A NEW SYSTEM

OF

PHRENOLOGY.

By JOHN S. HITTELL.

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CALVIN BLANCHARD,
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1857.

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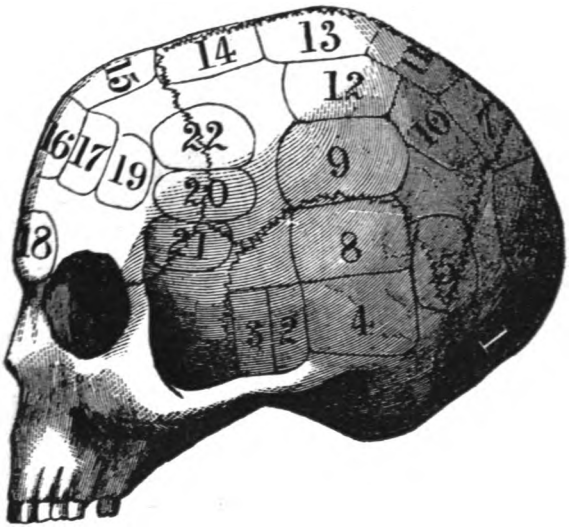

1. Motor-impulse.
2. Alimentiveness.
3. Bibativeness.
4. Destructiveness.
5. Combativeness.
6. Philoprogenitiveness.
7. Concentrativeness.
8. Secretiveness.
9. Cautiousness.
10. Love of Approbation.
11. Self-esteem.
12. Conscientiousness.
13. Firmness.
14. Veneration.
15. Benevolence.
16. Comparison.
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18. Individuality.
19. Mirthfulness.
20. Constructiveness.
21. Tune.
22. Ideality.

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PREFACE.

BRIEF OUTLINE OF THE "NEW SYSTEM."

I. The main points of the "New System of Phrenology," to set forth which is the object of this book, are that the phrenological system of Gall and Spurzheim is true in all its general principles; that the organs of Alimentiveness Bibativeness, Destructiveness, Combativeness, Philoprogenitiveness, Concentrativeness, Secretiveness, Cautiousness, Love of Approbation, Self Esteem, Conscientiousness, Firmness, Veneration, Benevolence, Comparison, Causality, Individuality, Mirthfulness, Constructiveness, Tune and Ideality are properly located and most of them properly described as to their functions: that Adhesiveness, Inhabitiveness, Acquisitiveness, Hope, Wonder, Imitation, Form, Size, Weight, Color, Order, Number, Eventuality, Locality, Time, and Language either do not exist as separate faculties according to the definitions of the founders of phrenology, or are not proved to be properly located; that the main function of the Cerebellum is not the sexual desire but the combination of the action of the muscles in harmonious motion: that the power of balancing and governing the equilibrium of the body dexterously, has its seat in the Cerebellum and not above the eye: that the faculty of Order resides in the organ of Concentrativeness and not in the forehead; and that some of the most important organs including Destructiveness, Combativeness, Concentrativeness and Secretiveness have much influence on character not clearly described by Gall, Spurzheim or Combe.

I shall endeavor to explain my reasons for rejecting portions of Gall's system in the body of the book, as the several points arise. After practising phrenology for some years (chiefly for my own amusement) it became

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clear to me that the theory, though in the main correct, was very defective in some points, and I discovered that a similar impression prevailed not only among intelligent persons of my acquaintance, but also among authors of reputation. I then sat to work to discover the errors if possible: and receiving with doubt nearly everything which I found written in Combe, I finally arrived at the "New System." My reliance for its truth is in my own observation, and on that alone. My system is submitted to public consideration, with the clear conviction on my part that it is still very far from being a perfect system of cerebral psychology, but supposing it to be better than any other and as good as I can make it, I offer it as it is.

MANNER OF TREATING THE SUBJECT.

II. I have sought to make this book as brief as possible, consistently with the object of expressing important ideas pertinent to the subject, not heretofore published in phrenological books, and of giving a general idea of Phrenology, sufficient for ordinary, practical purposes, to those who may know nothing of it before they see this essay. With some doubt as to the fate of my "New System," I have endeavored to place it before the public, as plainly, briefly and simply as possible—so that it may stand or fall on its own merits. I might have inserted in this work lengthy and perhaps instructive dessertations on the physiology and anatomy of the brain, and on metaphysical psychology, but I sought the success of a system, not of a book. I wished to avoid the dangers of having my doctrine recommended by coming in company with valuable information not necessarily connected with it: and of having it condemned because of any failure in attempting an ambitious literary production. In case that the "New System" be approved and adopted by any respectable portion of the community, I may, at some future time, consider it proper to publish a sequel, containing all the information upon the anatomy and physiology of the brain, metaphysical psychology, and the various opinions of different phrenologists on disputed points and other matters, which it may be well for phrenologist to be acquainted with and

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which would properly come within the scope of an encyclopedical work on the subject.

It may not be improper for me to state that I am not and do not expect to be a phrenological lecturer or head-examiner for money: and the public will please not consider this book as an advertisement for any kind of ware which I have to dispose of.

INTRODUCTION.

A WORD TO THE UNBELIEVER.

III. In the examination of the truth of a new doctrine, much depends on the spirit in which it is taken up. Truth is not learned intuitively: it is not always to be found by slight study: it often evades those who form beforehand a theory that it must be in such or such place, and start out determined to find it there. In science he only has a fair prospect of attaining the truth who begins by doubting everything—the old and the new—and then going no further than he can find solid foundation in fact. I am willing—I even desire, and for the sake of science demand,—that you, reader, shall make a sceptical investigation of phrenology before believing it, but I demand also that previous to that investigation you shall make an examination, equally sceptical and strict of any opinions, which you may have, hostile to the new doctrine.

To you personally I am a stranger, and an assurance of mine may carry but little weight, but I shall venture to tell you that I have examined heads phrenologically more or less every year for fifteen years, and it is an agreeable amusement to me. Besides I have so much confidence in the result of my opinions founded on these examinations, that for men generally I think a phrenological examination gives me as much insight into character as an ordinary acquaintance for months. Not that I place implicit reliance in these opinions: on the contrary I have sometimes found myself very much deceived, but not so much nor so often as in opinions founded merely on the observation of words and deeds.

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Phrenology deserves your notice. It maintains a respectable position before the world. Among its advocates have been many great men, among whom I will here mention only Gall, Spurzheim, Broussais Vimont, George Combe, Andrew Combe and Gregory. It is treated with respect by many of the ablest writers on physiology, including Carpenter, the greatest of them. It does not then become you, whoever you may be, to sneer at it before investigation. It is perhaps not improper that you should understand clearly the scientific merits of the founder of Phrenology—the debt which all the world owes to him—and when you understand that you may be disposed to pay more attention to what he has to say. If a man discovers some great truths, it is probable that there will be a little reason in most that he has to say. He, who has made great scientific discoveries, is not likely to be a charlatan in any respect. It may be said that the following principles owe their present general reception as well-established scientific and philosophic truths to Gall:—

1. The brain is the organ of the mind. This principle had been stated before the time of Gall, but it was first demonstrated by him, and brought into universal acceptation. The Edinburgh Review — no mean authority — only spoke the old belief when it objected to Phrenology on the ground that there was no special connection between the mind and the brain.

2. The mind is only the function of the brain, and related to it by the same general bonds which prevail between the other animal functions and organs. Gall does not state this doctrine clearly but it is a necessary conclusion from his premises.

3. The mind is strong in proportion to the size of the brain — as a general rule.

4. The mind is a bundle of impulses; and the ancient metaphysical division of the mind into reason, imagination, passion, memory, and will, is substantially false

5. The Cerebrum is the exclusive seat of intelligence and memory.

6. Those faculties which are intellectual, in the narrower sense of that word, reside in the forehead, the baser

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animal impulses have their seat in the lower part, and the higher moral feelings in the upper part of the brain.

7. There is no one mental faculty for remembering mental impressions, but each of the more intellectual organs records and remembers its own ideas.

Such are some of the truths now generally if not universally recognised in the scientific world, for which you, reader, are indebted to Gall. He also may be said to be the founder of Cerebral physiology, and that he did much to throw light on the structure of the brain is admitted by the ablest anatomists.

HOW TO COMMENCE THE STUDY OF PHRENOLOGY.

IV. Phrenology, as I consider it, if of any practical value, should be an accomplishment possessed by every intelligent man and woman, and should be frequently, almost daily resorted to for instruction and amusement. No great study is required to become familiar with its general principles: no long practice is necessary to learn how to apply them. After having read this book through once — no very serious task, I hope, — read again through the sections on the organs of Destructiveness, Combativeness, Secretiveness, Cautiousness, Concentrativeness and the Motor-impulse, and next feel your own head. After that, feel the heads of your neighbors. If you do not within one week find some remarkable coincidences between the development of the phrenological organs and personal characters as known to you, then become very doubtful about the truth of phrenology.

You may know that many learned and able men have rejected Gall's Craniology without having given it such an examination as you are here asked to make: but do not imagine that they or you can be justified according to the laws of scientific investigation in such conduct. You have no right to refuse to look at reasonable evidence placed within your reach; you should be exceedingly careful how you determine, according to general theories, that alleged facts, certified to by learned, upright and sharp sighted, men, are unworthy of your attention. Before you determine that "bump-feeling" is beneath your dignity, remem-

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ber, that it is the only evidence to which phrenology can appeal for support of its details; remember that that evidence is said to be conclusive; and remember also that, as you are to make the examination in person, you cannot be deceived by others. When Galileo said that Jupiter had moons, a professor in Padua refused to believe him, and refused also to look through the discoverer's telescope. Reader, do you approve that professor's conduct? If not, do not imitate him. When Jenner said that he could prevent the ravages of the small pox by vaccination, the doctors called him a humbug, an imposter. He asked them to try his discovery, to see by actual experiment whether vaccinated persons would be attacked by the epidemic, they laughed at him; they asked him what a scab from a cow's teat had to do with small-pox, and then did not listen to his reply: it was beneath their dignity to pay any serious attention to such "humbuggery." Reader, do not follow in their tracks. Remember the history of mesmerism. Know, if you do not already know, that it has risen above those who scorned and ridiculed it. When a new doctrine is offered to the world, do not demand such evidences as can not in the nature of the case be given; and when the testimony offered may suffice for proof if true, and uncontradicted, then examine that testimony. I ask you to examine the testimony for phrenology. I assert that there is such a correspondence between the size of certain parts of the brain and certain traits of character, that there must be a necessary connection between them. Do you deny that there is such a correspondence, or do you assert that no amount of coincidence would suffice to prove a necessary connection? You must make one or the other or both assertions if you wish to reject Craniology with a show of reason. If you make neither assertion, previous to investigation, we shall see whether you will not be a convert to the New System.

THE GENERAL PRINCIPLES OF PHRENOLOGY.

V. "Phrenology" means the science of mind as connected with and elucidated by the physiology of the brain. The general principles of Phrenology are, that:—

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1. The brain is the organ of the mind.

2. The mind is the function of the brain, and the two bear the same general relations to each other which prevail between other animal functions and organs.

3. The mind is composed of a number of separate faculties—all of which are active in nature, and impel the animal to action.

4. Each separate mental faculty has its distinct organ in the brain.

5. The mind as a whole, and the several mental faculties of which it is composed, are strong, as a general rule, in proportion to the sizes of their respective organs.

6. Every thought or sensation is accompanied by a physical change in the brain.

7. The position of the organs of many of the most important mental faculties are known, and are properly described by Gall.

8. The sizes of those organs may be sufficiently well distinguished on the outside of the skull to enable persons, who have mastered the theory of phrenology, to make it of value in reading character.

9. Every organ remembers its own impressions, and there is no distinct organ of memory.

10. There is no organ of the will, in the sense in which that word is used by many metaphysicians: phrenology recognizes in the will only a vicissitude of the supremacy of the different faculties.

MIND, THE FUNCTION OF THE BRAIN.

VI. Mind, according to physiology and phrenology, is the function of the brain. A function, in animal physiology, is the office, employment, or faculty of a portion of an animate body. Thus, sight is the function of the eye, and hearing is the function of the ear. Organs are material, functions are immaterial. Smell and touch, digestion and secretion, are functions of the animal body, and they are immaterial; no anatomist has yet been able with his knife to cut, or with his scales to weigh either of them. They bear a relation to their organs similar to that which exists

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between the strength of a stick, and the stick itself. The strength is the function of a material body, but is itself immaterial. So it is with all kinds of faculties and qualities, all classes of strength and power. The mind is defined, by Webster, to be "the intellectual strength" of an animal—a very clear and correct definition. To understand the nature of the human mind and its relation to the body clearly, is a matter of the greatest importance to the phrenologist, as to, indeed, all other men; and for the purpose of getting a broad view of the subject, we shall begin with looking at man's position in nature.

All known natural objects are divided into three kingdoms: the mineral, vegetable, and animal. These three kingdoms are intimately related to each other in many respects,—so intimately that the most learned scientific observers have been unable to discover the lines which separate them. Each class is composed of innumerable millions of individuals, different in rank and character from each other, and yet so marked that they can be arranged in groups gradually increasing in complexity and beauty of structure from the coarse, shapeless, primitive rock, up to crystal, more elegant and regular in form than some low vegetables which are connected in the same kingdom by numerous and evident bonds of relationship with the mighty monarchs of the forest, with the sensitive plant and the fly-catcher; and these latter are apparently superior in every thing, except the peculiar faculty called animal life, to some individuals of the worm and reptile classes, which again have their undisputed place in the same kingdom with the highest orders of the brute creation, and with man himself. Beginning at the rock, and ascending to the man, there is a chain of many links, and not one link wanting. Linneus remarks truly that nature makes no leaps. She has gone forward step by step; the successive footprints are recorded in indelible characters on the face of the universe. None of her productions are kinless; all are as though they had grown from one seed, which bore in its own bosom the faculty of developing itself into higher, more numerous, and more complex forms every year.

The vegetables and animals are composed of elements which are to be found in the older kingdom. As its child-

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ren, they have taken its substance. The carbon, the oxygen, the hydrogen, the nitrogen, which exist in mineral form, are also found in the plants, which dig into the earth for their support. The same materials compose the greater portion of the frames of the animals, which devour the plants or their plant-eating brothers, and both plants and animals, as a general rule, must every day have new support from air or water, or they die. The same general qualities mark the objects of the three kingdoms; all have weight, extension, and inertia. The same natural forces appear to prevail through, and to support, as they are, the three kingdoms. All are subject to similar mechanical and chemical influences; all are influenced by heat, electricity, and concussion. It was supposed, for many ages, that animal life was owing to a peculiar power, or vital force, unknown in the other kingdoms, and radically different from all the forces which exercise an influence therein. But this theory is now rejected by all the ablest physiologists. They can find nothing to support it; they find much to contradict it. Every process, every force discoverable in the animal frame, has its kindred process or force, in the mineral and vegetable kingdoms, in the chemist's laboratory, or the mechanic's workshop. The eye is a daguerreotyping establishment; the heart is a pump which forces arterial blood to the extremities, and sucks back the venous blood; the liver is an acid factory; the stomach takes the liver acid to dissolve the food; the brain is a galvanic battery which telegraphs thought and sensation along the wires of nervous fibre with a kind of electricity similar to that which New York uses in speaking to New Orleans, and the muscles, when required to act, are filled with electro-magnetism, so that the ends may be drawn together, just as the opposite poles of a steel magnet would approach each other, if its material were not stubbornly inflexible.

Among the various kinds of animals, man is one. His body is material, and it possesses the distinguishing feature of the animal kingdom—a nervous system. His frame bears a close resemblance to that of other animals. It is composed of the same elements, and is divided into the same organs with the same functions. Man has muscle and bone, skin and hair, feet and mouth, stomach and heart, senses,

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and blood, and brain; and a dog has the same. And he is a pretty good chemist who will distinguish a slice of human muscle, or brain, or a drop of human blood from similar portions of the canine system. Men and brutes are alike produced by generation, supported by nourishing food placed in the stomach and by a constant supply of air; and they die from similar causes, either mechanical or chemical violence, or the exhaustion by age of the life-sustaining power of their organs. The quadruped and the man have minds differing in power, but not differing substantially in kind. The brutes have reason, memory, and passion; they are evidently actuated in many of their movements by motives similar to those which govern men. When young, they are playful, and grave when old. Their countenances and actions at different times show plainly that the mind is filled with doubt, anger, revenge, fear, content, exultation, shame, joy, pride, love of frolic, and maternal love. They not only show these sentiments, but their characters are marked by the general predominance of certain mental impulses. They are "envious,* irascible, placable, [faithful, affectionate,] courageous, cowardly, vain, sober, haughty, humble, vindictive, generous, cunning, candid, [clever,] or stupid, just like human beings. According to the divisions laid down by phrenologists, they possess benevolence, self-esteem, cautiousness, love of approbation, hope, wonder, comparison, and many other of the faculties possessed by man. There is scarcely one of the ingredients of mind which is not bestowed upon them, and they have perversions of the faculties from disease like man. They [more particularly dogs, horses, swine, and kine] *go mad*, and the mother destroys her offspring† under the influence of puerperal insanity, as women do."

Brutes learn by experience, and that learning implies not only memory, but the faculty of reasoning by analogy. It is said that brutes and men are distinguished from each other in the possession of reason by the latter, and "in-

*WIGAN.—On the duality of the mind. Ch. XXVI.

†This offspring-murder is a frequent occurrence in the swine raising counties of Ohio and Indiana. Sows which ordinarily show great affection for their young, when provided with an abundance of food of every kind, set upon their offspring and devour them.

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stinct" by the former; but the probability is that both possess instinct and reason, differing only in the different degrees of development. That brutes reason is shown by multitude of facts recorded in every work on zoology: and that men have instinct is also a fact scarcely to be denied by those who will look at the evidence. A singular case is related by Carpenter in his work on *Human Physiology*, of an idiotic girl in Paris, who, having been delivered in solitude of a child, when found, actuated doubtless by the same instinctive impulse which guides the brute-mother, had gnawn off the umbilical cord of her offspring. Man's very great mental superiority in a state of civilization, and his evident superiority, even in the lowest state of barbarism, to the brute, is owing to a great extent to faculties which do not belong to the mind—to the hand capable of grasping, to the erect form which leaves the grasping hand at liberty, and to the tongue, throat-muscles, and ear which give him the faculty of communicating his thoughts. By the aid of these faculties he is capable of educating himself, and of rising to a greatness far beyond the condition in which he now is. Without these he would be as near to the chimpansee as the latter is to some of the lower orders of monkeys.

