question are also open to criticism. All investigators of truth; those who seek truth for truth's sake, don't wear spectacles of any kind or sort when they look for it; those who do, particularly those who cling to the spectacles of prejudice, never can or will get a fair and square view of it unless they are jostled till their spectacles fall off; and then the loss of something to which they have been so long accustomed would make them afraid to trust to what the uncovered eye revealed to them.

He who would advance in the under-

standing of that truth which is infinite and eternal, from everlasting to everlasting, must look for it with his uncovered eye; not through a glass of any kind or sort, fashioned by another like himself. Only by and through his absolute freedom from such hindrances to his perception can he discern what really is. Every one has, potentially, powers of perception and comprehension sufficient to discern and comprehend all that exists; he must develop these by exercise, and in proportion as he develops them, more will be revealed to him. He can only exercise them when they are untrammelled and unrestricted.

EVOLUTION.

"I continued my study of various departments of nature as industriously as I could; and in the spring of 1884, when preparing an address on evolution, I carefully summed up the evidence I had been accumulating all the previous years, and I was forced to come to the conclusion that the preponderance of the evidence is now in favor of its truth. Just as soon as I had formed this opinion, I published it to the church and to the world. Every day's study since has increased the preponderance of the evidence in favor of evolution as God's plan of creation, in my opinion, while I am still far from thinking that it is demonstrated to be true. I am more and more convinced of the truth of the views set forth in my address and the other articles enumerated in the indictment, and believe that in proportion as they are fairly and intelligently studied, will they be accepted as not inconsistent with the Bible as interpreted in our standards."

Professor Woodrow in his speech before the Presbytery convened to try him for holding and teaching views contrary to the confession of Faith, of which the above is an extract, shows that he had examined the subject before he formed an opinion, which cannot be said of Rev. T. D. W. Tallmadge, who in his lecture at Chatauqua, on "The Absurdities of Evolution" showed that he had not the slightest conception of the subject, and the "Absurdity" consisted in his attempting to lecture upon it. Such lectures do far more harm to the cause of Christianity than the advocates of "Evolution" can do.

He is rich whose income is more than his expenses.—*Bruyere.*

CALL A HALT.

I. LANCASTER.

It seems evident that there is confusion in the ranks of the investigators of psychic phenomena, in regard to the relation which such inquiries bear to science.

One objects that the scientist looks askance, and is apt to smile or sneer when asked to attend to these occult things, while another proceeds to unfold the imbecilities of science by showing its untenable conclusions, and hence its want of authority to pronounce on the validity of such matters.

Obviously, no fault could be found with refusal to examine because of incompetence to the task, and it might assist in the final settlement, if we get clear views of the part which science ought to take, and which it can take without ceasing to be science.

When we go to the recognized authorities to find what science is, we get a definition making it literally, knowledge, or more generally a systematic arrangement of knowledge. In this sense of the word it is supreme. We all recognize its authority from this standpoint, and bow in all becoming humility to its decisions. But this is not the sense in which the word is understood by the general public, nor by many writers in this publication, and it would be difficult to exactly define the word as used by them. By many, the speculations of scientific men are confounded with science. By others, the postulates assumed at the dictation of the laws of thought are held to rest on the same evidence as the verified facts of universal acceptance. Some persons get the notion that those ingenious processes which determine the thickness of soap bubbles, the size of atoms, the amplitude of etherial undulations, and the remoteness of objects in space, belong to the highest reaches of science, while others think that it is confined to operations in a realm of mystery, where complicated hieroglyphics, and symbols of doubtful propriety which smack of darkness, and are tingured with evil, abound.

Perhaps the best way of presenting this matter is to represent science as a method of finding out what is true. To consider its processes, its valuable part, and this is to inquire how the knowledge of the world is found, obviously, the methods of search are widely different from what they once

were. The prime necessity of truth now is that it must be capable of verification, and the amount of credence that shall be given to it depends upon the readiness and completeness with which it submits to such tests.

Now all psychic matters belong to the category of natural phenomena, and the way of investigating known as "scientific," which experience has shown to be the only reliable way, must be applied if we hope for progress. This rule of exact examination which distrusts any single experience however clear it might be, provided it can not be repeated under the same conditions, has been arrived at through a long, hard line of incessant toil. Untold labor has been expended upon it. It seems to have had arrayed against it all the forces of this, and all other worlds. Through blood, and tears, and terror, and death, the human race has at length one foot on the solid land of truth, with good expectation of getting the other beside it soon. Whatever else we may do we can not afford to loosen one of the safeguards which the most scrutinizing methods demand. It is not very long ago since a child's statement that some old woman had bewitched it was taken as true, and the old woman thereupon burnt at the stake for witchery of the child. It is within my own memory that apparitions were held to be common things, when in the twilight they could be seen vanishing behind bushes, warning of evil by holding up the finger, and in various ways making earth hideous by their uncanny vigils. Still further back, demons, witches, hobgoblins, and all the devilish brood swarmed over the world, and a host of necromancers, wizards, magicians, priests, and inquisitors went about scarifying and torturing the victims of credulity, while a black pall of superstitious dread enveloped humanity and paralyzed every fruitful effort. At length the methods of science were employed to deal with these matters and the world started on its march of modern progress, and every movement which is a real advance proceeds upon the solid ground of scientifically determined truth. The printing-press, the steam-engine, the power-loom, the telegraph, the electric light, and everything which has been of undoubted value has come under the strict category of verifiable phenomena. They can be produced at will. They are utterly indifferent to the opinions or the emotions of any man, or

set of men. They are instruments of enormous power, and any hesitation or reluctance to admit them among the undoubted facts of the world is naught but folly.

When the scientist, therefore, demands verifiable evidence for psychic facts, he stands on solid ground. He stands on ground occupied by all valuable things on this earth, and he can neither be asked nor expected to vacate it. What is known as testimony, or the unsupported statement of individuals, is entirely cut out of the category of evidence relating to these subjects. The statement of one who should say that at a certain time and place he saw a man killed, would be of great or little, or no importance according to the circumstances of the case. If the man whom he declared to be killed was found alive and unhurt, his statement would be of no importance. If the man had disappeared, it would be of some importance, and if the corpse were produced it would be of great importance. Even in the ordinary affairs of life in which it is presumed that proof could be given if required, anyone's entirely unsupported word is of small value; while in matters of critical importance it is of no value at all. There is excellent reason for this. It has been found true throughout human history that man is liable to be mistaken, and, humiliating though it be, it is also true that he will lie. Politicians, lawyers, business men, and tramps have lied. No age, sex, nor condition is exempt from this frailty. Strange as it may seem, even priests, preachers, bishops, and scientists have lied, and the entire race labors under the suspicion of a possible lapse from veracity. What would naturally be expected of such a creature, when, in addition to pure mendacity, he habitually allows his hopes, and fears, and aspirations, and personal interests to push his judgement from its seat? Obviously, what would be expected has happened. His unverified word has absolutely no evidential weight whatever in the determination of natural phenomena. He may see a hundred ghosts, and specify time, and place, and circumstance with painful particularity, and the only attention a scientist will give him will be to ring the chestnut-bell, and if he be a man of good sense he will understand that such treatment is all he ought to expect.

Just as long as phenomena confine themselves to a single mind without ability to initiate changes in the external world, it is

the business of that mind to investigate them, and if two or more persons have the same alleged experiences, associated effort may be made, and no scientist will offer any word but one of encouragement, but he will insist, that while the phenomena are hidden in the personality of individuals, they are not the proper subjects of scientific scrutiny. If a ghost could be produced, if one in the rolling ages ever had been produced, if a foot-print, or finger-mark, or relic of undoubted ghost origin could be submitted to inspection, if they would stop their perpetual flitting, flitting, and sit still long enough to be examined, the case would be different; but while the poor ghost depends on the bare word of unreliable humanity for existence its case is hopeless.