Man belongs to a certain class of animals: he is placed by naturalists among the "mammalia"—that class which give birth to their young alive, and suckle them at the teat—that class which includes the ape, the elephant, the lion, the wolf, the mouse, the opossum, and the whale. The unscientific observer might say that nature had made a great leap from the disgusting brutishness and vile form of the ape to the beautiful and majestic body, and all-comprehending mind of a Gœthe. But that vast distance was not made at one leap; there are many steps between the two points. The infant and the idiot, connected by steps, infinitely small with the greatest philosopher, are inferior in intelligence to the ape: and Solly, a physiologist and author of high and undisputed merit, declared that there was a greater distance between the minds of a Newton and a common hewer of wood and drawer of water, than between the mind of the latter and that of a dog. But the idiots, children, and uneducated persons of the Caucasian

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family are not the only humans, nearly related to the brutes. The lowest tribes of savages connect* "with the beasts in the most unmistakeable manner by a multitude of the most striking resemblances. The long arms, the form of the foot, the thin calf, the long narrow hands, the general leanness, the projecting lower jaw, the low sloping forehead, the small head running far back, the short neck, the narrow pelvis, the prominent belly, the beardless chin, the dark skin, the abominable smell, the filthiness, the grimaces in speaking, and the sharp shrieking tones of the voice are so many marks of his near relationship to the ape." And through his kinship to the ape and the other mammalia, he is akin to the bird, and the fish, the snake, the shellfish, the bug, the worm, and the polypus. Indeed, physiologists say, that man is a member of different lower orders at different times—so far as can be distinguished by external signs. While in the progress of formation, previous to birth, the human brain takes first the form of the brain of a fish; then that of a reptile; next that of a bird, then that of a low-class mammal, and finally, after having gone through all those stages, after having, as it were, belonged to four inferior orders, it is developed one step farther, to humanity.

There is one more point in which the near relationship of man to the lower animals is clearly observable, and although the consideration of it is necessarily in itself disagreeable, yet it should be looked at, since this professes to be a treatise on a matter of science, and science knows no feelings of bashfulness or delicacy—much less of prudery and false modesty. There are many records in history of hybrids—half man, half brute. The human had crossed breed with the beast mammal; and the offspring bore witness that the parents were made of live flesh and blood. But mammal and bird cannot produce a hybrid, neither can bird and fish: there is not enough relationship between them. Man is nearer to the dog than the dog is to the bird—nearer than the bird is to the fish—nearer than the fish is to the mollusca.

The animal frame, in all its parts, appears to us to be made with an evident adaptation to certain ends, so far as we know, and much study has been devoted to the subject,

* BUECHNER, Kraft und Stoff.

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and progress made in accumulating and comparing facts; every particle of the human system has its use—its purpose. The frame is divided into parts which differ from each other in form and material, and each of these parts or organs has a different function. The bones serve to stiffen the frame and shield the most delicate and important of the vital organs; the muscles give mechanical force and the power of locomotion; the stomach manufactures from the food new material to mend the constant wear and tear of every part of the system: and the nerves of sense enable the body to perceive its relations to other bodies beyond itself. No two organs have the same function: the heart cannot secrete bile; the liver cannot pump blood through the arteries and veins; the stomach cannot do the work of the kidneys. This division of the animal frame into various organs with different functions is almost infinite in many portions of the body, minute particles of flesh, invisible to the naked eye, have tasks to perform, different from those of other, equally minute particles at their side.

The most noteworthy of the larger divisions of the animal frame is the head. It is the exclusive seat of the majority of the senses—sight, hearing, taste, and smell—the special organs of which are among the most delicately organized parts of the body. The head is also a vital organ; there is no method of taking life quicker than by wounding it. The largest portion of the head is the brain, a mass of matter with an exceedingly fine organization, surrounded and protected by a strong case of bone. The delicate material and guarded position of the encephalon and its vicinity, to the most sensible parts of the frame, would lead us, without knowing anything of its functions, but reasoning, according to the general analogies of nature, to believe that it is one of the most important organs—that it exercises some of the most important functions of the system: and physiologists assert that it is the organ of the mind, and as a necessary corollary in physiology that the mind is the function of the brain. We shall look at some of the evidence, on which they found their belief.

The most important of all the animal faculties is the mind. By its means the animal is conscious and sensible,

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capable of feeling and thinking, capable of knowing the present, remembering the past and anticipating the future. Rank among brutes as among men, depends to a great extent upon it; and it is justly entitled to the elevated position in the brain and the strong protection of the skull. That faculty—mind—is the function of an organ, as all the other animal faculties are; and although it differs in its nature from all the other animal functions, yet these again differ from each other: digestion, muscular power, sight, smell, feeling, and blood-pumping have as little resemblance to each other as they have to the mind, yet they are all animal faculties: and every animal faculty is the function of an organ.

Observation has established the fact that certain relations exist in all cases between the organs and their respective functions: and where those relations are found to exist between a faculty and a part of the frame, it is presumed, unless there be evidence to the contrary that the former is the function of the latter. Thus it is a general rule of physiology that the function is dependent for its normal action on the healthy condition of its organs. If the stomach be disordered, it will not digest well. If the heart be pierced by a sword through the centre, it will be unable to send the blood through the system. If the muscles of the thigh be divided transversely, they cannot sustain the body. To injure the nerves of sight, smell, and hearing, is to injure those functions, themselves. And a similar relationship exists between the brain and the mind. When the former is diseased, the latter is disordered. The blow which wounds the brain, wounds the mind. Perhaps the injury to the function is imperceptible in some cases, but it is, in all probability, none the less real. When the brain is irritated by the presence of intoxicating liquor, the mind becomes drunk, loses the clearness of its perceptions and does things which it would never do, which it would shrink from with horror, while sober. If the skull be broken so that the finger can be pressed in upon the brain, the pressure will render the man unconscious and insensible, and while the pressure continues he has no more mind than a chicken with its head cut off. The experiment has been tried frequently and the same result was always found to

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follow. So too a pressure on the brain produced by other causes may produce unconsciousness. The bursting of a blood vessel in the brain causes apoplexy and sometimes death, by the pressure of the blood on the organ which is the true seat of life.

"We know* the simple fact that all the manifestations of mind depend on physical structure — that every change therein is accompanied by a greater or less change in the mind—that its qualities, its sentiments, its opinions, its affections, its belief, its propensities and its passions are permitted to be influenced, strengthened, weakened or perverted by disease in the physical structure of the system—that a blow on the head shall entirely alter the moral character of the individual—that slight inflammations of its structure shall change modesty, reserve and devotion into blasphemy and obscenity—that a small spicula of bone from the internal surface of the skull, shall transform love into hatred—that other diseases shall make the sober-minded man vain and silly, turn the hero into the coward or the coward into the ferocious bully—shall make the tender mother destroy her own offspring, and the loving husband put to death the object of his long-tried affection."

The mind is affected directly by the condition of the brain and not by that of any other organ. The loss of an arm or a leg, or of both arms and both legs, does not perceptibly injure the thinking faculty. Any part of the body below the chin may be seriously injured, without immediately affecting the mind. It is true that any obstruction in the flow of blood to the brain affects the mind, and a total stoppage causes a loss of consciousness, and death: but this fact affords no evidence against the theory that the brain is the organ of the mind. All the fleshy fibres of the animal's frame must have an uninterrupted and sufficient supply of good blood to enable them to act in a healthy manner: and if that supply be not furnished, the muscles, the stomach, the liver, and the kidneys will "strike" work as quickly as the brain.

Another general rule, prevailing in the relations between organs and functions, is that the latter are strong in proportion to the size of the former. A large muscle is stronger

* WIGAN.

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than a small one: a large liver secretes more bile than a small one: a large stomach digests more food than a small one: and a very large olfactory nerve is usually considered indicative of a very acute sense of smell. The same rule prevails in the relationship between brain and mind. The fact may be perceived most readily by comparing different classes of animals. The long ladder of animal life, reaching, as it were, from heaven to earth, with thousands of rounds, beginning at man and running down step by step in the scale of physical development, gradually decreasing in beauty, strength and complexity of frame, and variety, vigor and grace of motion, is marked by an equal decrease in intellectual power and the amount of brain. Man is far superior in intelligence to all the other animals, and his brain is absolute larger than that of any other except the elephant and whale: and it is also larger in proportion to the size of his frame than that of any other animal, with a few exceptions of the sparrow species; and these exceptions are more apparent than real. The sparrow owes much of his relatively large brain to the full development of the sensory ganglia, that part of the brain which is the seat of sensation and consciousness, while the thinking part—the Cerebrum—is proportionately smaller than in man. The difference between the brain of the man and that of the dog, between the brain of the dog and that of the sheep, and between the sheep's brain and the tortoise's brain is as good a measure as we have of the respective difference between their mental capacities. The same rule may be observed among men. The brain of women is usually one tenth less than that of men, and their mental faculties may be that much weaker. Infants have small, soft brains, and very weak minds—at first scarcely minds at all—and as the brain grows large and solid, the mind grows in activity and strength. A very small brain is a certain sign of idiocy, and very great talent is always accompanied by a very large brain.

A third general rule of the relationship between the functions and the organs is that those organs, whose functions are under the control of the will, must rest about one third or fourth of the time. The heart, the lungs, the liver, and some other organs not under the control of the will, can

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not be driven by the will to go faster, nor compelled to stop; and they work, or can work, always without rest. But the muscles are under the control of the will, to a considerable extent at least; and they must have rest six or eight hours out of the twenty-four. So the mind is under the control of the will liable to be driven to great exertion or over-exertion, and requiring also for the brain its share of rest every day.

A fourth general rule is that in old age the organs lose their vigor and strength, and the functions suffer a similar decay. The general loss of physical power, the *decline* of life in men after the age of forty or forty-five, is a matter of universal observation. All the organs appear to lose; bones, muscles, stomach, liver, and the organs of secretion generally. The brain decreases in weight also, but not so much as the muscles; and therefore the brain, according to the experiments of Solly, is, on an average, heavier in proportion to the body at sixty years of age than at forty-five. And as the brain decreases in solidity, so does it lose force. Notwithstanding the constant and valuable accumulation of knowledge and experience, there is probably no human mind so strong at sixty as it was at forty. The majority of great intellectual works have been planned and executed by men in the blossom or bloom of manhood. The memory of events begins to fail before forty, and continues to fail rapidly after that age. At sixty the mind ordinarily becomes perceptibly weak, and if a man lives to eighty without falling into decided dotage, he is considered fortunate. Shakspeare, in his Seven Ages of Man, makes second childhood the natural termination of human life, and the truthfulness of his picture has been admired throughout the civilized world.

A fifth general rule is that the exercise of the function wears away the organ, and that the wear and tear is proportioned to the amount of the exercise. The muscles are worn out by physical labor; the worn-out material is carried off through the pores of the skin and the kidneys. The chemist knowing the material of which the muscles are composed, and knowing approximately the amount of waste caused by great or little exertion, can, by examining the secretion of a man's kidney, and knowing the amount of time

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in which it was collected, may guess pretty near the truth at the amount of work done by him in that time. So, also, the exercise of the mind is always accompanied by a proportionate wear of the brain; and the worn-out matter is carried off through the urine, where it may be distinguished and its amount discovered. This rapid wearing away of the material is the cause of the pain in muscles and brain which follows over exertion of the physical strength, or the mental powers.

Physiology informs us not only that the mind is the function of the brain, but that different parts of the mind are the functions of different portions of the brain. The encephalon is composed chiefly of two divisions: the *Cerebrum* or upper part of the brain, and *Cerebellum* or lower and back part. Each of these parts has its peculiar mental function.

The Cerebellum is the seat of the power of governing the muscles in harmonious action. "We* find its degree of development corresponding pretty closely with the variety and energy of the muscular movements which are habitually executed by the species; the organ being the largest in those animals which require the *combined* effort of a great variety of muscles to maintain their usual position, or to execute their ordinary movements; whilst it is the smallest in those which require no muscular exertion for the one purpose, and little combination of different actions for the other. Thus in animals that habitually rest and move upon four legs, there is comparatively little occasion for any organ to combine and organize the actions of their several muscles; and in these the cerebellum is usually small. But among the more active of the predaceous fishes, (as the shark,)—birds of the most powerful and varied flight, (as the swallow,)—and such mammals as can maintain the erect position, and can use their extremities for other purposes than support and motion—we find the Cerebellum of much greater size, relatively to the remainder of the encephalon. There is a marked advance in this respect, as we ascend through the series of quadrumanous animals; from the baboons, which usually walk on all-fours, to the semi-erect apes, which often stand and move on their hind-legs only The greatest development of the Cerebellum is found in

* CARPENTER.—Elements of Physiology.

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man, who surpasses all other animals in the number and variety of the combinations of muscular movement, which his ordinary actions involve, as well as of those which he is capable, by practice, of learning to execute.

"From experiments upon all classes of Vertebrated animals, it has been found that, when the Cerebellum is removed, the power of walking, springing, flying, standing, or maintaining the equilibrium of the body, is destroyed. It does not seem that the animal has in any degree lost the *voluntary* power over its individual muscles; but it can not *combine* their actions for any general movement of the body. The *reflex* movements, such as those of respiration, remain unimpaired. When an animal thus mutilated, is laid on its back, it can not recover its former posture; but it moves its limbs, or flutters its wings, and evidently not in a state of stupor. When placed in the erect position, it staggers and falls like a drunken man—not, however, without making efforts to maintain its balance.

"When the Cerebellum is affected with chronic disease, the motor function is seldom destroyed; but the same kind of want of combining power shows itself, as when the organ has been purposely mutilated. Some kind of lesion of the motor function is invariably to be observed; whilst the mental powers may or may not be affected—probably according to the influence of the disease in the Cerebellum upon other parts. The same absence of any direct connection with the psychical powers, is shown in the fact, that inflammation of the membranes covering it, if confined to the Cerebellum, does not produce delirium. Sudden effusions of blood into its substance may produce apoplexy or paralysis; but this may occur as a consequence of effusions into *any* part of the encephalon, and does not indicate, that the Cerebellum has any thing to do with the mental functions, or with the power of the will over the muscles."

The Cerebrum is the seat of intelligence and memory. "The results † of the removal of the Cerebral Hemispheres, in animals to which the shock of the operation does not prove immediately fatal, must appear extraordinary to those who have been accustomed to regard these organs as the centre of all energy. Not only Reptiles, but Birds and

† CARPENTER.

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Mammalia, if their physical wants be supplied, may survive the removal of the whole Cerebrum for weeks, or even months. If the entire mass be taken away at once, the operation is usually fatal; but if it be removed by successive slices, the shock is less severe, and the depression it produces in the organic functions is soon recovered from. It is difficult to substantiate the existence of actual sensation, in animals thus circumstanced; but their movements appear to be of a higher kind than those resulting from mere reflex action. Thus they will eat fruit when it is put into their mouths: although they do not go to seek it. One of the most remarkable phenomena of such beings, is their power of maintaining their equilibrium; which could scarcely exist without consciousness. If a rabbit, thus mutilated, be laid upon its back, it rises again; if pushed, it walks; if a bird be thrown into the air, it flies; if a frog be touched, it leaps. If violently aroused, the animal has all the manner of one waking from sleep; and it manifests about the same degree of consciousness as a sleeping man, whose torpor is not too profound to prevent his suffering from an uneasy position, and who moves himself to amend it. In both cases, the movements are *consensual* only, and do not indicate any voluntary power; and we may well believe that, in the former case as in the latter, though *felt*, they are not *remembered;* an active state of the Cerebrum being essential to *memory*, though not to sensations, which simply excite certain actions."

It is supposed that consciousness, which is not destroyed by the removal of either the *Cerebrum*, or the *Cerebellum*, must reside in the *Sensory Ganglia*, which are masses of nervous matter at the base of the brain, in front of the *Medulla Oblongata;* but physiologists have not yet been able to obtain so much evidence to prove its connection with any special portion of the brain, as they have found in regard to intelligence and the power of movement. That consciousness has its seat in some part of the brain, is considered as conclusively established by the fact that pressure on the brain deprives the animal of that faculty.

The main points of the evidence in support of the theory, that the mind is the function of the brain, have now been presented. Every analogy of nature which could reasonably

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be appealed to, supports the theory ; and there is nothing upon the other side—nothing, at least, that science can recognize. "No physiologist," says Carpenter, "could venture to deny, in the face of the crowd of facts which force themselves on his attention, that all mental phenomena are inextricably linked with vital [physical] changes in the nervous system."

THE MIND A BUNDLE OF IMPULSES.

VII. The fact that the mind is composed of a number of distinct faculties has been recognized by all mental philosophers. There is no one deserving of that name who has not spoken of reason, passion, memory, will, conscience, consciousness, and imagination as distinct parts of the mind. Distinctions much more minute are recognized in the language of all civilized nations, and by all intelligent men. The words wit, constructive talent, musical talent, poetical talent, self-esteem, courage, and caution are to be found in the tongue of every people, which has issued from the barbarous stage, and the use of these words recognizes the general belief of separate mental faculties. This general belief does not prove the compound nature of the mind, but it raises a presumption which should be taken into consideration. The proof, or at least the evidence, from other sources is abundant. Who has not noticed that men of all ages differ greatly from each in their mental power and dispositions? One is cruel from early childhood, another is kind ; one is sensible, another foolish ; one quick-witted, another slow ; this one has a talent for mathematics, that one for languages; one is humble, another arrogant. Many instances have been known, where three or more boys, children of the same parents, have been reared together, and educated in the same way, and yet have shown dispositions and talents very different ; each possessing some predominant qualities of mind, which were apparently lacking, or very weak in the others. Some children cannot learn a tune, and others cannot learn the multiplication table,* and yet may possess a very fair amount of intelligence in other respects. It frequently happens, that men have some faculties diseased or crazed, and the others sane. The

* I had, as school-teacher, once a case of this kind.

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word "monomania" means a madness confined to one faculty, or to one subject. Idiots, or partial idiots, sometimes have one or few of their faculties in the average strength. Fodéré in his *Treatise on the Goitre and Cretinism* says, that "by an inexplicable singularity some Cretins, imbecile as they are in reasoning on ordinary subjects, are born with a fair talent for copying pictures, for rhyming, or for music," and he states that he had known several who taught themselves to play passably well on the organ or harpsichord; and others, who understood without instruction, how to repair watches, and other pieces of mechanism. It is difficult to find in the consciousness alone evidence sufficient to convince ourselves satisfactorily that the mind is composed of distinct faculties. It is true that our feelings, thoughts, and capabilities are very various, but arguing merely from consciousness, we should remain subject to a doubt whether these were not different modes of action of the same organ: as the physical power of throwing stones, building houses, painting pictures, and of doing many other very different actions, all reside in the same muscles. But when we compare various minds, and see how they differ, we must discover that the mental faculties are not merely different modes of operation of the same organ. The strong arm is strong at all kinds of work, whether striking with a hammer, shoving a plane, lifting a weight, or throwing a stone; and if it be awkward for want of practice in showing its strength at either of these exercises, that awkwardness can certainly be removed with a little practice. But the mind which in general character is strong, cannot as a matter of course, even with much practice, excel in music, in painting, in wit, and in the perception of the relation of numbers. On the contrary it is a subject of surprise, if any one mind does excel in all those different qualities. It is not expected that the mind which is strong and expert in one faculty, shall be strong and expert in others: but it is expected that the organ which exhibits strength in one mode of action, shall exhibit it in others also. Thus, the arm which is strong in the use of the blacksmith's hammer, is strong also in throwing stones, or lifting weights, but the mind which perceives all the beauties of a long and intricate piece of music, and remem-

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bers it with ease after hearing it but once, may have a very slight perception for the beauties, or a very weak memory for the details, of a simple but great picture. Every strong arm can swing a hammer; but not every strong mind can be witty, or expert in the use of numbers. The arm of the boy which has never been subjected to any special training, can with equal exercise be made to exhibit equal strength in handling the hammer, the plane, or in lifting; but the mind of the uneducated boy, when taught equally in a number of different branches, may show much more proficiency in some than in others.

Another class of evidence for the substantial difference of the mental faculties, and their location in separate organs, is found in cases where some particular mental faculty is diseased, while all the others continue in a healthy state. Many such cases are recorded of persons, who have been wounded by blows upon the head, or whose brains have been diseased.

Another evidence of the complex nature of the mind is found in the fact that the mind when tired of one kind of labor, may find relaxation in another, which fact may show that different faculties are called into play. To require any exertion, be it ever so light, from a weary organ, can afford no pleasure, and if the mind were but a single faculty, it would when tired, seek absolute rest, and not merely relaxation.

It is not to be supposed that we know the precise number of all the distinct mental faculties: and it is possible that many of those faculties, which are known to us and are supposed to be single in their nature, are really composed of several sub-faculties.

It was at one time the favorite theory of philosophers that mind at birth was without an active or decided character; that it was entirely passive until circumstances had formed it, previous to which formation it was as a piece of white paper on which anything might be written, or as a piece of soft wax which might be moulded into any form within the range of known human character. After that theory had been exploded, another arose that man is born with certain ideas, which are perceived when or before he arrives at years of discretion. This theory was suggested

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by the desire to find protection in instinct or intuition for religious dogmas which derived a very questionable support from reason. The latest theory, and one which is perhaps now more generally received than any other, is that man is born with certain mental faculties which are in themselves propensities or impulses—which not only give him the power but drive him to think and act in certain peculiar ways. He who has a great capacity for appreciating music has a want, a pressing impulse to seek opportunities for gratifying his taste and exercising his talent; and a similar remark may be made of those who have strong faculties for building, painting, or for reasoning. So too of the moral propensities, such as the dare-impulse, or the sex-love impulse, or the justice-impulse: either of these faculties if strong may drive a man to deeds which reason tells him will prove injurious to him. The faculties not only have the power of action when instigated by external circumstances, but they love to act, and their exercise is a source of pleasure. Their exercise gives pleasure, and then the man is naturally impelled to find exercise for them. The mind wants occupation,—and while awake constant occupation,—though that occupation may be often of a very light or effeminate kind. Constant mental occupation contributes very much to contentment and happiness, because it gratifies the mental impulses—the active thinking powers, which demand subjects for thought as the stomach demands matter for digestion.

SOME REMARKS ON THE ANATOMY OF THE SKULL AND BRAIN.

VIII. The brain is about the color and consistence of wheaten-dough. It may be considered as composed of four principal divisions. *First* the *Cerebrum* or large brain, which fills the skull above the ear. *Secondly* the *Cerebellum* or small brain which fills the skull behind the ear. *Thirdly* the *Sensory Ganglia*, knots of nerve-matter which lie under the cerebrum in front of the ear: and *Fourthly* the *Medulla Oblongata*, which is that part of the spinal marrow within the skull. There are many small organs of nervous matter, near the *Medulla Oblongata*, but their func-

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tions are not well understood and it is unnecessary to describe their appearance here, or to mention their names even. Each of the divisions of the brain above mentioned may be considered as composed of two hemispheres, one on each side of the skull, and the two separated by a very plain partition. The whole brain is covered with a skin, the *dura mater*, which is like a piece of oiled silk. This skin goes down between the two hemispheres of the cerebrum to the *Corpus Callosum*, a tough white integument which serves at once to separate and connect the lower portions of the halves of the Cerebrum. The matter of the brain is of two kinds,—neurine, a granular gray matter, sometimes called cineritious, ashy or cortical, (outside, barklike) which lies at the surface and extends generally to a depth of half of an inch or more. In this matter are found the convolutions or folds, which are seen on all the external portions of the encephalon. It is supposed that the neurine is the seat of thought, and that the mental vigor depends to a great extent on its amount, and the depth and number of its convolutions. Under the neurine is found a white fibrous (sometimes called medullary) matter which makes up the greater portion of the brain. This white matter is composed entirely of fine hollow threads, or cylinders, so small that 10,000 of them, side by side, go within a space of an inch, or 100,000,000, within the space of a square inch. In the centre of each is a fluid, which is supposed to conduct the nervous electricity and communicate sensation: and the fibrous matter generally is supposed to have the function of conveying the impressions, and thoughts generated in the neurine. It is in that matter that the fibres take their start, and they run to other parts of the neurine in the same hemisphere, or they run through the Corpus Callosum to the other hemisphere, or they run down to the spinal marrow and the small nervous bodies at the base of the brain.

Solly reports that in male human beings, between the ages of 1 and 4 years, he found in a number of cases the average weight of the entire brain to be 45 ounces avoir-du-pois; 47 ounces between 5 and 7; 52 ounces between 7 and 10; 51 ounces between 10 and 13; 50 ounces between 13 and 16; 56 ounces between 16 and 20; 58

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ounces between 20 and 30 ; 62 ounces between 30 and 40 ; 53 ounces between 40 and 50 ; 59 ounces between 50 and 60 ; 60 ounces between 60 and 70 ; and 54 ounces in a number of persons examined above 70 years of age. These examinations were made upon the brains of such deceased persons as chance threw in his way, and do not necessarily represent fairly the general average at the different ages ; but we may safely believe, the general weight at 3 years to be 45 ounces ; at 40 to be 65, and at 50 to be 59 ounces avoir-du-pois. The weight of woman's brain is ordinarily about one tenth less. At 4 years the body weighs 8 times as much as the encephalon ; at 15 years, 15 times as much ; and at 30 years, 35 times, after which time the proportion varies little. Magendie says the brains of persons in advanced age weighs about 15 per cent. less than in middle age. The cerebrum weighs ordinarily nine, ten, or eleven times as much as the cerebellum ; and this proportion changes but little through life, though Gall and Spurzheim represent the cerebellum as increasing very much in size about the age of puberty.

Skulls are generally about a quarter or a third of an inch thick, though sometimes as thin as an eighth of an inch, or as thick as three-quarters of an inch. The bone is always thinner at the temple than on the forehead ; but above the nose, the skull sometimes becomes three quarters of an inch thick, or rather, the external and internal surfaces of the bone are that far apart, a hollow place being left between. This swelling in the bone, called a *frontal sinus*, sometimes extends so as to be three inches wide on the brow. When there is a large sinus, it is generally perceptible by its roughness and prominence. There is sometimes a little process or occipital spine growing at the back of the head, on the medial line, on a level with the top of the ear, and is usually as large as a hazel. It is only bone and signifies nothing phrenologically. The process behind the ear, by the back of the skull is fastened to the neck, must not be mistaken for any organ. That portion of the skull forming the covering for the brain, is divided into six pieces by *sutures*, or sawlike joints, which grow together in old age. The general course of the sutures may be seen on the engraving opposite the title-page.

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THE LOCATION OF THE DIFFERENT MENTAL FACULTIES.

IX. In examining the brain, we find it to be composed of a large number of obviously separate organs : the *cerebrum*, the *cerebellum*, the *sensory ganglia*, the *medulla oblongata*, and many small bodies of nervous matter (gathered about the *medulla oblongata)*, each of which we must suppose for the mere reason of material distinctness, to have a distinct function. But the phrenologist confesses that he does not know the function of any of these organs save the cerebrum, the cerebellum, and the sensory ganglia. In regard to the sensory ganglia, he agrees with the physiologist ; in regard to the cerebellum also he agrees with the physiologist, that its functions relate mainly to the impulse for physical action, or the power of combining the action of the muscles ; and the chief question raised by phrenology may be said to be, whether the cerebrum is divided into a number of distinct organs, with different mental faculties for their functions. If it be, then the substantial doctrine of phrenology, as it appears at this time, is true ; and it is false, if there be no such division.

The cerebrum shows varieties of physical structure so distinct as to justify the belief that different parts of it have different functions. Each hemisphere may be considered as divided into three main lobes : the anterior or front, the middle, and the posterior or back. These lobes are not separated from each other, yet there are such deep furrows between them, at the surface, that the division is recognized by all physiologists. The cerebrum is made up of neurine and nervous fibres, differing from each other in material and in form. The neurine lies in folds, and in some parts of it, the chemical composition is different from that of other parts ; and a difference of chemical composition in animal organs implies a difference of function. The nervous fibres may number several thousand millions in the whole cerebrum, and these fibres are divided into three classes : those connecting the neurine with the spinal narrow ; those connecting the neurine of one hemisphere with that of the other ; and those connecting different parts of the neurine of the same hemisphere. But of all these divisions of the sub-

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stance of the brain, the phrenologist can take no advantage; he does not pretend to locate his different mental faculties in these different divisions; he can obtain no proof from them for any substantial part of his theory. All the nervous fibres in the cerebrum are supposed to be the means of conveying ideas and impressions to and from various portions of the neurine; but this is not a special doctrine of phrenology, nor has it been treated upon by phrenological authors.

But he locates his distinct mental faculties on the surface of the brain, in small tracts, an inch and a half square—more or less—between which he can discover no indications in the substance or form of the brain, of a separation of organs. This inability to discover a dividing line between the organs in a matter which is mapped of as exercising, in different parts, a number of distinct functions, is a fact which no doubt has had very great influence in leading physiologists to be hostile to Gall's theory. Attention is here called broadly to this fact, because every one examining the subject should bear clearly in mind the evidences both for and against doctrines which he examines or believes. Those organs in the leg and arm, and in the chest which have different functions, are plainly separated, or easily separable from each other: but if phrenology be true, the same rule does not apply to the brain, or, at least, not in the same manner, and to the same extent.

Physiologists generally are inclined to believe that the brain is divided into separate organs quite as numerous as those laid down by phrenology; but they have been unable to find the evidence to satisfy them as to the particular location of different functions.

The brain is divided into two hemispheres, and all the organs are supposed to be double, as there are two eyes, two ears, etc. The evidence for the location of the organs, as laid down by phrenologists, has been obtained only by observing that certain qualities of mind were generally, if not universally accompanied by a certain shape in the skull. Since it was known that the mind was the function of the brain, that the brain gave shape to the skull, that the mind was divided into a number of distinct faculties, that these distinct faculties had probably distinct seats in the brain, and that size is the measure of power generally in the ani-

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mal organism, it was concluded that, where the strength or weakness of a peculiar mental faculty was invariably accompanied by the large or small distance of a certain portion of the skull, from a certain point midway between the ear-orifices, there must be a necessary connection between the faculty and the brain covered by that portion of the skull.

The question for the student now is: "*Is the division of the mind into separate mental faculties, as made by phrenologists correct, and is their strength always measurable by the size of the organ, or part of the brain allotted to it?* To examine this question, we must first be familiar with the phrenological descriptions of the faculties and of the localities of their organs.

The organs, according to my system, are as follows:

PHYSICAL IMPULSES.

I. Motor Impulse.
II. Alimentiveness.
III. Bibativeness.

MORAL IMPULSES.

IV. Destructiveness.
V. Combativeness.
VI. Philoprogenitiveness.
VII. Concentrativeness.
VIII. Secretiveness.
IX. Cautiousness.
X. Love of Approbation.
XI. Self-esteem.
XII. Conscientiousness.
XIII. Firmness.
XIV. Veneration.
XV. Benevolence.

ARTWARD IMPULSES.

XVI. Comparison.
XVII. Causality.
XVIII. Individuality.
XIX. Mirthfulness.
XX. Constructiveness.
XXI. Tune.
XXII. Ideality.

Many other organs, rejected by me as doubtful, incorrectly located, or founded on a false assumption of the existence of separate mental faculties ascribed to them as functions, are received by other phrenologists. Thus Combe gives 36 organs, and Spurzheim 35, to which more have been added by Vimont and others. Among the organs given by them, and rejected by me are adhesiveness, inhabitiveness, acquisitiveness, hope, wonder, imitation, form, size, weight, color, order, number, eventuality, locality, time, language, union for life, love of life, etc.

I dislike the nomenclature of these organs very much; but with the exception of the first, I have felt compelled to

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adopt them from Spurzheim who inflicted them upon the English language. Having been adopted not only by the phrenologists, but also, to some extent, in popular usage, and even in some standard books on general literature, I could not presume that any attempt of mine to drive them from use, would avail. Every name in the lot is liable to some serious objection. In the first place, many of the words are not English in their origin, and are compounded from Latin and Greek in a barbarous manner. In the next place, they convey, according to their etymologies or common acceptations, no idea, or very improper ideas of their organs. Not one describes clearly the main function of its organ; some describe functions which do not belong to their organs; some describe inferior phases of the functions of their organs, and not the main phases as they should; and others convey no idea of any mental function, but of some abstraction which could never be properly supposed to be a mental faculty.

The proper name for each organ would be an English word made by prefixing the main characteristic of the faculty to the word "impulse." Thus "amativeness" would properly be the "lust-impulse," a name which conveys a coarse idea, but a true and clear one. The "coarseness" is a good objection; but it can not be brought justly against any of the new names which I suggest in the sections treating of the various organs respectively. The "lust-impulse" is not in my list. The divisions of the organs into three classes of "physical," the "moral," and the "artward" impulses, is a matter of little moment in itself, but it differs from the divisions made by other phrenologists. My division corresponds with the general doctrine that the animal organs lie at the base of the brain, the moral at the top, and the intellectual in front. The title "artward," as signifying an impulse toward art, is of new coinage, as preferable to a misuse of some old word, such as "artistic." The impulses classed under this head, lead in practice to arts, in theory to sciences, as we can say, the "art of reasoning," the "science of music;" but all these impulses are nearly akin, and it appeared more natural to treat them as leading art-ward than science-ward.

We then proceed to the consideration of the separate organs.

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X. The Cerebellum, according to the unanimous opinion of physiologists, is the seat of the power of combining the action of the muscles. If it be removed or seriously diseased the animal may struggle and make efforts to move, and may perhaps move all the muscles which should act in the motion which it desires to make, but they do not move harmoniously, and therefore the effort results only in a convulsive struggle. To this faculty, undoubtedly the chief function of the Cerebellum, I give the name of "Motor-impulse." The organ gives the power of balancing, and managing the muscles with dexterity and quickness. It gives also a love of exercise and motion. It is an organ of much influence in forming men of great activity.

The "Motor-impulse," according to physiologists, gives the faculty of balancing, and governing dexterously the equilibrium of the body, which faculty, Spurzheim says, resides in an organ located above the eye. But the evidence obtained by numerous experiments in mutilating the brains of living animals, and by the comparison of the Cerebellums of many animals differing greatly in complexity and dexterity of their muscular movements, appears to leave no room for doubt: and on the other hand there are valid reasons for rejecting the organ of "Weight" even if we were unable to locate its functions with probability in any other portion of the brain. A quotation from Carpenter in regard to the functions of the Cerebellum and the experiments and observations made upon will be found in Sec. VI.

Gall said that the "Sexual-impulse," *Geschlechts-trieb* as he called it in German, "Amativeness" as Spurzheim called it in English, the "Lust-impulse" as I call it, had its seat in the Cerebellum: and both Gall and Spurzheim, to the last, rejected the doctrine that the faculty of combining the action of the muscles had its seat there. That there is a "Lust-impulse" in the mind is generally admitted by physiologists and psychologists. Slight observation will convince any close observer that the Lust-impulse is not owing to the local irritability of the sexual organs, although that undoubtedly has an influence upon individual acts. Persons whose bodies appear to be in nearly the same condition of health, vigor, and age and whose occupations, amuse-

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ments and diet are the same, show a great difference of feeling in regard to desire for gratification of the Lust-impulse. Wounds upon the head, particularly upon the back of the head, have often speedily been followed in persons previously chaste and decent, by fits in which they showed by word and action, their entire possession by, and subjection to, the grossest and apparently ungovernable lust. So also it has been observed that persons who died in insanity, wherein the Lust-impulse was evidently deranged—and sometimes that organ only,—the Cerebellum or some other part of the brain has been found to be diseased. It is not to be doubted, however, that nymphomania and satyriasis are usually caused only by local irritation: and they are treated by physicians accordingly. That the organ of the sexual desire has its seat somewhere near the back of the head is rendered probable by the fact that the passion has a strong influence upon the form and size of the back of the neck. A comparison of the necks of a stallion and mare, bull and cow, of an amorous man and a cold woman, will show the difference, and this is caused by the amorous passion. But how it is caused is not clear, since geldings have necks like females. This would seem to show that the organ in the brain does not cause the wide, strong neck, which characterizes great amorousness.

Whether Amativeness have its seat in the Cerebellum is a matter of doubt. Some physiologists have thought it was a function of the spinal marrow or of the Medulla Oblongata. In my observations I have generally thought the size of the Cerebellum to be a good measure of the amative propensity. The theory that the Lust-impulse and the power of combining the action of the muscles have their seat in the same organ, "would seem," says Carpenter, "to find some confirmation from the fact that an unusual amount of muscular exertion appears to have a peculiar tendency to depress the sexual passion, even whilst it increases the general vigor of the system. If the Cerebellum be really connected with both kinds of functions, it does not seem unlikely that the excessive employment of it upon one should diminish its energy in regard to the other." The amount of physical exertion which appears necessary to place the body generally in its most healthy condition, increases the

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amount of all the secretions except that of the seminal fluid, the formation of which it apparently serves to decrease, as physiologists presume, for no investigations have been made other than by observing the different impulses and feelings of persons when idle and when engaged in hard and constant labor. The gratification of the amorous desire throws a peculiar languor over the system—a languor entirely too great to be accounted for entirely by the mere loss of a small amount of a secretion previously existing, and whose presence did not directly contribute in the least to the animal vigor.

Very amorous persons are usually quick in their movements and fond of exercise, and expert in using their limbs, and the same may be said of salacious animals generally but not universally. Most men of great mental power and love of action are very amorous, as were Cæsar, Mahomet, Mirabeau and Nelson; while Alexander, Charles the Twelfth and Napoleon deserve to be mentioned on the other side.

Some assertions have been made by phrenologists in regard to the relation between Amativeness and the Cerebellum which are rejected by the physiologists. Thus Gall said that the Cerebellum was much smaller in geldings than in stallions, but examination has shown the statement to be untrue. According to Spurzheim "In new-born children the Cerebellum is to the brain as one to nine, ten, thirteen, twenty or more: and in adults as one to five, six or seven." Solly, who is much more trustworthy, (being a later, and more careful author and interested in no system) says that in a large number of heads between one and seventy years, the proportion of the Cerebellum to the encephalon varied little in persons of different ages,—the proportion varying only from one ninth to one-eleventh, and being as high in those under five years of age as in those between twenty and thirty. It was also said by Gall that the sexual function of the Cerebellum was shown by the fact that either impotency or insane lust was caused by severe wounds in that part of the brain, but among the large number of such cases are on record, only about one tenth of the cases show such a result.