So of the whole mass of alleged psychic phenomena, slate writing, thought transfer and the rest. No scientist avers that they are impossible. None will say positively that they do not occur, but that they are not fit subjects of scientific inquiry, for the reason that the conditions under which critical investigation can proceed are not present.

But this is not all. Since the day of the great Christian scientist Michael Faraday, who declared that the doctrine of the correlation, and conservation of forces was the highest truth that the human faculties are capable of comprehending the tendency of the evidence has been to completely reconstruct the whole problem of mind. This tendency is irresistible. The interminable squabbles between materialism and spiritualism have no longer a leg to stand upon. They have simply vanished in the process of psychological analysis. Compared to the march of the scientific explorers in the physiology of the nervous system our psychic investigators are nowhere; for by the side of any rival hypothesis the doctrine that mind itself is a brain-conditioned form of force stands about as infinity to one. It seems to be a process and not a thing. Our way of collecting individual experiences is like an insignificant skirmish between outposts while the decisive battle is raging far away. The vital question is, what is the nature of knowledge when we have obtained it? Not only of ghosts but of all other things. What is it that we examine when our attention is directed to an inkstand, or a chair, or a cocoanut? Most persons now, and all a few years ago, would pronounce sensible objects to be existences of the ex-

ternal world precisely as they are perceived by us. There is demonstrative evidence now accessible that such notions are pure delusions, and that a correct view will recast the whole conception, and it would be the part of wisdom to settle indisputably what knowledge of ordinary sensible objects consists of before we carry our investigations very far into the obscure regions bounded by the individual consciousness.

If it be true that the laws of matter and motion apply to the phenomena of mind with the same unerring certainty that they do to the external world, the task of unraveling the complexities of psychic things will be simplified, for the direction in which to look for the solution will be indicated. When it is remembered that it is but of yesterday that the data required by science for investigating mind was obtainable, and that in human affairs the task of clearing away the accumulations of worn out conceptions is enormous, it can reasonably be expected that advance will be but slow, and impatience at the want of attention on the part of scientific specialists to matters which many think important, is not warranted by wisdom.

When we at length discover the method by which that wonderful nervous mechanism known as brain transforms the forces of nature into consciousness, all psychic phenomena may stand revealed, and when the relation which consciousness bears to other things is found, ghostly matters may be seen to lie in the sequence of cause and effect ranged with verifiable things.

Let us then be wary. Let us excuse the scientists from the task of sifting individual experiences and hasten to get our own investigations on a better basis. Let us bend our energies on the nature and method of working of a nerve. Try to discover the velocity, the intensity, the magnitude, the direction of motion of the forces traveling the nerves, to find the quality of the consciousness which succeeds the passage of the force, and the texture of the bonds which connect them.

For the ideas of mind which have come to us by way of ancestral legacies, although valuable for past ages, may not serve our purposes, and when we entertain those ideas as a whole, or in however small a part, there is danger that we imitate the dwellers of old on the plains of Shinar, and attempt to scale the skies by a shaft of Babel.

PSYCHOLOGY.

In every direction among the sciences and philosophies we hear of the old schools and the new schools. Theology had this nomenclature to itself fifty years ago, but now it indicates a virtual break of a vital sort, with the methods as well as the opinions, the axioms as well as the hypotheses of the past. New school political economy was a natural and necessary outgrowth of the final effort of civilization to solve the question of poverty and inequality.

But what interests me to-day is the new school and old school of psychology. Have we souls? Or are we permitted to lay it down as an axiom that we have? The old school psychology had no doubt of it. It began with the phrase "Soul and Body." The duality of our make-up was unquestioned. This notion received a severe shock when Coleridge and his fellows made it quite clear that the soul is not made apart from the body, and put into it at birth, or a little before or a little after.