The phrenological organ of Amativeness wherever loca-

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ted is essentially a "Lust-impulse." It has nothing refined, nothing delicate, nothing platonic about it. It demands only gross, sensual gratification. Many persons who have the organ and the feeling in large development are no doubt pure, delicate and refined, but it is not by virtue of that faculty. When unrestrained by other and nobler impulses, it leads to the most brutish offences against morality and decency. The influence of the passion contributes much to give human society its forms and conventionalisms.

The organ which has been under consideration, — the Motor-impulse—is represented on the outside of the skull by a tract about three inches and a half wide by two inches high, bounded at the sides by perpendicular lines about two inches back of each ear, and extending from the base of the skull to a line on a level with the tops of the ears.

ALIMENTIVENESS.

XI. This organ, the "Eat-impulse," has its seat in front of the upper part of the ear and is about half an inch wide and an inch high. It regulates the taste for food and when large gives a love for dainties. It represents the palate, probably more than the stomach. Some men are very much concerned about the nicety and variety of their diet, others are satisfied with very coarse and simple food: and it is supposed that the difference is owing to a mental faculty. The sense of hunger depends, no doubt, upon a sensation of emptiness in the stomach carried to the brain by special nerves: but whether the cutting of those nerves would entirely destroy the taste for dainties, is as yet a matter unknown.

BIBATIVENESS.

XII. The "Drink-impulse" is located immediately in front of the "Eat-impulse" and is of the same size. By some phrenologists they are considered as but one organ. I have thought at times that the size of the head at Bibativeness gave a good measure for the love of strong drink, as it has existed in several extreme cases which have come under my observation: but had it not been for these I

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think I should have considered this and the preceding organ to be very doubtful. The love of liquor is a passion, often so powerful that an extremely strong will is required to conquer it; and such thought of impulse is scarcely to be expected from mere local irritation, though that too undoubtedly has its influence.

DESTRUCTIVENESS.

XIII. This organ, which I think should be called the "Discontent-impulse," is an inch and a half high, and two inches wide, and is located just above the ear. If the points of the three larger fingers of one hand be placed together in a line, and laid upon the head above the ear, and touching its top, they will rest upon the site of the organ.

The faculty is one of the most important in the human mind: that is to say, it exercises great influence over human action and character, and is seldom idle. To excite a feeling of discontent, or to be discontent, is the first function of the organ. It is the great worker, and the great civilizer. When large, it fills the mind with wants,—with wants which are "the true spirit of enterprise"—with wants which require work as a means to satisfy them—with wants which make idleness difficult, if not impossible—with wants which are the "spur in the head," so much superior, according to the proverb, to spurs on the heel. Small Destructiveness gives the easy-going soul, content with everything, without enterprise or energy, ready at any moment, to fall back into the savage state, if he see his neighbors set the example. Such are the first and immediate influences of the organ; but the secondary are not less important.

When very large, it gives irascibility, and the capability of intense anger which causes men to rage like mad tigers, or to feel as though they would suffocate with fierce wrath, and which leads women to cry with vexation. It causes a disposition to find fault with everything and everybody, to consider few persons as friends, to dislike company or at least miscellaneous company, to love solitude, to be grave and melancholy, to have at times strong fits of the "blues;" to find life a wearisome and unprofitable scene. It gives vigor and spirit to all the modes of thought and

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action, and point to modes of expression; and has much influence to give clear thoughts and strong language. It is the soul of despatch; he who can do a great deal of work by virtue of mental vigor, or physical dexterity, must have it large. It gives the love of hunting, and a disposition to tease. When large, but subordinated, to a sense of love and duty, Destructiveness gives seriousness, earnestness, zeal, enthusiasm, and fanaticism: without subordination, it leads to disregard of the feelings of others, meanness, base hate, revenge, envy, cruelty, blood-thirstiness, and murder. Large size of the organ is absolutely essential to all true greatness; the spur of its dissatisfaction must be long felt before taste for art can develop itself to high power of composition or execution. It is necessary to all thoroughness, to all kinds of strong impulse, to all quickness and decision. The "Motor-impulse" gives the capability of handling the body quickly and dexteriously; the "Discontent-impulse" gives the disposition to do so.

One of the natural modes in which Destructiveness expresses itself, is swearing. The use of oaths is confined chiefly to the great nations: the Greeks swore a little; the Romans more; the English improved the art of swearing greatly, and there is no probability that the Americans will allow it to decline in their country. At least they have not done so yet.

Destructiveness is necessary to all very compact composition, to all sublime conceptions, to all high eloquence. Macaulay says, Eloquence is "reason penetrated, and made red-hot by passion." That passion is Destructiveness, and it makes every word of Demosthenes glow with a white heat. It burns in the prose of Luther, in the novels of Rousseau, in the bulletins of Napoleon, in the sadness of Hamlet, in the bitter life-contempt of Faust, in the nature-worship and discontent of Childe Harold.

But it often happens, that the organ is very large in persons who are amiable, polite and benevolent in their ordinary intercourse with men. Gall first considered the organ as the propensity to commit murder: but that is not its chief function by any means. Probably few murderers have the organ so large, or feel its impulse so strongly, as many of the greatest and best men, but in the latter, it is

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subordinate to other feelings: so that the man not only abstains from deeds of blood, but is even famous for his kindness and philanthropy. Shakspeare does not indulge in such bitter curses upon the miseries of life, as Byron does, but there are abundant marks in his writings that he too had asked himself often seriously in the midst of his earthly trial, whether it were better "to be or not to be," and I doubt not the chain of life galled him as much at times as it did the author of Manfred.

In this organ is found the key of the proverb that "Sorrow is knowledge." The same faculty which gives deep seriousness and sadness, gives the energy and vigor which conduct to greatness. Gœthe says,

> "Who never ate his bread in sorrow,
> Who never through the darksome hours
> Has watch'd, with tears until the morrow—
> He knows ye not, ye Heavenly Powers."*

The same passion which makes life bitter, inclines great men to love solitude. There may be a question, whether it is the fault-finding, discontented disposition of destructiveness which leads carnivorous animals to lead solitary lives, or whether it is the necessities of their mode of obtaining food. The brains of carnivorous animals are considerably wider than those of herbivorous.

COMBATIVENESS.

XIV. This organ—the "Dare-impulse," as I call it—occupies a space about an inch and a half square, and touches with one corner on the upper back corner of Destructiveness.

Combativeness gives a disposition to venture, to be bold in action and in thought, to be enterprising for love of enterprise, to speculate pecuniarily, to be scheme-full, forward, disputatious, noisy, fond of romping, courageous, and given to fighting. The "Dare-impulse" gives physical and moral courage as a matter of constitution. A person of a notoriously cowardly character, may exhibit physical courage in defence of some object of peculiar affection—as in the case of a mother fighting for her children—or the same

* I quote Carlyle's translation from memory—perhaps not quite correctly.

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character may exhibit moral courage from a sense of duty; but if combativeness be small, such actions require a very large amount of impulse from other organs to counteract it. Small combativeness makes the physical and moral coward, the backward, bashful, quiet, peaceable man; large and uncontrolled it makes the foolhardy man. With large Amativeness and Destructiveness, it makes the quick speaker and mover, the bold planner and doer, and gives a fondness for and skill in physical exercises, particularly those which are not without danger. This combination also gives "spirit" to character, and liveliness in company, which in solitude is followed by deep sadness. There is seldom a great intellect without a large amount of the "Dare-impulse." Large Combativeness and small Destructiveness give a readiness to fight without malice, a love of fighting for its own sake. Large Destructiveness and small Combativeness leads to great demonstrations of passion, and a liberal use of threats, which one never fulfilled. Large Combativeness gives the capability of being impudent; with small Veneration and large Self-esteem, it gives the disposition to be so habitually. Large Amativeness and Combativeness makes young men rakish, enterprising among the women, fond of amorous adventures, and disposed to seek them; and the same combination makes girls noisy and fond of romping, more particularly if Secretiveness happen to be small.

PHILOPROGENITIVENESS.

XV. This organ, which should be called "offspring-love," is about an inch and a half square, and lies immediately above the "Motor-impulse," on the medial line of the head. It gives the love for children, and perhaps also for pets, though in regard to the latter there is great reason for doubt.

CONCENTRATIVENESS.

XVI. This organ lies above Philoprogenitiveness, and is about an inch high, and an inch and a half wide. Its name should be "Finish-impulse." Its principal function is to carry to completion what is undertaken, to do work neatly, to finish, to keep things in order. The man who has

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the organ very large, will make a "fine workman;" he who has it small, will make a "rough workman;" and this distinction of fine and rough workmanship may be applied to almost every thing that man can do, from writing books, and painting pictures, to building houses, and sewing shirt-bosoms. He, who has the organ small, is disposed to leave every thing lying round "loose," to keep nothing in order, to change his plans frequently, to leave work unfinished after commencing it, to do his work in a hurried, if not a slovenly manner, to be slovenly in his habits, to be incapable of placing a high finish on any kind of work (though he may understand very clearly the importance of that finish, and lament his inability to take the requisite "patience") to move about from place to place, and to be a jack-of-all-trades, and master of none. He who has large Destructiveness, supported by large Combativeness, and Motor-impulse, and fair talent, is the rapid workman, the fellow who will do a wondrous amount of execution, and if he have small Concentrativeness, he will do it in a rough, but probably a spirited and substantial manner; while he who has small Destructiveness, and large Concentrativeness, will do his work very neatly, but also very slowly. The latter "plods" along, "sticks" to one thing, and takes it easy; the former "rushes," exerts himself with a wonderful might at what he has in hand, and then, perhaps, suddenly drops it, and takes up another plan, idea, or hobby which he treats in the same manner. A person with large Destructiveness may exact orders from others, though he himself has none. Very large Concentrativeness gives "old-maidish" nicety.

Spurzheim and Combe attribute to this organ the power of fixing the attention strongly upon any one subject; but that power, probaby belongs to the "Discontent-impulse," the seat of passionate earnestness, and determination. They do not ascribe the faculty of order to Concentrativeness, but to a separate small organ located above the eye.

SECRETIVENESS.

XVII. Secretiveness lies immediately above Destructiveness, and is about an inch and a quarter high, and two inches wide.

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A better name than Secretiveness, or one more expressive of the main tendency of the organ, would be "Reticent-impulse; for its chief influence on men is to make them reticent, in word, in expression of face, and in action,—to make them hide their thoughts. He who has Secretiveness large, is not frank, does not speak his thoughts or show his modes of thought candidly, converses in a non-committal manner, is reserved, is disposed to speak indirectly, takes indirect roads towards ends which he has clearly in view, uses hints, and is disposed to look for hints in the conversation of other persons, is suspicious, and makes acquaintances slowly. By virtue of his reserve, he avoids giving offense, and is qualified to manage men. He has a natural tact-faculty, which is of great value not only in governing and leading men, but in ordinary intercourse with them, and particularly in conducting pecuniary transactions, bargains, etc. In this manner the "Reticent-impulse" is absolutely necessary to that combination of talent which is certain of success in the world. Nine out of ten of those, who as merchants, diplomatists, or statesmen have risen from obscurity to a high position, and have long maintained it, will be found to have Secretiveness large. The reserve caused by a large development of the organ makes a person difficult to become acquainted with. Much time is required to learn his character fully, and it is of persons of this class generally that the phrase, "he bears acquaintance," is used. Such a person may not be a more agreeable acquaintance, when fully understood than a very frank man; but his want of cordiality at first continues to wear away gradually for a long time, while the very candid man, if he be pleased with a new acquaintance, is cordial from the first. Another tendency of the "Reticent-impulse" is to lead a man to speak little of his own affairs, and to meddle little in the affairs of others.

He who has Secretiveness small, is frank, can not conceal his thoughts, or if he can, does so with great difficulty, speaks unreservedly and directly, goes straight toward the point which he has in view, is unsuspecting, makes acquaintances rapidly, shows his own character readily in conversation and action, has not much tact, is not qualified to attain high success, either in trading, or managing men, is inclined to talk about his own affairs, and has little cun-

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ning. If he has large Destructiveness and small Concentrativeness, he is abrupt in his conversation. It is supposed that this is the organ which gives the stealthy, sneaking character to all the cat-kind; and it has been remarked that the cat seldom advances directly toward a person whom she wishes to approach. Candor and tact are both admirable qualities, but they are seldom or never found co-existing in a high degree in the same person. Goethe says that in all ages, the men who have opened their breasts to the public, have been crucified and burned.

CAUTIOUSNESS.

XVIII. This organ is located on the corner of the skull above the ear, adjoining Secretiveness, than which it extends a little further back. Its size is about an inch and a half in height, and two inches in length.

Cautiousness leads men to be cautious, considerate, careful, prudent, to take the future into account before acting. When very strong, the faculty predisposes to hesitation, irresolution, change of intention from extreme prudence, and anxious fears for the future. He who has small Cautiousness, is naturally careless, inconsiderate, and ready at all times with the thought, "sufficient unto the day is the evil thereof." He is not necessarily brave, nor does the large size of the organ make a coward. Large Cautiousness and large Combativeness will cause a man to avoid danger, but to bear himself bravely when he is in it. Very large Cautiousness and very large Destructiveness incline the mind to look at life on the gloomy side, to fear the worst, and sometimes to commit suicide. The combination is generally found in those who commit self-destruction. Large Cautiousness, Destructiveness and Conscientiousness make the reliable business man whose word is sacred, whose promises are fulfilled, and who is unhappy if he can not comply with every express obligation.

LOVE OF APPROBATION.

XIX. Love of approbation lies immediately behind Cautiousness, and covers a space about an inch and a half square. This is the "Vanity-impulse," the faculty which

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leads men to love praise, and to seek to attract attention as a gratification to vanity. It leads also, when very large, or not subordinated to other impulses, to affectation, dandyism, fashion-worship, and slavery to the opinions of others.

SELF-ESTEEM.

XX. This organ lies immediately above Concentrativeness, and is about an inch high, and two inches wide. Its influence is to give self-respect, pride in self, independence of character, dignity of conduct, sense of honor, and a disposition to walk straight, and carry a high head. When in excess or ill, it tends to make a man arrogant, imperious, impatient of restraint, and unwilling to listen to advise. With large Combativeness and Destructiveness, it makes the self-reliant man, and with large Conscientiousness, in addition to those organs, it makes the generous man, who does generous acts not out of weakness, (if such a thing be possible,) but out of positive virtue.

CONSCIENTIOUSNESS.

XXI. This organ is an inch high by two inches long, and lies immediately above Cautiousness, and in front of Self-esteem. It is the impulse which leads men to be just, to worship duty. Its general tendency leads us to do to others, as we would have others do to us. Aided by large Destructiveness, Combativeness, and Self-esteem, strong Conscientiousness gives great honesty, strength of character, nobleness of purpose, and intensity, and generosity of feelings; smallness of the organ gives a predisposition to faithlessness and dishonesty of kinds. It leads to a love of justice and honesty for their own sakes, but it does not tell what justice and honesty are. Reason must be called in to tell that, and reason must call in education to help her. Thus it is that though the love of justice is a part of all sane and well-regulated human minds, yet various nations differ greatly as to what are the requirements of morality. Moses justified the Jews in making offensive, unprovoked, and exterminating wars upon the Gentiles, in slavery, polygamy, concubinage, and many other deeds which are declared to be sins by the general voice of Christendom in

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the 19th century. Many of the Grecian moralists authorized practices which are not now to be mentioned in decent society. Some nations consider skill in theft a virtue: and many civilized men of truly benevolent feelings, have taught that the present institution of marriage, and the system of private property now prevailing, are injust, directly and indirectly. Does it follow that there is no sense of justice? Not by any means. The different views of morality are due not so much to varieties in the love for justice, but in the differences between the circumstances, interests, and reasoning powers of different men and nations. The child and the man, the Hottentot and the enlightened European, the uneducated and the educated man, will not agree in regard to the relative beauty, and merit of specimens of music and painting; but their differences of opinion will be ascribed not to a want of sense for beauty, but to their various conditions of life, reasoning power and intellectual cultivation. The love of justice, which is the faculty of Conscientiousness, is found in all men, and is their natural guide to a pure morality. It seeks for none of *its* sanctions in the hope of reward, or the fear of punishment; to do, or to see a just act, gives to this organ a pleasure, similar to that, which the faculties of artistic taste feel in executing or contemplating a work of high art.

Christian theologians, much interested in endeavoring to sustain a system, have said, that man is unable to attain to pure morality by any natural faculties: that there never was any pure morality on earth, till Jesus came to teach it: that man is corrupt by nature: and that the belief in a personal Creator and Governor of the universe and in future life, where all men will be subjected to infinite rewards and punishments for the deeds, done in this life, are among the essential foundations of morality. The story that man is corrupt, rests on the same authority with the myths of the earth being only six thousand years old, of the light being made before the sun and planets, of the earth and its tenants being made in five days, and all the rest of the universe in one, and so forth. Men are undoubtedly very wicked, but no one who observes the matter closely, will charge the great amount of public and private immorality to man's love of wickedness, but rather to the circumstances, sur-

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rounding him, which make it a matter of interest and often of necessity—if he would not commit suicide—to be immoral. Nine-tenths of the crimes against society are caused by poverty—absolute or relative: and society herself is an accomplice in them. The assertion that there was no pure morality on earth previous to the teaching of Jesus, is rather a singular one, when we remember that he referred to two passages in the Pentateuch which contained, as he said, the whole law; and when his great sentence "do to others as you would have them do to you" had been previously taught in the very words by Confucius, Socrates, and Lisias, and in spirit by all moralists. If a particular doctrine or phrase were a divine revelation, no man could know the fact, for if he can comprehend the doctrine or speak the phrase, he must be guilty of great presumption, in saying that no man could have originated it. If there be any impulses in the human mind, one of them must be to love justice; and if there be a love of justice, it must lead reasonable men to a pure morality. The road, however, is a long one, and the greater portion of the distance between the possible wrong, and the possible right is still before, not behind human society

It is not to be doubted that a clear conviction in the minds of all men, that every violation of justice in this world should be punishsd most severely, but unavoidably and accordingly to a graduated scale of sin, would be of much value to protect the interests of society; but the fear of punishment would make no true morality; nor is it the place of phrenology to suggest any concern about popular belief in favor of, or against any such dogma.

FIRMNESS.

XXII. Firmness occupies a space about two inches square on the peak of the skull, bordering on self-esteem and conscientiousness. It gives firmness of purpose, power of resisting the impulses of passion, and coolness in danger and under exciting circumstances. Large Firmness is necessary to the cool soldier and the unexcitable surgeon. If the organ be small, the man is liable to be carried away by the impulses of passion, no matter how strong in his mind may be the sense of the wrong which he commits by

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giving way to it. Where is the man who never broke a good resolution, feeling at the time his inability to resist temptation and at the same time lamenting his weakness? I think that Combe attaches too much importance and influence to this organ.

VENERATION.

XXIII. Veneration lies in front of Firmness, and behind the coronal suture, and occupies a space on the skull of about an inch and a half square. It impels men to piety, to the perception and reverence of a sacred principle,—which principle, as I think resides in humanity itself. Gall and Spurzheim and Combe have said that the organ teaches the reverence and worship of a deity, by which they understand, as it seems, a personal, manlike, immaterial divinity, who exists independently of matter, and dwells outside of it, in some place not yet ascertained. If it be assumed that the organ teach the worship of a power superior to man, there is yet no ground for assuming the worship of one only personal deity : — the divinity might be either the divine law, pervading all matter, coëxistent with it, and inseparable from it, as received by the Pantheists—or an anthropomorphic and single deity as received by the Unitarians, Deists and Mohammedans, — or a multitude of gods, as received by orthodox Protestants, Catholics, and Polytheistic Pagans,—or mere divine stocks and stones as received by many tribes of savages. I do not find any clear warrant in man's nature or history that he has an instinct or in-born impulse to worship one of these kinds of divinity more than another. In early ages the mass of mankind were given to fetichism ; now they are polytheistic, while the most learned are perhaps nearly equally divided between monotheism and pantheism. The fact is that man must go to his own mind to find out what he thinks God ought to be, and he makes his divinity accordingly. Luther says "God is an unmarked slate on which there is nothing save what thou hast written :" and Schiller thinks that "Man paints himself in his Gods ;" and a similar idea was in Channing's mind when he declared that "Every man's elevation is to be measured first and chiefly by his concep-

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tion of this Great Being." The savage has savage gods; the Greek Olympus was the dwelling of idealized poetic Greeks in the guise of gods; Moses trembled before a fierce and jealous Jehovah: Jesus worshipped a spirit of love. Surely these men were not all taught by a natural impulse that they must worship the same kind of a God, and that they should consider all other divine worship sinful. Perhaps Veneration told them all that something sacred does exist, that there is a power in nature greater than that of man which must be worshipped, leaving to reason the task of finding what that divine power is, and how it should be worshipped. The phreno-magnetists (see sec. LIV of this book) say that one of the natural impulses of Veneration is to pray to God. Such an impulse would imply the existence of an anthropomorphic Deity—which I, for one, do not believe. If it can be shown beyond a doubt by phreno-magnetic experiments that there is a faculty in the human mind which impels man to address prayers to a divine personality, then pantheism will receive a more severe blow than she has received for several centuries.

However to come back to the function of Veneration. This organ teaches the perception and reverence of a sacred principle in nature; it also leads to deference for human authority, and if not restrained by courage, self-reliance and the understanding, it makes the creed-worshipper, and the slave of formulas.

BENEVOLENCE.

XXIV. In front of Veneration lies Benevolence, occupying a space about an inch and a half square. Its function is to give a benevolent, charitable, kindly, obliging, forgiving, polite disposition, full of sympathy and pity for suffering. Its influence is often limited and guided by destructiveness, which organ must always be taken into consideration with Benevolence. When the former is small and the latter large, the person cannot say "No," and his inability comes partly from kindliness and partly from want of energy. With both organs large, the man may be very irascible, but his anger toward men does not degenerate into a mean hatred, and usually is soon appeased. With large Destructiveness

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and small Benevolence the hate is apt to be durable and mean in its character, although the meanness will depend to a considerable extent on conscientiousness and self-esteem, which, when large, have a tendency to ennoble all the sentiments.

COMPARISON.

XXV. This organ is located immediately below Benevolence, and reaches down to within about half an inch of the eyebrows. It is an inch and a half high, and an inch and a quarter square. It gives the faculty of reasoning by Comparison and by analogy, according to the Fathers of Phrenology, but it appears to me that there must be an error here. They ascribe to Causality, and I think properly, the talent of reasoning from cause to effect, and from effect to cause, but this faculty appears to me to be substantially the same as that of reasoning by anology and Comparison. Since the date of the publication of Hume's great essay on the subject, it is generally, if not universally, admitted among philosophers, that we can perceive no necessary connection between cause and effect; we can only perceive that certain events are always followed by certain other events in a peculiar manner, and we call one the cause, and the other the effect: and that is substantially all that we know or can know about it. Now, this perception that certain causes have been heretofore invariably followed by certain effects, and the presumption that the same causes will always be followed by the same effects hereafter, is reasoning by analogy, in another form, but really the same faculty. This power I ascribe to Causality, and must deny it to Comparison; and the precise faculty of this latter organ is a matter of doubt to me. That it has something to do with reasoning is clear. Gall was right in saying that it contributes much to make the ready, showy man, the fluent, popular orator. A Mr. Watson, a Scotchman, called it "Conditionality," and thought it gave the power of perceiving the conditions of things, and the disposition to look at them on many sides. It probably gives the tendency and the faculty to amplification, illustration, and ornament in writing and speaking.

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CAUSALITY.

XXVI. Causality lies on each side of Comparison, and occupies a space about an inch in width, and an inch and a half in height. The functions of this organ have been referred to in the preceding section, as being those of reasoning by analogy, and from cause to effect. It gives the power of abstract reasoning, of deep metaphysical contemplation and of solving the great problems of the higher mathematics. He who has it large, will succeed in arithmetic and in mathematics. The organ was very large in the heads of Bacon, Kant, Gœthe, and Napoleon.

INDIVIDUALITY.

XXVII. This organ is located above the eyebrows over the root of the nose, and occupies a space of an inch square.. Sometimes it appears to lie partly between the eyebrows, when these are far apart. The name, Individuality, is a very objectionable one, for the organ has nothing to do with that self-hood which is the general meaning, and before the time of Spurzheim was the only meaning of the English word "Individuality." A more correct, though still an awkward, name would have been "Observation-impulse," or "Observation." The organ gives the faculty of observing things, and perceiving their peculiarities. Perhaps also it takes notice of events. When large, it makes the collector of facts ; and it is necessary to the natural philosopher and statistician, whose sciences require a close attention to a vast number of little details. It gives the main part of the talent necessary for the successful scholar, in spelling, reading, and learning geography. It contributes with large Destructiveness to make the ready man, the good gamester, the perspicuous writer, and the popular artist.

MIRTHFULNESS.

XXVIII. Mirthfulness occupies a space nearly an inch square outside of, and partly below Causality, and reaching to the corner of the temple. Its function is Fun-love, the Fun-impulse, delight in and perception for the amusing,

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whether witty, humourous or ridiculous. It gives humor, and with large Individuality and Comparison makes the wit. It is a singular fact that Sterne, one of the most humorous of all authors, and the chief characteristic of whose writings is their humor, should have had his portrait painted long before phrenology was heard of, with the forefinger resting on his prominent organ of Mirthfulness.

CONSTRUCTIVENESS.

XXIX. This organ, the "Build-impulse," lies on the temple, adjoining Mirthfulness, and reaching down to within an inch of the corner of the eyebrow. It covers a space about an inch and a quarter square. It gives the faculty to build, invent, draw, mend, and contrive mechanically. Constructiveness is required in making the plans of novels, dramas, and pictures.

TUNE.

XXX. Tune lies on the temple below Constructiveness, reaching as far down as the outer corner of the eye and occupying about an inch and a quarter square. It gives the love, taste, and talent for music, and the memory for notes. It has been supposed also to give the accurate ear for poetical rhythm, for the harmony, discord and relation of tones, and the perception of the differences between different kinds of music. Thus if a man be unable to distinguish whether the members of an orchestra are engaged in tuning their instruments or playing an overture *— or if he does not know the difference between a jig and a hymn when he hears them, he is supposed to have the organ of Tune small. Townshend in his work on Mesmerism mentions the case of a gentleman who could not hear the chirping of grasshoppers, but he could hear a whisper which was drowned, for other persons in the company, by the noise of the grasshoppers. Combe would probably have said that the organ of Tune was defective: but Townshend says "What can be more evident than that this inability to distinguish a particular sound arose from a defective sensibility

* Such a case is mentioned in Townshend's *Mesmerism*.

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in the acoustic nerve which had not the capacity of responding to aërial vibrations so rapid as those by which a note so shrill as the cricket's cry is produced?" A question somewhat similar to this rises whether the inability to distinguish between some colors is owing to a defect in the optic nerve or in some part of the encephalon. Gall says the defect is in the brain.

I have had some doubts whether the organ of Tune was properly located, or if properly located, whether its size could be discovered externally with sufficient accuracy to make it worthy of attention: but these doubts are too weak to justify me in refusing credit to what appears to be substantial evidence on the other side.

IDEALITY.

XXXI. Ideality lies on the upper part of the temple above Constructiveness, and is about an inch and a quarter square. It gives taste, love for the beautiful, the elegant and the ornamental. It is that faculty generally called "Imagination," which has the power of creating a fictitious world of its own, and of giving to "airy nothing a local habitation and a name." It is the chief creator of poetry and of works of imaginative art. With strong passion it gives taste and perception for the sublime and grand.

REJECTED ORGANS.

XXXII. In addition to the twenty-two organs which have been described in the preceding sections many other organs, most of them located by Gall and Spurzheim, are described by various writers on Phrenology. Among these rejected Organs are Adhesiveness, Inhabitiveness, Acquisitiveness, Hope, Wonder, Sublimity, Imitation, Form, Size, Weight, Color, Order, Number, Eventuality, Locality, Time and Language. I consider Acquisitiveness, Wonder, Sublimity, Imitation and Time as merely doubtful: the others I reject under the full belief that no trustworthy evidence has ever been obtained by any one to justify their recognition. A section will be devoted to each of these organs mentioned as rejected, stating briefly its functions

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as described by other phrenologists, and my reasons for not receiving it. He who will take the trouble to look at the standard phrenological books will see that there is as much evidence there recorded for many of these rejected organs as for others which I receive; but I can not help that. Many statements in the works of Gall, Spurzheim and Combe, though made undoubtedly in good faith, are untrue: and all that they have written should be received with the doubt taught by philosophy. I appeal from their statements to the authority of common observation. Every intelligent man by going to a little trouble may fit himself for passing an opinion upon the disputed points.

In addition to the rejected organs above named there are some others, such as Human Nature, Suavity, Love of Life, Union for Life, &c., the alleged localities and functions of which may be found described in Fowler's Phrenology. I have not thought it worth while to devote separate sections to them.

ADHESIVENESS.

XXXIII. This organ is located between Combativeness and Philoprogenitiveness, and covers about an inch and a half square Its function according to Phrenologists generally is to give the attachment to friends and the love of society. Gall looked upon the organ as the seat of the faculty which makes man a social and sociable being. But probably man's attachment to society is owing principally if not entirely to the external advantages which he derives from it — the gratification of his physical and intellectual wants. The mental faculties demand exercise, and he finds it in conversation and intercourse with his fellow-men. If a man have a particular antipathy to society, and an extreme fondness for solitude, the cause will be found in large Destructiveness, and Combativeness and small Benevolence, and perhaps also small Secretiveness, which make him harsh, ill-natured, and crabbed: and his tendencies to a gloomy dissatisfied state of mind are increased by want of success.

I have no organ to occupy the place ascribed by Gall to Adhesiveness.

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INHABITIVENESS.

XXXIV. This was the name given by Gall (and adopted by Spurzheim) to the organ now generally known as Concentrativeness. Afterwards the space occupied by that organ was by some phrenologists divided into separate domains of Inhabitiveness and Concentrativeness. Inhabitiveness, according to Gall, gave the attachment to one place of abode — presumed to be usually the place of nativity. It is not satisfactorily shown that there is any such special mental faculty as a disposition to dwell in one place, nor is there conclusive evidence to connect, the faculty, if there be such a one, with the part of the brain said to be its seat.

ACQUISITIVENESS.

XXXV. Acquisitiveness is located between Secretiveness and Ideality and occupies a space an inch and a half square. It is described as being the organ which gives the idea of separate property, the love of acquiring it, of hoarding it up, and of stealing. It is argued that there is such a mental faculty because the passion for acquiring and hoarding up property is visible on all sides, in all nations, and in all ages: and has a very great influence in giving society its forms; and because there are many cases on record of monomania for stealing, which are presumed to have been caused by the disordered state of part of the brain. But to receive such a mental faculty is to admit that the system of separate property is a natural and necessary condition of society—a requirement of human nature. I cannot believe that: on the contrary, it is clear to me that at some future, though probably far distant, time, enlightened nations will live in communistic society, wherein the advocates of separate property shall be looked upon, very much as the advocates of slavery and polygamy, as beneficial in their absolute influence or all the parties interested, are looked upon by civilized men generally at the present day. As to the cases of monomania for stealing, I cannot explain them: but I class them with some other kinds of mental disease (not explained by any phrenologist) wherein the insanity

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is connected apparently not with a faculty but with an idea. Thus there is a case on record of a man who was insane when speaking of the planet Saturn*, but in every other subject was not only sane but sensible. And yet will any phrenologist say that there is a special organ for the planet Saturn because somebody was insane on that subject alone? Many such cases are mentioned in the works on insanity.

The disposition to acquire and hoard separate property I ascribe to the influence of all those wants which can be gratified by the use of many things purchaseable with it. The Hoard-impulse is probably one form of Cautiousness. Gall said that Acquisitiveness was the organ which gave the disposition to steal, and he at first named it the Theft-impulse: and in his books several remarkable cases are stated where he discovered thievish character by the size of this organ. In my experience however, I have not been able to discover any connection between the two. This much is certain — thieves are seldom known to hoard up property; and misers are seldom thieves. Stealing is caused by small Conscientiousness, so far as it may be ascribed to any organ. No phrenologist can with certainty distinguish the inmates of a prison from the number of society in good standing, merely by feeling their heads. I read once that a phrenologist went to a prison in Albany, with some friends for the purpose of proving the truth of his science by making a blindfold examination of the prisoners: he was blindfolded: led into a room where a number of clergymen, invited in for the purpose, were seated on a bench; and he examined them all, saying this one was in for a murder, that one for rape, another for highway robbery, another for burglary, another for picking pockets—and so forth. What the authority was for the story I do not know: and it matters not whether it was true in letter: it was, to a considerable extent, true in spirit. Had the most intelligent of the prisoners been placed side by side with the preachers, or other men in fair standing, the phrenologist might, with a thorough understanding of his science, have mistaken some of these for those, and *vice versa*.

Of all the organs which I have ventured to class as

* Abercrombie on the Intellectual power.

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"rejected," Acquisitiveness is the one in regard to which I most question the propriety of my procedure: but the greater weight of doubt being against it, I place it here.

HOPE.

XXXVI. This organ is located in front of Conscientiousness, and is said to inspire man with buoyant feelings, sanguine expectations of prosperity and happiness generally, and of success in particular schemes,—in short, that general feeling known to all men under the term "Hope." Every one can perceive that some persons are disposed to be more sanguine in their expectations than others. I have not found that that disposition is to be measured by the size of Spurzheim's organ; and after rejecting the organ, I was led to doubt the faculty. Man's capacity for enjoyment, his disposition to look forward, and his inability to foreknew events with certainty, seem calculated to give rise to hopeful feelings. Large Combativeness certainly contributes much to make the very sanguine man, while large Cautiousness and Destructiveness do certainly contribute much to give very moderate or gloomy expectations. Gall thought that every organ had a tendency to hope for its own gratification, or, in other words, he considered Hope to be a part of every faculty.

WONDER.

XXXVII. This organ, called also "Marvellousness," was located by Gall at the side of Veneration; but Spurzheim cut off the back part of it to make a home for Hope. Wonder, it is said, gives love for, and disposition to believe in, the new, the wonderful, the marvellous, and the supernatural; and if very large, it is said to incline to visions and hallucinations of seeing ghosts, etc. For want of confirmation of the organ within my own experience, and for some doubt in regard to the existence of any such mental faculty as is ascribed to it, I class Wonder among the doubtful organs. I have no organ to occupy its place on the head.

SUBLIMITY.

XXXVIII. This organ is located in front of Cautiousness, and is said to give perception of, and taste for the

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sublime. That perception and taste appear to me to belong to Ideality and Destructiveness. A man of very strong passion naturally likes the sublime, while a man of little force of character can scarcely appreciate elevated grandeur, whether in nature or art. If there were a distinct faculty for sublimity, its influence would still be so seldom perceptible in human character, that it would be very difficult to discover its locality, and the ordinary phrenologist could never make any valuable use of the organ in reading mental dispositions or capabilities. I have found no confirmation of the organ.

IMITATION.

XXXIX. Imitation lies on each side of Benevolence, and gives the talent for imitating others with the voice, the look, and the motions, and for making imitations of works of art in painting, statuary, architecture, etc. I have found no confirmation of the organ ; and I think there is no such separate faculty of the mind. The disposition and talent for imitation depend probably to a considerable extent on the powers of observation.

FORM.

XL. According to Gall, Form is located below Individuality, and its size is indicated chiefly by the width between the eyes. Any one who will examine a number of human skulls, will see that width between the eyes is not caused invariably by the greater or smaller development of that part of the brain which lies partly between them. In fact, he must come to have strong doubts whether any trustworthy external sign can be found by which to measure that development.

The alleged function of the organ is to perceive the shapes of visible objects.

SIZE.

XLI. Above Form, on the eyebrow, lies Size. This is one of five organs which lie under the hair of the eyebrow, and each may be said to have half an inch square of terri-

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tory, for the whole length of the eyebrow will scarcely allow of more than half an inch in width to each. This, it must be confessed, is a very small homestead compared with the districts allotted to most of the other organs which have four, six, nine, or even twelve times as much surface. It may easily be understood how an organ with an inch and a half square of surface should make its development perceptible on the skull ; but it is plain that, if an organ with only half an inch square of surface, were very large, and the other organs about it small, its size could not be discoverable externally. Besides, there is a ridge at the eyebrow, which adds to the difficulty of learning the size of any small organs, even if their influence were perceptible on the inside of the skull. This ridge may be best seen by sawing off the crown of a skull just above the eye-sockets.

Size gives, as is alleged, the faculty of perceiving relations of extension—length, breadth, and thickness.

WEIGHT.

XLII. Weight comes next to Size, and occupies about as much space, and gives, it is said, the power of balancing and preserving the equilibrium of the body, and also the perception of the weight and resistance of objects generally. According to the experiments of the physiologists, heretofore referred to, the power of balancing, and of preserving and governing the equilibrium of the body, lies in the Cerebellum ; and if a faculty of perceiving the resistance and weight of bodies were located in this place, it is not likely that any evidence could be obtained for the fact. There would be the same difficulty in the way, which was noticed in speaking of " size."

COLOR.

XLIII. Color comes next to Weight, occupies another half inch square, and gives the taste for, and perception of colors. Painters of landscapes, portraits, and historical pictures are unanimous in the opinion that men differ greatly in their natural perception of the harmony and beauty of colors : and they frequently object to the coloring of paintings, that it is cold, raw, or harsh. Some artists seem to

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have a natural faculty for perceiving the harmonies of color, while other great painters are unable to acquire an equal merit in that respect by the greatest study. Some persons cannot even perceive the difference between some different colors (which are most frequently green and red) though their eyesight is excellent otherwise,—that is in perceiving shades of light as thrown from objects far or near. The inability to distinguish colors is said by the followers of Spurzheim to be owing to the defective development of a cerebral organ; but the weight of scientific authority appears to me to be in favor of the opinion that it is chargeable to the optic nerve. The sensation of light is caused merely by the vibrations of a light-medium, or ethereal substance pervading space, and extending through solid substances to a greater or less extent; and the idea of color is caused by variations in the rapidity of the oscillations of this medium. If the optic nerve be obtuse in its perceptions, it does not notice the difference between the oscillations of the red and the green. There would be the same difficulty in discovering the size of this organ, as in size and weight.