The question now among the psychologists is a somewhat different one; it is, whether any of us have souls; another, any such things as souls at all. Two books lie before me—one O. S., that is, Old School; the other N. S., that is, New School; both coming from the sterling press of Charles Scribner's Sons. The first is by Dr. James McCosh, and he says: "The soul is that self of which every one is conscious. We have," he affirms, "intuitive evidence that we have souls." There is no question about it, we know it. "The soul is the power by which we take cognizance of self, as acting, as thinking, or feeling; by loving, fearing, and resolving." There is no doubt about this man's opinion. He is sure that he has a soul. He may not believe it was created separately and put into his body at birth, but it would puzzle him to say at what time, or in what way, the two things came together, were joined in such intricate fellowship, and came on as one. The other book, "German Psychology of To-day; by Th. Ribot." Those who are acquainted with Ribot's admirable volume on Heredity will understand his ability to handle this question advisedly. He does not at all withhold his contempt for the old school of psychologists; nor does he hesitate to state the position of his own school plainly and sharply. Psychology, he avers, has for its object "the study of nerve phenomena accompanied by consciousness." Here is the groundwork of the whole new school contained in the fact that consciousness manifests itself only in connection with nerve phenomena. The battle will be fought right there. The soul, as it exists as a separate entity, never manifests itself apart from nerves and nerve phenomena. But he is discreet, and we must all be discreet, for it will not do to say the soul appears only *as* nerve phenomena, but only *with* nerve phenomena. Now, the phenomena of the nervous system is sensation; just that and no more. And no psychologist, neither any physiologist, has been able to discover the bridge over from sensation to sentience, or from body feeling to mental feeling. The lowest forms of life have not only sensation, but hunger or desire. Throw over your pontons. The higher forms of life have not only sensations of very elaborate and complex root, but they have hunger elaborated into hunger for righteousness. That is, man is a being of high ethical and intellectual power, which can not be converted into sensation; nor can sensation be converted into ethics. Well, suppose

we do not try to make a bridge, but simply say that life from the outset, and all the way up, is possessed of two qualities, is defined by two powers, sensibility and apprehension of feeling. There is, from the bottom up, a physical and a psychical. As life grows elaborate the lower sentience or apprehension passes into comparative sentience or comparison of sensations—that is, consentience or consciousness. This becomes in higher life self-consciousness, and finally consciousness of self higher than ourselves. The whole mental realm, with its arts, theologies, philosophies is thus created. You can not say this is nerve phenomena; no, but it is connected with nerve phenomena. And here is where our new school psychology lays its emphasis. Mind can not be studied apart from matter. What then? Man is not a duality; but a unity, with dual functions.

Here evolution comes in to have its say. Montgomery, confining and standing upon evolution as a hypothesis, demonstrates under the microscope that man is not an aggregate of cells, but a single substantial unit, with native power to construct and grow. Any living creature is one single living unity. This is operated on from without, and from within, and it possesses the selfhood to use influences and substances to build itself, and not some other self. A living plant is not made up of a lot of cells aggregated together, but of a single unit that adapts itself to all the forces about it, with power to be itself all the while. Man is the free plant, the exalted animal, the rational self.

Really, then, we seem to have abolished the soul as a something separate from and above the body! Are we then materialists? Is that the outcome of scientific psychology? Do we study the soul only to love it altogether? On the contrary, we find ourselves to be substantial, irreversible, indestructible facts. We love the mythical soul of theology. We find the self, the our-self of investigation. Instead of any longer studying two facts, or the relations of two facts, that is soul and body, the new school of psychology substitutes "the study of two phenomena of our being."

We get around, then, once more to the definition given by our author, "Psychology is the consideration of nervous phenomena accompanied by consciousness." He might add that it is the study of consciousness accompanied by nervous action. It is in reality the study of life, as sensation and feeling. Physiology can confine itself to the organization of the nerves and nervous processes. Psychology is the larger science, that considers nervous action and its accompanying consciousness. Psychology is then, after all, physiological psychology; it is the study, not of mind, but of mind as functional in connection with the body. The one substantial fact of the universe is life; the second fact most substantial is consciousness. Psychology, abolishing the duality of body and soul, and of a separate soul, has, however, established the grander fact of conscious existence as the true definition of a person. In reality we have come nearer losing the body than the soul, for the body is only a synthesis of our environments, and can be washed away, worn away, and finally laid away, without loss of self-existence.