ORDER.

XLIV. Beyond Color, located on the outer corner of the eyebrow, and occupying another square half inch, is Order, whose alleged function is sufficiently described by its name. That function is, however, ascribed by me to the organ of Concentrativeness. The examination of a skull, such as described in sec. XLI., will show that the skull is three-quarters of an inch thick at the organ of order—three times as thick as the bone is an inch above. Who can believe then that the shape of the skull on the outside is determined at this place by its shape within. The location of order is immediately above the suture, which may be seen on the frontispiece.

NUMBER.

XLV. Number is located at the outer corner of the eye, occupying half an inch square on a level with the iris, when the eye is fixed on the horizon. The seat of the or-

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gan is thus on the rim of bone which protects the eye, and connects the cheek-bone with the eyebrow.

The function ascribed to this organ is the perception of the relation of numbers; and he who has it large, is supposed to have a natural facility in adding, subtracting, multiplying, and dividing numbers. There are records of many well authenticated cases of persons who, with little instruction in arithmetic, and very moderate reasoning power, could multiply or divide sums of four or five figures each in their heads, and give accurate answers much sooner than any arithmetician could solve the problem on a slate; and some persons, indeed, have been found, whose powers in perceiving the relations of large sums of figures to each other appeared almost miraculous, while there are others who with quite as much as ordinary intelligence on common subjects, are yet almost unable to learn the multiplication table. Such facts would seem to show that there is such a mental faculty as the perception of numbers.

But Gall could have had no good reason for locating the organ, as he did, on a little ridge of bone which on its edge is an inch and a quarter from the brain. Under such circumstances, it is impossible that the size of a cerebral organ should be externally discoverable. No description and no engraving can convey a proper idea of the absurdity of the location of this organ; but a glance at a skull, after seeing where Gall, Spurzheim, and Combe place the organ, will satisfy any reasonable man. The engraving given as a frontispiece may serve for those who have not access to a skull, to show the position of Number, and the absurdity of the belief that the prominence of the bone there can be any measure for the development of any portion of the brain. I do not know where to place the organ of Number.

EVENTUALITY.

XLVI. This organ according to Gall, lies between Individuality and Comparison, and its function is to notice and remember *events* as distinct from *things*, which latter come within the domain of Individuality. I have found no confirmation of the faculty.

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LOCALITY.

XLVII. Locality lies at the side of Individuality, and its function is to observe places, and give a taste for travelling. I have found no evidence in practice to support the organ and do not believe that there is any such distinct faculty in the mind. The observation of places probably depends on general powers of observation, and the disposition to travel depends upon large Combativeness, small Concentrativeness, and external circumstances.

TIME.

XLVIII. Time lies below Mirthfulness, and above Weight and Color. It takes note of the flight of time. There may be such a mental faculty, but, if there be, it would be difficult to find any persons in whom its extreme weakness or strength could be made the means of determining the place of its seat in the brain. I have found no evidence for the organ as located by Spurzheim.

LANGUAGE.

XLIX. This size of the organ of Language is measured by the prominence of the eye. Its faculty is to observe and recollect words, and supply them in composition and conversation. An examination of the skull will show that the prominence of the eye does not depend upon the size of any one part of the brain. Yet Gall was, as he says, led to the theory of phrenology, by observing that those boys in school, who had the most prominent eyes, were always the readiest in committing tasks to memory. I have never been able to observe any such fact.

GENERAL REMARKS ON THE SIZE OF THE ORGANS.

L. The position and extent of surface of the different organs have been described cursorily in the sections allotted to them respectively; and an engraved chart of the skull has been placed opposite the title-page to assist the reader in getting an idea of the localities. A little practice, however, will be necessary, before he will be able to lay his fingers always upon the right place. The size of the organs

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is estimated by the distance of the skull over it, from a point midway between the ear-orifices. The eye is generally used for making the estimate in regard to Comparison, Causality, Mirthfulness, and Individuality, and the fingers for the other organs. A phrenologist can never measure the absolute size of an organ—that is the distance of its surface from the centre of the brain—so accurately with his fingers as he could by various instruments which have been made for that special purpose; but the measurement with the fingers is by far the most convenient as well as the most reliable for the discovery of character.

In very small heads, it is presumed that all the organs are small, even though some should be comparatively prominent: but in heads of medium size or larger, the relative rather than the absolute size of an organ should be relied upon as the measure of the strength of the corresponding faculty. Thus if A's head is six inches and a half wide at Destructiveness, and B's is seven inches wide, it does not follow that B. feels the Discontent-impulse more strongly than A. The size of an organ must be ascertained by its comparative prominence on the head to which it belongs, and not by a precise comparison with the size of the same organ on other heads. This rule applies at least to heads not under the medium size. Of course in a very large head it is presumed that all the faculties are strong, unless the skull show decided cavities over some of them. Large and very large brains are frequently accompanied by dull temperaments; and this is the only explanation I can give for the above direction to rely on relative rather than absolute size. The rule is recognized in practice by all phrenologists. Were it otherwise they would not depend upon their fingers for measurements, but would resort to instruments by which the absolute size of every organ could be accurately known. Combe gives the rule substantially as here stated.

In examining the organs of Tune and Constructiveness, it must be remembered that the skull is there covered by strong muscles.

There is sometimes a considerable difference in size between the two hemispheres of the brain: and in such cases the measurement of the organs on the larger side should generally be relied on.

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The twin organs in the two hemispheres are supposed to act together and strengthen and correct each other, as do the two eyes, the two ears, &c. In case that the organ on one side be injured the other can act alone. In case the organs in both hemispheres of the brain be injured then the faculty should be disordered, if the theory of phrenology be correct. No clear evidence, however, from any cases of this kind, is on record. A serious irritation or wound in one side of the brain does not always produce insanity, when, if like injury were done to both sides, insanity or insensibility would result.

Dr. Wigan in his work on *The Duality of the Mind* endeavors to show that if the two hemispheres of the brain do not act together harmoniously, the result may be a condition of "double consciousness" wherein two different minds, with different modes of thought and different stocks of knowledge, appear to have control by turns of the same individual. A number of such cases, well authenticated, are reported by different medical authors. Wigan's arguments are plausible but not conclusive.

A great error prevails very commonly, and it is not without countenance in books on phrenology, that the intellectual acumen, the strength, perspicacity and vigor of a man's understanding depends principally on the size of his reasoning organs: and the general prevalence of this impression and its manifest untruth are influential causes of the disbelief of many in Gall's system. Valuable practical working talent depends more upon Destructiveness than upon Causality; and it is safer as a general rule to measure judgment by size at the ear than by size in the forehead. Large Destructiveness, Combativeness, Secretiveness, Motor-impulse and Cautiousness, with moderate "Artward impulses," will make a far more useful, efficient, successful and even intelligent member of society, than he who has the "Artward-impulses" large and the others moderate.

Some phrenologists assert that they are able to discover on the skull whether an organ beneath has been active, but I have never had any satisfactory evidence of such ability.

Persons familiar with Gall's system frequently speak of "cultivating" an organ if it be small. They say *this* organ

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should be "cultivated." The idea that any organ can be "cultivated" appears to me to be very erroneous and contrary to all human experience in and out of the range of phrenological observation. If a man knows his own weak point, he may be on the lookout to avoid errors which he would otherwise commit: but as for "cultivating" an organ in the hope to see it grow—that is fudge.

It is common for students of phrenology to have plaster casts of heads with the organs wrapped out on them. This appears to me to be another mistake: the student should have a human skull, or else rely only on plates and living subjects. Casts are worse than useless: they misrepresent the skull, and they are worthless for representing the living head, a specimen of which every student ought to carry on his own neck.

TEMPERAMENTS.

LI. The size of the whole brain, or of a special organ, is the general, not the universal and exact measure of its power. Very stupid men, and even whole tribes of barbarous Indians have larger brains than some learned white men, famous the world over for their services to humanity. "Little head, little wit; big head, not a bit," says a common proverb, which, though substantially false, is applicable to some cases. The rule of the proportion of power to size is not universally applicable to those parts of the animal frame below the head. A small muscle is sometimes stronger than a large one; a small animal is sometimes stronger than a large one.

That the size of the human brain is not the precise measure of it spower may be presumed from the fact that the organ does not increase in size in proportion to its exercise. The blacksmith's arm is perceptibly larger than the tailor's, and it grows perceptibly from the time he begins working at the trade, until he has his full strength, which increases with the growth of his muscles. But the brain of the man, who is educated in all the highest branches of philosophy, and whose mind has great strength, and is constantly active, is little larger than it would have been, had he been placed among savages in childhood, and bred to manhood without intellectual cultivation. No doubt, the difference

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in the mental power of the two brains might be accounted for by the difference in their structure. The neurine, or gray matter on the outside of the brain, is supposed, as said in sec. VIII., to be the laboratory of thought, the activity and strength of which can in no wise be measured more accurately than by the amount of neurine, and the extent of its surface exposed in the convolutions. That amount and extent of surface of the neurine are not supposed to be discoverable accurately by any external signs, but an approximation may be made. Persons of active minds, of brains with a large proportionate amount of neurine, have skulls which are *hilly*, diversified in their surface by *bumps*, while the heads of sluggish persons have fewer inequalities about them. This *hillyness* is not to be confounded with varieties in the sizes of the organs, and the clear idea of it is only to be obtained through the sense of touch, after the examination of a number of heads. Besides this sign, there are the "temperaments" discoverable by the eye, and indications, as is supposed, of different degrees of mental activity. The Temperaments recognized by phrenologists generally, are four: the Nervous, the Sanguine, the Bilious, and the Lymphatic. The following descriptions of them are copied from Combe:

"The *Nervous* Temperament is recognized by fine thin hair, thin skin, small, thin muscles, quickness of muscular motion, paleness of countenance, and often delicate health. The whole nervous system is predominantly active, and the mental manifestations are proportionally vivacious.

"The *Sanguine* Temperament is indicated by well-defined forms, moderate plumpness of person, tolerable firmness of flesh, light hair, inclining to chestnut [or red], blue eyes, and fair complexion, with ruddiness of countenance. It is marked by great activity of the blood-vessels, fondness for exercise, and an animated countenance. The brain partakes of the general state, and is active.

"The *Bilious* Temperament is recognized by black hair, dark skin, moderate fulness, and much firmness of flesh, with harshly expressed outline of person. The functions partake of great energy of action, which extends to the brain; and the countenance, in consequence, shows strong, marked, and decided features.

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"The *Lymphatic* Temperament is distinguishable by a round form of the body, softness of the muscular system, repletion of the cellular tissue, fair hair, and a pale skin. It is accompanied by languid, vital actions, with weakness and slowness in the circulation. The brain, as part of the system, is also slow, languid, and feeble in its action, and the mental manifestations are proportionally weak."

These descriptions of the Temperaments are, no doubt, to some extent correct; but still they should be received with doubt. The physiologists admit varieties of Temperament, but think our knowledge of them too limited to justify descriptions so precise as those given by Combe.

MEMORY.

LII. The phrenological doctrine in regard to Memory has been referred to in several preceding sections of this book, which doctrine is that there is no one special faculty for remembering all classes of ideas, but that the different organs, or at least the "Artward" organs, record and remember their own impressions. Thus Causality recollects arguments, Mirthfulness remembers jokes, Tune remembers pieces of music, Constructiveness recollects the structure of machinery, etc., and it is only by some such theory as this that we can account for the remarkable variations in the capacity of a person to remember ideas of different classes.

THE WILL.

LIII. Previous to the time of Gall, all mental philosophers wrote of the "Will" as a distinct faculty of the mind, as *the* faculty which had the government of human actions. Phrenology recognizes no such faculty, but teaches the doctrine, that "Will* in man is nothing more than a vicissitude in the supremacy of the faculties." All *deeds*, including speaking, are done through the medium of the cerebellum as the organ for combining the action of the muscles; and it is probable that the nerves which convey sensations from different parts of the Cerebrum to the Motor-impulse, have some communication, and agreement, or settlement, in regard to their conflicting desires and purposes, before ar-

* Vestiges of Creation.

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riving at the head-quarters of the executive powers. But there is no omnipotent volition which sits high above all with the power of saying, this or that organ may have the control. On the contrary, the Will is the slave of the impulses, rather than the impulses the slave of the Will.

"Sin" is defined to mean a violation of a law prescribed by an anthropomorphic God, as "vice" is the violation of moral law, and "crime" a violation of criminal law. Christian philosophers assert that sin includes all kinds of vice; and they assert also that all sins will be punished by everlasting pains in hell, unless they are excused according to Paul's platform. On the other hand I say, that, if there were such an anthropomorphic divinity, which I deny, he could not in justice punish man for any of his actions. Men have a right to inflict pain as a preventive of crime; but they have no right to inflict it for any other purpose. And the punishments, which they inflict, are very different in principle and effect from a hell, which, if it exists, being unseen, can not exercise its proper influence in preventing violations of the laws, and necessarily takes the character of a place where God gratifies his vengeance rather than vindicates his justice.

Every man has a character of his own—a mental constitution, distinct, peculiar, and different from that of all other men. No two are precisely alike. Men born and bred together, under the same circumstances, are different from each other: one is brave, another cowardly; one is talented, another stupid; one is magnanimous, another mean. Their mental constitutions differ. The grand fact is that they have peculiar mental constitutions,—individual characters. Now, whence came those constitutions? Did each man make his own mind? Was it given to him by any person, for whose acts he is responsible? Or was it not born with him? Does it not depend for its nature and powers upon the brain? That personal character has great influence on a man's actions, no one will deny. A cowardly man does cowardly acts; a brave man does brave acts; a good man does good, a mean man commits base actions. Men are not mean, brave, generous, etc., because they perform mean, brave, and generous actions; but these actions are the consequences, the effect, the expression of a positive character, and that character does not change with the actions, but remains sub-

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stantially the same through life. A cowardly man may, under the influence of an extraordinary impulse, perform a brave action, but that does not make him brave ; his character remains the same as it was before. A man's actions are influenced not by his character only, but also by external circumstances. Thus, if A. enter a crowd, and begin to strike right and left, B., who is a coward, will run, and C., who is brave, will stand and resist. No human action can be imagined which is not governed entirely and alone by personal character and external circumstances. But both these are beyond the control of the individual. A man can not become more or less brave, wise, generous, firm, prudent than he is. Among the many human inventions, there is none for altering a man's mental constitution. There is no imaginable process of hoping, praying, willing, or striving of any value for such a purpose. A man may change his position, but he can not change external circumstances. He may keep company with good, or bad men, but he can not, by a mere effort of mind, make them different from what they are. How then, since his actions are governed entirely by his character, and by external circumstances, both of them beyond his own control, how is he to be held responsible for those actions by a being who made the character and the circumstances? But suppose that an exceptional case be found where an apparent change has taken place in a man's character,—that change must have been caused to a great extent by external circumstances, aided by forces existing in his own mind, which bore within itself the power to alter its mode of action ; and therefore, the change is not in itself a matter of merit or demerit.

Man is the slave of motives. He never acts without motive ; the very meaning of the word "motive" implies impulse to action. He must act with motives, and he cannot act contrary to them. But a man's motives are not under his control. I have a Hunger-impulse, a Hate-impulse, a Love-impulse, and other impulses which furnish the motives for my action, and which I cannot get rid of, neither can I always determine with what strength they shall present themselves. The strongest motive always governs. He who feels hungry, and has a palateable dish within his reach, and has no motive for not eating then and

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there, must eat, as a matter of necessity. Men cannot create motives by their will, and therefore are not responsible for their motives. In short, the will is governed by the mental constitution, and not the mind by the will.

The purpose of all action is self-gratification. Every action is caused by a motive: every motive is the demand of a passion for gratification: every passion is part of the mind, part of the self. This man has a base mind; a mind in which base passions predominate; he has base motives, and commits base actions. His mental constitution tells him to be regardless of the pleasures of other men; to grasp greedily for everything which may conduce to his own immediate comfort. His neighbor has a magnanimous soul, magnanimous passions: his motives are generous, his actions are noble. He finds by experience that he has more pleasure in rendering others happy, than in looking merely after his own bodily comfort. He is generous not for the sake of making others happy, but because to make others happy, is to make himself happy; because the consciousness of having been generous, is one of his keenest pleasures, because the impulse to delight in the consciousness of noble actions, and in giving pleasure to others, is stronger in his mind than the desire for a small physical gratification. The martyr who dies at the stake, when he might save his life, and even be elevated to high honor, by deserting his religion, does the act in accordance with the dictates of his own mind; and by so doing gratifies it. He prefers glorious death to inglorious life. The man who jumps into the water, to save a drowning person, does it to gratify himself. He perhaps was present on a previous occasion when a man was drowned, and did nothing to save him; and probably spoke to himself, thus: "The danger is nothing; I do not fear it; to save him would have been a good deed; his death will cause deep pain to his friends and relatives; I might have saved that to them, and given them great joy; had I saved him, he would have always been a most devoted friend to me; his sight would have given me joy; the remembrance of the act would be a source of inextinguishable pride and pleasure, so long as I live; I would obtain great credit for doing a brave and noble deed; the knowledge of such an action would follow me, wherever I should

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go, and confer an imperishable honor on me; and the honor would be in proportion to the danger. The next time, I see a man drowning, I will try to save him, if there be any probability of success." If we imagine that a man can have any purpose in his actions, save self-gratification, we must suppose also that his motives do not come from his passions, or that his passions are not part of himself; or that his will is independent of his passions.

Philosophers say that every phenomenon has a cause, and that there is apparently a necessary connection between the cause and its effect. Now, if men's actions be the necessary effects of preëxistent causes, and those causes again the effects of other preëxistent causes, and so on up, mounting beyond the birth of the individual, he cannot be responsible for his actions. He is only a blind link in an endless chain. "According to the principle, which denies necessity, and consequently causes, a man is as pure and untainted, after having committed the most horrid crime, as at the first moment of his birth, nor is his character anywise concerned in his actions, since they are not derived from it, and the wickedness of the one can never be used as a proof of the depravity of the other."* All those persons who argue that man is morally responsible for his actions to a creator, also argue that that creator is the great first cause of every thing which exists, the necessary author of every particle of matter, of every movement of matter, of every natural phenomenon, and of every action. But "if† human actions can be traced up by a necessary chain to the Deity, they can never be criminal, on account of the infinite perfection of that Being, from whom they are derived, and who can intend nothing, but what is altogether good and laudable. Or, if they be criminal, we must retract the attribute of perfection which we ascribe to the Deity, and acknowledge him to be the ultimate author of guilt and moral turpitude in all his creatures." And of course, in neither case, could he hold men responsible for their unavoidable actions, of which he was the necessary cause, the original author.