Aye, there is the rub! Can it? Is the substantial being, the our-self, which is neither soul nor body, but simply self—can it be destroyed? or can it sustain continuity of being? You hold up your hands in horror! What! shall we pass over the question of immortality to science? Well, that is

just what we are coming to. Science will determine all these questions for us on the basis of investigation. The revolution of the future will be the revelation of facts. And we can rest assured that true science, which is another word for investigation, is not incorrect. It is not agnostic, nor is it materialistic.

But why and to what purpose, this puzzling of brains as to origins, substances and natures? Will it make one whit of difference with us practically? To answer that we have only to remember that the old theory of a soul as separate from the body did involve contempt for the body; and all the mediæval abuse of the body; a scorn which led not only to scourgings and fastings, and self-abuse, but to diseased, starved souls; for, as we have found out at last, the Psyche and Physicus are one, and suffer and enjoy as one. The one great lesson of the newer psychology is care for the whole self, sacred regard for every organ and every function.

Montgomery reiterates, "we are trustees of all the eternity behind us, to hold its work without waste or shame; and to pass it on to our successors with an increment of our own worthy work as interest." The moral law of the new school is a law embedded in nature, not superimposed by an outside will. We may also remember that the older view of the soul, as a separate thing, created with but wholly distinct from the body, led to a theory of a God of the soul as separate from nature. Not only was the body despicable, but the "light of nature" was misleading and abhorrent. There are still those to whom there is no idea so terrible as a religion of nature. These people always speak of paganism, in its myriad forms, as the religion of nature. Whereas all pagan religions and theologies are purely supernaturalistic. They are wholly dependent on an army of gods and demons, the later Brahminism of India having 30,000 gods and no end of devils. The only change that took place when one religion was overthrown by another was that the gods of the defeated faith were transformed into the demons of the new.

Very evidently these were not religions of nature at all, as we now mean by nature; but they involved, to the maximum, outside forces, interfering with the pure forces of nature. Modern science is properly tending toward an absolute natural religion. It aims to bring all forces within the general term of natural. The god of science is that supreme purpose that works in nature, is nature, the aim, the life, the all *in* all. Well, the battle is a fair one, and an honest one; and there is at last a generous spirit abroad that says let both sides be heard.

These are the two consequences or tendencies of the new school of psychology: (1) to exalt the honor and nobility of the physical being; (2) to reverence the voice of nature. But it must not be supposed that while the body is regarded with honor, as the necessary and admirable mechanism of the real self, it is therefore to be held as one with the real self. Psychology holds itself rigidly to the proposition, "the investigation of nerve phenomena manifested in connection with consciousness." There is no escaping the fact that the self, the psychical self, really works, not only with the body, but beyond the body. No psychical research can any longer ignore or refuse to examine the phenomena that have so far been compelled to appear under the more or less opprobrious terms of spiritualism, mesmerism, hypnotism, telepathy. Are these phenom-

ena of the nerves? Undoubtedly, although reaching indefinitely beyond the nervous organism, they are associated with and rise out of nervous action; they are phenomena of the nervous system. Only the student of evolution comprehends that the nerve is a result, not a cause. Nerve power resided in lower life-forms long before there was a nerve. Nerve potency of function finally organized a nerve, and finally a highly complex nerve system. All the phenomena of psychology belong to nerve function, not simply to the nervous organism. To make this more plain, there are thousands of instances where the most powerful phenomena of a psychical sort outreach the body altogether. What is it in every-day association that leads to what we call attraction and repulsion? We feel the presence of people often in ways that annoy and shock us. We say we do not know why; but if we allowed ourselves to consider the matter, without prejudice, we might know. The fact is that a self coarser than ourself is liable to hurt us by contact. Others are blessings to us, even to have them near us. Can we separate between the psychical and physical in such cases? We do not need to do so. We only know that a subtler force touches us than the organized apparent body. We can not see it, but we feel it. In extreme cases it disorganizes us, breaks us up, kills us. We say such or such a person is very magnetic; but what do we mean by that? Evidently that the person, the self, reaches beyond his visible self, and affects us in a controlling way. The spiritualists have some very curious things to tell us about these points. And I am bound to confess they have a strong argument in some directions. With all the spiritual tramps, and unalloyed humbugs, and gullible ghost-swallowers counted out, there are some very able scientists who are telling us that our physical selves, while associated with the bodies, are not bound to the periphery of our bodies. It is a slippery place to stand, and stand wisely, and sift evidence rigidly; but even Sir William Thompson argues that we are developing an additional sense—that is a new functional power of sensation, the electrical. Psychology therefore, under the definition of Ribot, must take under consideration these psychical phenomena of a somewhat mystical sort. They are phenomena of a nervous sort.