Different mental faculties are the functions of different organs, which are distinct parts of the brain: and the strength

* † HUME, Essay on Liberty and Necessity.

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of the faculty depends on the size of the organ. Thus the sizes of all the organs determine the character of the man, and his character determines his actions: and as he cannot change his organs, or alter his character, so he cannot avoid doing as he does. Some phrenological writers have asserted that the organs were dependent for their size on the strength of the faculties, and not *vice versa*, but this statement is as absurd as it would be to say that the size of a muscle depends on its strength, instead of its strength on its size.

Every intelligent man has a theory of duty which his reason teaches him, and his conscience urges him, to observe; and which he desires to observe strictly, but in vain. He feels the struggle between the baser and higher impulses of his nature and he must submit occasionally to see the latter defeated. No man ever did on all occasions successfully resist temptation to do evil, no matter who or what he may have been, or how strongly he desired to do good only. And shall we believe that every man can do what all men would do if they could, and what no man ever did? The idea is absurd. When all men have the power to resist every temptation to do evil, they will no longer be men.

MESMERIC EVIDENCE FOR PHRENOLOGY.

LIV. Mesmerism may be considered as having been at last admitted into the domain of orthodox and reputable science, after a long and toilsome struggle of three quarters of a century. Some of the most important allegations of its advocates are recognized as true by the highest physiological authority* of the age, and the smaller fry will no doubt see fit to follow suit at no distant day. If Mesmerism be true, the question arises whether the much-spoken-of "phreno-magnetic" evidence is trustworthy and sufficient to prove the truth of phrenology. This evidence is obtained by a mesmerizer, touching with his finger the head of a magnetized subject and willing at the same time that the faculty residing in that part of the brain beneath his finger shall be excited and shall be expressed in his face or action.

* CARPENTER, Human Physiology. See also the testimony of Agassiz in Townshend's Mesmerism.

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"When certain subjects," says Gregory,* are thrown into the magnetic sleep, it is found on trial that by touching certain parts of the head, marked and sometimes violent manifestations of certain mental faculties occur. It is further observed that these manifestations correspond in their nature to the part of the head touched, on the principles of phrenology. *** The phenomena may, and do occur occasionally in such a way as not necessarily to prove the truth of the organology of Gall, while on the other hand, cases are met with in which we cannot, I think, explain the facts, except on the hypothesis of Gall, that every mental faculty, whether it be a propensity, or a sentiment, or an intellectual aptitude, is dependent for its manifestations in this life on a certain portion of the brain." And elsewhere† the same author gives the following cases: "A. F., a young man, was put to sleep by me in a few minutes. In this state every part of the head that was tried, yielded striking manifestations of the corresponding phrenological faculty. I had no reason to think that this young man knew the position of the organs, nor anything about phrenology: but even if he had some general notions on the subject, the effects produced appeared so rapidly that it was impossible for him to have simulated them, even had he been disposed to do so, which I am sure was not the case. Benevolence, Destructiveness, Combativeness, Secretiveness, Acquisitiveness, Self-esteem, Love of Approbation, Veneration, Cautiousness, Adhesiveness, Philoprogenitiveness, Tune, &c., were all tried, first in rapid succession, and all yielded strong manifestations, although very often they were quite different from what I had expected, or were distinct when I had no clear idea of how they were to be manifested. Benevolence being touched, he immediately began to give away all his money to me, taking me for an object of charity, and when I continued the contact, took off his coat to give it me. This is the almost universal manifestation of Benevolence, obviously because when the feeling is excited, its most natural result is to give to those in want. Cautiousness produced the most and vivid picture of terror I

* Animal Magnetism Letter XI.
† Animal Magnetism Part II Cases 26 and 27.

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ever saw : and he said there was a fearful abyss before him, and felt as if he was to fall into it. Tune instantly caused him to sing : Imitation to imitate not only every sound he heard, but also with closed eyes, the gestures made by those near him. It is impossible here to give all the details : suffice it to say that though it looked like first-rate acting, a close study of his countenance showed the most entire truthfulness. Besides, as I moved my hand from one organ to another, so rapidly as to confuse any one not very much in the habit of guessing what organ is touched, the effects never failed to follow. To test him further I tried touching two organs at once, and invariably obtained combined manifestations. Thus when Benevolence and Acquisitiveness were touched, he put his hands into his pockets as before, but instead of giving me the contents, he treated me to a lecture on the heinousness of begging, and declared that he thought giving money the worst kind of charity. Veneration alone caused him to pray humbly and devoutly : Veneration and Self-esteem combined gave rise to a prayer in a standing position in which he returned thanks to God for having been made so superior to other men in religious knowledge. This combination was accidental, Self-esteem having been first excited with very amusing results, and Veneration having been touched before the excitement of Self-esteem had subsided, with the desire of reproducing former humble devotion. Many similar trials yielded analogous results. I found also that when intending to touch one part, my hand accidentally glided to another, the manifestation was always that of the part really touched, not of that which I intended to touch. In the region of the supposed organ of Alimentiveness, I found within a small space, three different points, the touching of one of which produced excessive desire to eat, of another the desire to drink, and of a third sensations of smell. To obtain these results which could not be known to the subjects, since they were not then published, nor generally known to phrenologists, although I had heard of them, it was necessary to move the point of the finger only one-fourth or one-eighth of an inch, the three certainly lying in less than the surface of a shilling. In all these trials it did not signify what I wished nor what I said ; only such organs were excited as

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I touched. I had complete evidence that the subject did not sympathize with me or my thoughts, but that my touch excited the faculty corresponding to the part touched.

Mr. C. had been several times magnetized, four years ago, but not since. I put him to sleep in one minute, and found him even more susceptible to the touch than A. F. The manifestations were very similar, but came out so rapidly, that it was hardly possible to be sure the part was touched before the effect was produced. If, while Benevolence was in action, Acquisitiveness were touched, he instantaneously collared me to recover what he had given me. If Combativeness were touched, before I could remove the finger, he had struck with his fist, and assumed a very pugnacious attitude. When I combined Benevolence with Acquisitiveness, he pulled out money and offered it, but on my attempting to take it, always withdrew it, his eyes being closed, and told me he required it more himself. In short, whatever he was doing, the slightest touch, even accidental, or with the cuff of my coat on any organ, at once arrested him, and changed his action and expression. When in the act of falling on his knees, Veneration being touched, the slightest touch on Self-esteem sent him up like a shot, or Combativeness made him attack in the fraction of a second, whoever happened to be before him. In short, I could play on him exactly as on an organ, producing any expression, gesture, or action I pleased, simple or combined. There was no silent or occult sympathy mith me, and my expectation had no effect in modifying the results. It was quite impossible to doubt the sincerity of Mr. C., who was besides in a deep magnetic sleep. This case, like that of A. F., could only be explained by supposing, that touching the head excited to action the adjacent parts of the brain." A large number of other mesmerists have tried similar experiments, and have arrived at similar conclusions. They say they have incontrovertible evidence in these phenomena of the substantial truth of phrenology. Among those who have publicly borne testimony to this effect, are Elliotson, H. G. Atkinson, Dr. Engledue, Wm. Lang, Braid, Barth, Dods, Spencer Hall, Leroy Sunderland, Fowler, and many others whose names do not occur to me at present. Lang,

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in his work on Mesmerism, states that Vandenhoff, the actor, was present on an occasion when the phrenological organs of a mesmeric lady-subject were excited, and he was so much pleased at the manner in which she—no practised actress—gave expressions to the different passions, that he said, "If this be acting, it is the most perfect acting I have ever seen." It is said that the expression of the various passions in these phreno-magnetic experiments is not only perfect, but the change from one to another is immediate. The subject may be engaged in the deepest devotion, when, if her Combativeness, or Acquisitiveness be touched, she picks your pocket, or gives you a blow with her fist in an instant, and then will give demonstrations of her pride, her Mirthfulness, and her musical talent within half a minute, the play of her features changing as rapidly as her other modes of showing her feeling.

But all this mesmeric testimony should be received with great distrust. The powerful influence of the mesmerizer's mind over the subject is well known, and it is almost impossible to recognize cases in which preconceived ideas in either magnetizer or subject, do not influence the experiments more or less. The literal truth of the facts recorded by Gregory and others, I do not doubt; but I object to the inferences. The several organs may have been excited, but not at the places where they were supposed to be. Lang* says, "Patients have been led into erroneous manifestations through conversations carried on by those around them. Thus, an operator and patient, alike ignorant of phrenology, being selected for the purpose of testing the truth of that science, results such as the following were obtained: A gentleman present undertook to guide the operator, and stating aloud that he intended that Veneration should be touched, directed the hand of the operator to Acquisitiveness. The manifestation was that of Veneration. In the same manner the patient picked pockets, on Veneration being touched, and the manifestation was invariably that talked of by the gentleman who directed, and not that of the organ which the operator touched." Lang is a believer in both mesmerism and phrenology, and he ap-

* Mesmerism (ch. VII.) by Wm. Lang, Edinburgh, 1843. Frazer & Co.

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pears to be a pretty careful observer; so his statement may be received as undoubtedly true. On looking over these phreno-magnetic experiments, we find that they are reported as confirming all, or nearly all the organs of Gall and Spurzheim, including those of Number, Order, Weight, and others which I have endeavored in this book to explode,—with what success the reader can judge. Dr. Gregory * says that he verified "all the perceptive organs," as located by Gall and Spurzheim, by mesmeric excitement. "Those of Form, Color, Size, Order, and Number, all responded to the touch, and exhibited beautiful objects of many kinds, singly, or in vast numbers, grouped in disorder, or symmetrically arranged, gray, or splendid in varied hues, and extending to infinite distance, and small or large, according to the organs touched. When Weight was touched, she [the subject] felt as in a bad dream, as if falling from a precipice, or as if the ground were falling from her feet." Lang † mentions a case of a mesmeric subject, who, when her organ of Number was excited, "wrote out a sum." Now, if this mesmeric evidence for these "perceptive faculties" be true, then we must conclude that Gall was exceedingly sharp-sighted, or fortunate in guessing, to discover the locality of a mental faculty in a portion of the brain which lay an inch and a quarter from the surface of the bone, on which he pretended to measure its size.

The phreno-mesmerists are unable to agree among themselves. The language used by Gregory and Lang seems to imply that in their experiments they found confirmation of the system of phrenology as taught by Gall and Spurzheim. Sunderland and Fowler ‡ found confirmation of a much more extensive system of organology, corresponding in some general features with Gall's doctrines, but differing greatly in particulars, having no less than eighty-three distinct faculties; while Dr. Buchanan, of Cincinnati, who appears to have started with phrenology and mesmerism, has abandoned Gall's teaching in regard to the location of most of the organs, and teaches a system of "Anthropology," with which he desires to supersede the older theory. These dif-

* Animal Magnetism, letter XI.
† Mesmerism, ch. VII.
‡ See Fowler's Phrenology, edition of 1856.

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ferences of opinion show that the experiments are unreliable; and, indeed, before any experiments of this kind are received as trustworthy, they should be reported with much more minuteness and clearness than are to be found in any report of phreno-magnetic experiments, made as yet.

It is a noteworthy fact that several of the most reliable observers of, and ablest writers upon mesmeric phenomena, do not believe in phrenology. Townshend does not mention it, and evidently has no faith in it. Colquhon rejects it; and Reichenbach, a most careful and trustworthy scientific investigator, and an admirable writer, who has studied animal magnetism thoroughly, says that Gall's craniology depends for proof on "suppositions and gropings." * And it is another noteworthy fact that mesmerism had been in extensive use for twenty years, before the discovery of phreno-mesmerism was made; and yet, during those twenty years, hundreds of mesmeric subjects had been experimented upon, and in numerous cases the heads of the mesmerized persons were touched and handled extensively, without any discovery that the organs were excited or excitable thereby. For these reasons I doubt the trustworthiness of the phreno-magnetic testimony. If any reliable evidence of that kind can be obtained for phrenology, should not the experiments be conducted in such way that the mesmerizer could not know what part of the skull he touches, and the subject be ignorant of craniology? There would be no great difficulty in making such experiments. The fact is that most of the phreno-mesmeric experiments have been made carelessly, and it can not be expected that any reliable scientific result should be derived from them.

PROBLEMS NOT SOLVED BY PHRENOLOGY.

LV. There are many problems in regard to the physiology of the brain, and the nature of the mind, which phrenology does not pretend to solve, or does not solve satisfactorily, and it may be well to state some of them here.

1. Why are there no plain mechanical divisions in the substance of the neurine to mark the limits of those parts which perform different functions?

* Phrenologie, "bei welcher Tatonnement und Muthmassungen die Führer sind." *Reichenbach's Odische Erwiederungen.* Wien, 1856.

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2. Why is it that the size of the organs should be measured by their length from a point midway between the ear-orifices.

3. What is the influence of the increased length of the nerve-fibres in large brains?

4. What are the functions of the small organs at the base of the brain such as the *corpora striata*, the *corpora quadrigemina*, the *pons varioli*, etc.?

5. Are the impressions, produced on the various senses, recorded by special organs?

6. How is it that ideas and impressions, which can not be recalled to mind at one time, may be at another? There are cases where things forgotten for years—such as languages, tunes, etc., are remembered perfectly by persons in trance, or fever, or under the influence of opium, ether, chloroform, or mesmerism.

7. How are thoughts remembered? Is every mental impression written down by a change of cerebral structure, which afterwards remains as so changed?

8. How is it that there may be two states of consciousness alternating in the same individual, each having its own stock of knowledge, and its own memory, so that the same person may be said to have two minds at different times?

9. What is the cause of the influence of association in suggesting and recalling ideas to the mind? Are kindred ideas written down on neighboring fibres, which are all excited to action, when one feels a sensation?

10. How is it that persons can be insane on one subject only, or on the ideas associated only with one word, and be entirely sane and sensible in every other respect?

11. How is it that in some states of trance and mesmeric clairvoyance, persons can read the thoughts of others, without aid through the ordinary channels of sense?

12. How is the nervous electricity, or oad * generated?

* The term given by Reichenbach to a peculiar fluid, which is generated in the nervous system It is spelled "Od" in German, and pronounced "Oad," or "Oadt".

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APPENDIX.

Dr. Wigan on Gall's Organs above the Eye.

AFTER I had written the greater portion of this book, and long after, I had lost all faith in the small perceptive organs located by Gall above the eye, I found the following passage in Dr. Wigan's able book on *The Duality of the Mind*:—

"Whatever may become of phrenology, as the word is commonly understood, the division of the brain into parts ministering to different functions is an established fact, or at least an inevitable inference from a consideration of the operations of the mind, and the anatomical varieties of structure in the different portions of the brain, more especially at its basis. It is the location of the organs which constitutes one of the great difficulties. The very fantastic division of the portion round the eyes, is so repugnant to common sense, and so utterly impossible to be recognised if true, that were it necessary to concede this point as a preliminary, every man of reflection would refuse to enter on an investigation founded on premises so utterly untenable and absurd."

Morell on Physiological Psychology.

The Rev. J. D. Morell, one of the great English authors who have acquired fame within the last ten years, contributes to the Medico-Chirurgical Review for April 1856, an able article on Psychology as connected with Physiology, and he concludes by presenting "a few observations," as the general results of the consideration of the present position and prospects of psychological science—viz.:—

1. That the purely rational and abstract systems of mental Philosophy uniformly prove unfruitful very much in the same way as did the science of nature, so long as it was pursued by inward reflection only, without any systematic reference to actual and observable phenomena.

2. That the more empirical systems have contented themselves too much with a mere enunciation of phenomena, giving us rather a natural history of mental facts than any searching analysis or broad generalizations concerning them.

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3. That the researches of physiology, reaching up as they now do to the organic functions of the nervous system, both without and within the region of humanity, have set mental philosophy once again in movement, and drawn it more and more into the circle of natural science.

4. That as physiology itself is only in its infancy in regard to the functions of the brain and nervous system, it can supply at present only very partially the facts that are necessary for a complete psychology.

5. That as physiology advances, the coördination of the science of mind with that of nature [the material body?] must become more apparent, and the laws operating through the one, must throw new light upon the fundamental processes of the other.

6. Lastly we have good reason for the belief that psychology, as a science, is now once again on the road of advancement; and that grounded on positive principles, it will this time become fruitful in all its applications. Instead of leaving us in doubt and difficulty respecting the basis of human knowledge, it will exhibit with new distinctness the origin, the growth and the validity of our ideas: will teach us to separate the material of truth from its protean forms, will elucidate the nature and worth of the sentiments and emotions, show us the real power and energy of the human will, guide our interpretations of the religious aspirations, instruct us in the principles and laws of education, define more clearly the limits of moral responsibility, and give us finally that insight into humanity as a whole, which shall promote and regulate all the operations at once of justice and charity.

The Opinions of Great Men on Phrenology.

The great mass of the learned men of the present day certainly do reject phrenology in England, Germany, France and America. And especially the great physiologists reject it, that class which should be first to find and appreciate the evidence in its support if there be any; that class who would have no conceivable motive for hesitating to avow their belief in phrenology, if they should adopt one. The only cause which I can give why they do not believe, is that they are unable to find any evidence with the scalpel, the scales or the microscope. Feeling for bumps is a method of investigation of which they know nothing. Phrenology is spoken of as worthy of serious attention by Carpenter and Todd and Bowman, but most of the other great physiologists speak of it with disfavor or hostility. I subjoin the opinion of several scientific writers of high standing.

"Unless we must discredit testimony which would be deemed

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sufficient to establish the truth in any other science, they [Phrenology and Mesmerism] do present us with many curious and remarkable facts, which, to say the least, are explained with great difficulty by ordinary scientific principles. Now, what in such a case, is the course which every true philosopher ought to take? Evidently, if he follow Newton and Bacon, he ought to examine those facts calmly, and with a scrutiny proportionate to their marvellous anomalous character."—*Prof. Hitchcock.*

Dr. Herbert Mayo on Phrenology.

"How great is my regret that in former years, when I worked at the physiology of the nervous system, I undervalued phrenology! Prejudiced against it by the writings of the late Dr. Gordon, by the authority of my early instructors, by the puerile mode in which craniology was generally advocated, by the superficial quality of the cerebral anatomy of Gall, I confined my attention to what I considered sounder objects of investigation. But now I have no doubt not only that the metaphysical speculations of Gall were in the main just, but likewise, that a great part of his craniological chart is accurately laid down. To connect phrenology with severe anatomical research, to endeavor to determine the organic conditions which interfere with the application of the science to practical purposes, would be a task worthy of the efforts of the best physiological laborer."—*Popular Delusions, Letter XI.*

[On a subsequent page I quote a passage hostile to phrenology from the same author, written by him at an earlier date.]

Connection between Functions and Organs.

"Unable to ascend to the beginning of the existence of living bodies, our only resource in seeking information of the true nature of the animal forces is to examine the composition of these bodies —that is to say their tissues, and the manner in which their elements are united; and although it is true that this tissue and this union of elements are only in some sort the result of the action of the vital forces which have given them birth and furnished them with the means of support, it is also clear that these forces can have their origin and support only in those elements."—*Cuvier. Anatomie Comparée.*

Nervous Electricity.