Meanwhile, societies for psychical research are accomplishing a good deal of at least preliminary work—that is, sifting the vast mounds of marvelous stories and imaginings to get at a few facts. Nothing of value is ever achieved in any direction until men arise who are willing to do this very work. Newton did not reject astrology until he had thoroughly investigated it and disproved it. Occultism and Neo-Buddhism have had a thorough overhauling, and are exposed as frauds. Just now spiritualists of character are busy weeding out frauds and bringing in order provable phenomena. The psychical societies are publishing reputable and able journals, of which *MIND IN NATURE*, published in Chicago, is a prominent and useful example. The London society has done more than any other as yet to get down to bottom work. A university for the study of mind was projected by Mr. Wade, of Cleveland, but has fallen through. Two or three professorships of psychology have recently been established in older universities.

The editor of the *Popular Science Monthly*, for September, complains, with excellent reason, that the American Association for the Advancement of

Science, which has just closed its annual session, has no "section" for the discussion of psychology. The nearest approach to it is a section for biology, and one for anthropology. The editor suggests, as the probable reason, that psychology formerly meant nothing more than metaphysical speculation. That this is no longer true can be seen by this volume of Ribot. Psychology is at least one of the exact sciences, and deserves a place as such. Only by this means can we finally rid ourselves of the charlatanism that palms off on the masses undigested theories, and "revelations," and nervous fancies and dreams, as voices from an extra-natural world, having authority to direct and control our ways of living and thinking. Psychology, as a science, that, and that only, can deliver us from our bondage to the miraculous.

These two books I have selected because, happening to be published together, they so exactly illustrate what is being thought of our own make-up. There is no puzzle to man like himself. Solve himself, and he has solved the universe. Plainly, he is the epitome and expression of eternal, universal life; he is the child of that something, which all men have called God.—*Rev. E. P. Powell, in St. Louis Globe-Democrat.*

A COURSE OF READING IN PHILOSOPHY.

Repeated applications have been made for advice as to a course of study which might be pursued by men and women who, being engaged in practical life, are desirous of occupying a portion of their time in acquiring a knowledge of philosophy. The Institute of Christian Philosophy, having had this matter under advisement and taken counsel of several of the most distinguished teachers of philosophy and authors of philosophical works, has prepared a practical course of study which will occupy probably two years.

A full statement of the whole plan, course of study, mode of examination, distinction, etc., will be sent upon application to the address of any one inclosing fifty cents to Mr. Charles M. Davis, Secretary, 4 Winthrop Place, New York.

The desire of the officers of the Institute is to make this new department really useful, to show, what is true, that the Institute is not for recluses and students of high thought alone, but for *the people*, meeting their wants, stimulating their desires and learning from them what are the lines of thinking along which able thinkers should be invited to think.—*From the October Number of "Christian Thought."*

CANINE SAGACITY.

An English writer tells the following: A family let their house furnished, leaving in it a large dog. The tenant was an old lady, who liked to sit in a particularly comfortable chair in the drawing-room, but as the dog was also very fond of this chair, she frequently found him in possession. Being rather afraid of the dog she did not care to drive him out, and therefore used to go to the window and call "Cats!" The dog would then rush to the window and bark, and the lady would take possession of the chair. One day the dog entered the room and found the old lady in the chair. He ran to the window and barked excitedly. The lady got up to see what was the matter, and the dog instantly seated himself in the chair.