"Of the mode by which the effects of changes in one part of the nervous system are instantaneously transmitted to another, nothing whatever is known. There is evidently a strong analogy between this phenomenon and the instantaneous transmission of the electric power along good conductors; but the relation is much more intimate than this, for electricity is capable of exciting nerve-force,

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whilst conversely nerve-force can excite electricity. Thus, a very feeble galvanic current transmitted along a motor nerve serves to excite contractions in the muscles supplied by it; and in a like manner a galvanic current transmitted along any of the sensory nerves gives rise to a sensation of the kind to which the nerve ministers. Moreover, certain animals are capable of generating electric power in a very remarkable manner, and the nervous force is essentially concerned in this operation. But, on the other hand it is quite certain that the influence transmitted along the nerves of the living body is not *ordinary* electricity; for all attempts to procure manifestations of electric changes in the state of nerves, that are acting most energetically on muscles have completely failed; and a nerve remains capable of transmitting the influence of electricity when it has been rendered unable to transmit the influence of the brain."—*Carpenter. Elements of Physiology.* § 396.

Instinct in Man.

"Those unfortunate beings in whom the cerebrum is but little developed, are guided almost solely by their instinctive tendencies, which frequently manifest themselves with a degree of strength that would not have been supposed to exist, and occasionally new instincts present themselves, of which the human being is ordinarily regarded as destitute."—*Carpenter's Hum. Phys.* § 783.

"Observations show that all organic functions are kept in operation by the aid of chemical processes, and that a living being may be considered a chemical laboratory in which those things are done which together make up the sum of life."—*Mialhe.*

Mind in Brutes.

"Everything which feels and moves voluntarily is endowed with a mind."—*Müller, Physiologie.*

"The difference between mind in the lower animals and in man is a difference in degree only: it is not a specific difference. All those who have studied animals by actual observation, and even those who have given a candid attention to the subject in books must attain more or less clear convictions of this truth, notwithstanding the obscurity which prejudice may have engendered. We see animals capable of affection, jealousy, envy; we see them quarrel and conduct quarrels in the very manner pursued by the ruder and less educated of our own race. We see them liable to flattery, inflated with pride, and dejected with shame. We see them as tender to their young as human parents are, and as faithful to a trust as the most conscientious of human servants. The horse is startled by marvellous objects as a man is. The dog and many others show

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tenacious memory. The dog also proves himself possessed of imagination [consciousness?] by the act of dreaming. Horses, finding themselves in want of a shoe, have of their own accord gone to a farrier's shop where they were shoed before. Cats, closed up in rooms, will endeavor to obtain their liberation by pulling a latch or ringing a bell. A monkey, wishing to get into a particular tree, and seeing a dangerous snake at the bottom of it, watched for hours till he found the reptile for a moment off his guard: he sprang upon it and seizing it by the neck, bruised its head to pieces against a stone, after which he quietly ascended the tree. We can hardly doubt that the animal seized and bruised the head, because he knew or judged there was danger in that part. It has several times been observed that in a field of cattle, when one or two were mischievous and persisted long in annoying or tyrannizing over the rest, the herd to all appearance consulted, and then making a united effort, drove the troublers off the ground. The members of a rookery also have been observed to take turns in supplying the needs of a family reduced to orphanhood. All of these are acts of reason, in no respect different from similar acts of men."—*Vestiges of Creation.*

"The intellectual faculties in different individuals of the human race, differ from one another as much as the human mind itself differs from that of the brute creation. The intellectual powers of a Newton are as much raised above those of the common hewer of wood and drawer of water, as the mental faculties of the laborer are raised above those of the dog which follows him to the field."—*Solly.*

Strength of Mind dependent on Health of Brain.

"The due activity of the nervous system is not merely dependent on a constant and ample supply of blood; but it requires that this blood should be in a state of extreme purity, and more especially that it should contain a due supply of oxygen, and should be depurated of its carbonic acid, and of other products of the decomposition of the body. The final cessation of nervous power in death by asphyxia is partly due, to a positive deficiency in the supply of blood; but the obtuseness of sensibility, which gradually increases until a state of unconsciousness comes on, may be clearly traced in the first instance to the deficient aeration of the blood, which is gradually deprived of its oxygen, and more and more charged with carbonic acid."—*Carpenter's Human Physiology,* § 357.

"If the circulation through the brain be suspended but for an instant, insensibility and loss of voluntary power supervene and continue till it is restored."—*The same,* § 355.

Solly in his work *On the Brain* states, that Sir Astley Cooper was in the habit of relating to his students the case of a man whose

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skull was broken and pressed in upon his brain, so that he was insensible. He lived in perfect unconsciousness for thirteen months, —a mere vegetable—until he was restored to his sensation, thought and conscious life by the operation of trepanning. After his recovery he knew no more of those thirteen months, than if they had been only a few minutes passed in deep sleep.

Size of Brain, Measure of Mental Power

"We think that all observation, both in man and in the lower animals, proves that the energy of any nervous centre always bears a direct proportion to its bulk, whether absolute or relative; and that the phrenologists do not err in attaching great and primary importance to those parts with which they associate certain faculties." —*Todd and Bowman. Physiology.*

Growth of Mind.

"Mind, we see, is a thing of gradual growth, increasing bit by bit, from less than that of the lowest quadruped to the exhibition of the highest intellect. The infant just born has no voluntary power, no will, no reflection, no perception; it has scarcely sensation, yet all these come by slow degrees, and the accumulation of faculties which are ultimately to constitute a mind, may be retarded or entirely prevented by disease or want of cultivation. Some of these faculties may progress to the injury or extinction of others, or they may be all developed in due order and succession till they make the godlike gift of reason. Can the mind then be a thing *per se*, [essentially] distinct and separate from the body? No more than the motion can exist independent of the watch, and all the arguments of theologians and metaphysicians on this subject are founded on the confusion of terms. Predicate what you please of the *soul*, you cannot exaggerate its exalted nature; but do not confound it with *mind*, which is nothing more than a collection, an *aggregate of functions*, and the word itself only a term to designate a set of processes, any one of which may be defective, excessive or absolutely wanting, without destroying, and sometimes almost without materially impairing the reasoning faculties. No man possesses all of them in perfection, or he would be superior to humanity; few possess any of them in perfection, but a moderate degree of excellence in many of them may be attained by almost any one who is subjected to due cultivation, and they may almost all of them be lost by neglect and desuetude."— *Wigan. Duality of the Mind*, Ch. XXVI.

Decay of Mind in Old Age.

"In old age the senses become dull, the attention sluggish, the

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imagination is extinguished, the memory refuses to receive more impressions, and the judgment rests on the recollection of former comparisons. The mind, which held command over other minds, sinks to the common level of approaching death; and it is well when that natural termination of life arrives, before the weakened judgment permits the commission of follies which disgrace the wisest life, or at least afford occasion for that most melancholy and common observation that a man has lived too long."—*Conolly. On Insanity.*

"In the case of old men it is generally found that a decline of the faculties keeps pace with a decay of bodily health and vigor. The few exceptions that occur to the universality of this fact, only prove that there are some diseases fatal to life which do not injure those parts of the body with which the intellectual operations are more immediately connected."—*Dugald Stewart.*

"The psychical tendencies of every one undergo a consecutive change in the progress of life."—*Carpenter. Hum. Phys.*, § 801.

Functions of the Cerebrum and the Sensory Ganglia.

"The Cerebrum is the instrument of all those psychical operations which we include under the general term 'Intellectual.'"—*Carpenter.*

"The Sensory Ganglia are to be regarded as the true centres of sensation, that is of the consciousness of external impressions."—*Carpenter.*

Nature of the Mind.

There are many ideas to be found in theological works on the connection between the mind and the brain which are not introduced here, because they have no scientific weight upon the question under consideration.

The testimony offered by the spiritualists is worthy of serious consideration, and thorough investigation which it has not yet had from men of science. I am no spiritualist, but I have glanced at the testimony and have been astonished and perplexed by its directness, force and coherence; and I do not hesitate to say that if I held the common doctrine of Christians in regard to the nature of the mind, I should declare myself a believer in spiritualism at once. I have no sympathy with the bigoted hate, the contemptuous indifference and the obstinate refusal to hear the witnesses which the great world shows towards that theory. There are scientific as well as a religious bigots; and the latter are more pardonable than the former. In entering upon any scientific investigation, without which there should be no dogmatic condemnation of scientific theories or theorists, "one of the students first endeavors ought to be to prepare his mind for the reception of truth, by dismissing, or

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at least loosening his hold on all such crude and hastily adopted notions respecting all the objects and relations, he is about to examine, as may tend to embarrass or mislead him : and to strengthen himself by something of an effort and a resolve for the unprejudiced admission of any conclusion which shall appear to be supported by careful observation and logical argument, even should it prove adverse to notions he may have previously formed for himself, or taken up without examination on the credit of others. Such an effort is in fact, a commencement of that intellectual discipline which forms one of the most important ends of all science. It is the first movement of approach toward that state of mental purity, which alone can fit us for a full and steady perception of moral beauty as well as physical adaptation. It is the euphrasy and rue with which we must purge our sight before we can receive and contemplate, as they are, the lineaments of truth and nature."*

Pritchard on the Relation between Mind and Brain.

Pritchard, following Jacobi, questions, whether the brain is the organ of the mind necessarily, and bases his doubt principally on the fact that no brain is discoverable in some not very stupid insects. I quote his remarks as given by Wigan—for I have not seen Pritchard's book—but he strikes against the doctrine of the physiologists as much as against that of the phrenologists.

"It is a fact that among insects, if we take the different tribes collectively, manifestations of all the psychical qualities which we observe in mammifers and birds, [regarding as a whole the properties divided among different departments] there may be recognised the most strict analogy. Attention, memory, the faculty of combining means to obtain ends, cunning, the desire of revenge, care of offspring, and all the other psychical qualities, which have been traced in the mammifers, are also to be observed in the insects as typical or characteristic phenomena, sometimes in one combination, sometimes in another, or in different groups, sometimes strongly, sometimes more feebly expressed."

"If we look but cursorily through the works of writers who have investigated the instincts, habits and economy of insect tribes, we may well ask ourselves, while contemplating this wonderful panorama, where psychical† life [even in the same directions in which we trace it in mammifers, fishes and birds] has taken a higher development, or when its phenomena are displayed collectively, displays itself in richer or more varied forms. In the interesting work of Kirby and Spence we find examples collected of the parental at-

* HERSCHEL. Introduction to Astronomy.
† RICHARD says, "psychal": "psychical" is now the word.

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tachment and provident care which different tribes of insects evince toward their offspring: how the *cimea griseus*, like the hen, leads about her young brood, gathers them together, and exerts herself to defend them; how the earwig sits on her eggs, and when they are scattered, collects them again under her, and after the young are hatched, watches over them with equal care; how the *aranea saccata* watches over the sac in which she has enclosed her eggs, pines away with sorrow if she is robbed of it, and evinces the liveliest joy in regaining it; how she sustains the most valorous conflict for it against other insects, even to the sacrifice of her own life in its defence; how an ant, when cut through, ceased not to evince care for the eggs of her nest, and mutilated as she was, rescued ten of them from danger; how a throng of drones exerted themselves with energy, courage and self-devotion when their young had been placed by Huber in a situation of apparent danger; with what astonishing endeavors and apparent calculation of means, and with what varied art and contrivances the *apis papaveris* and the *apis centuncularis* furnish their dwellings; how many water-insects make use of the materials which accident throws in their way to construct dens in which they dwell in the water. In order to become aware that psychical life displays its other manifestations among animals of all departments in ways nearly alike, we may read how wasps, as soon as external conditions take place, which produce an essential change in the state of the organization, exert themselves with rage to destroy the very brood which till then they had watched over with the greatest care. How the working bees are at first so eager after the eggs laid by the female, that they consume them as fast as they can obtain possession of them, until the eggs, after a few hours, become changed in such a manner that the instinct of appropriation takes another direction, and they now tend the eggs and the larvae springing from them with inviolable fidelity; how some spiders like some beasts of prey, cannot approach each other even for the coupling without danger, since amidst their caresses, they are sometimes so powerfully impelled by a different direction of organic tendencies, that they fall suddenly upon one another, and one of them entangles the other and devours it.

Now, if it should be established that all those properties of animal life, approximating to (human) intelligence, or bearing analogies so striking to the manifestations of mind, which in one great division of the animal kingdom are assumed to be essentially connected with and dependent on, a particular system of organization, exist in another department and display themselves in all the same various profusion, while the creatures belonging to this latter department are yet destitute of that system of organization [cerebrum], and of anything which bears resemblance to it, the advocates of phrenology will be obliged to abandon that broad ground on

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which they attempt to fortify their position. Within the more confined field which the vertebrated tribes alone present, it will be more easy to maintain such an assumed connection of psychical qualities with a peculiar structure, or rather it is more difficult to disprove it when assumed. The general anology which prevails throughout these tribes in the organization of their cerebral and nervous system affords no room for so decisive a contradiction to the relation which the phrenologists would establish."

Composite Nature of Mind.

"The term mind is a name which we apply to a certain combination of functions or to a certain power which we feel within, which thinks, and wills and reasons, and is known to us only by these functions."—*Abercrombie. On the Intellectual Powers.*

"The chemical constitution of the nerves and brain is not the same in all places, but there is a marked difference between different portions, and therefrom it appears probable that the brain is composed of a number of organs."—*Büchner's Kraft und Stoff.*

Convolutions of Brain, the Laboratory of Thought.

"The convolutions of the brain are the centre of intellectual action."—*Todd and Bowman, Physiology.*

The Lobes of the Cerebrum.

"The following considerations form a serious objection to the general phrenological division of the Cerebrum into an interior and percipient and reasoning part, and a posterior part for disposition and impulse. It will be granted that animals have more affection for their offspring than reason. But quadrupeds in general—the horse, the dog, the sheep for example—have the posterior cerebral lobes small, the anterior lobes large. [I do not understand phrenology to be connected especially with the size or proportion of the several lobes. *J. S. H.*] Again on the general analogy of development, that which is formed latest in the embryo should have the highest function. But the posterior lobe of the brain is the last unfolded in the order of growth, the last part added to complete the growing organization."—*Mayo.*

Carpenter appears to intend a similar objection, for he does not express it directly, when he says (*Hum. Phys.*, §. 782) that the variation in the relative development of the lobes of the Cerebrum is a fact of very great importance in the consideration of Gall's organology: and he states that the Cerebrum of the *Oviparous Vertebrata* is not a miniature representation of that of man, as a whole, but only of his anterior lobes, which are supposed by Gall

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to be the seat of the higher intellectual faculties: thus leaving to low-class brutes no organ for the baser impulses which predominate in their psychical nature.

"The grey substance, pervading brain and nerves: now called neurine, is ascertained to be the seat of sensation, and the medullary portion, to be only the medium of conveying its orders to various parts of the body, and *reflexly* sensations to the grey substance." —*Wigan.*

"I have found at different times all the internal parts of the brain diseased without loss of sense: but I have never seen disease general on the surface of the hemispheres without oppression or derangement of the mind during the patients life."—*Sir Charles Bell. Anatomy.*

Cerebral Disease.

"There are no cases on record in which the mental faculties have remained undisturbed when the disorganization [disease] has extended to both sides of the brain."—*Solly.*

Disease of Portion of the Mind.

"*Moral* insanity may and frequently does exist without any disorder of the *Intellectual* powers, or any delusion whatever: it being the result of the generality of the affection of the emotional tendencies, that no one of them maintains any constant hold upon the mind, one excitement being (as it were) driven out by another." —*Carpenter.*

"It is unquestionable that many criminal actions are committed under the irresistible dominance of some insane impulse, the individual being at the time perfectly aware of their evil nature and of his amenableness to punishment. Such an impulse may lead the subject of it to kill, to commit a rape, to steal, to burn and so on, and this without the least intention of doing injury to another: and many instances have occurred in which the individuals thus affected, have voluntarily withdrawn themselves from the circumstances of whose exciting influence they were conscious, and have begged to be placed under restraint."—*Carpenter.*

Buchanan on the Phrenological Organs.

"The absurdity which has crept into phrenological works [and which has been popularly taught as the true anatomy of the brain] of regarding the various organs as radiations from the Medulla Oblongata like inverted cones, with their bases against the inner plate of the skull, and their apices at the Medulla, has no foundation in anatomy. The central region of the brain consists of the

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ventricles, around which the hemispheres are formed and become convoluted. The measurement of organs which have been made by phrenologists, from the cavity of the ear upon the supposition that they extended from the Medulla Oblongata to the skull, are quite fallacious. There are no such organs; they could not exist without passing through the ventricles, and disregarding the facts of anatomy. The Medulla Oblongata is neither anatomically, physiologically not mathematically the centre of cerebral development. There is no single centre, as there are two distinct hemispheres, each complete in itself, and possessing its own central region. When we select the ear as corresponding to the Medulla, for the central point, we take a position which, instead of being central, is entirely below every portion of the Cerebrum."—*Anthropology*, Sect. XI.

Anatomy of the Skull.

"The bones of the head are moulded to the brain."—*Bell.*

"In some places the skull is comparatively thick, at others thin, and the relations of these places to each differ much in different persons. The forehead of one is thicker, and the hindhead of another: and any one needs only to examine a skull sawn through in various directions to satisfy himself that the external surface is by no means an exact copy of the internal."—*Karl Vogt. Physiologische Briefe* p. 207.

Cerebellum and the Sexual Impulse.

"In this part [the Cerebellum] the sexual appetite is supposed by phrenologists to be located. The justness of this opinion has always appeared to me doubtful. It may be confidently asserted that quadrupeds use the organs of smell and vision for discriminating the subjects of their appetites, both of food and desire. It is likewise highly probable that the part of the brain in which a nerve of sense begins, is that which digests the ideas and originates the impulses that follow from the excitement of the sense which it conveys. But neither the optic nerve nor the olfactory communicate with the Cerebellum: but both, especially the olfactory, take their rise in the tubercles, that are immediately in relation with the Cerebrum. The olfactory nerve in quadrupeds is even in part directly continued from the substance of the middle lobe of the brain. It is probable, so far as this reasoning has any weight, that the impulses by which the animal is led to those functions which preserve itself and its species, are originated in the Cerebrum."—*Mayo.*

"My experiments indicate that the sexual impulse is located upon the median line and does not occupy the whole of the Cerebellum. Pathological observations in European hospitals confirm my experiments by showing that in cases of apoplexy or inflamma

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tion with erotic phenomena the seat of the inflammation, congestion or irritation was generally the central superior portion of the Cerebellum on the median line."—*Buchanan. Anthropology.*

Carpenter asserts on the responsibility of a scientific friend, that "the size of the Cerebellum in the different races [of men] bears no relation whatever to the degree of projection of the occiput."

"There are many among the phrenologists of the present day who hold with Serres that whilst the hemispheres of the Cerebellum possess the endowments now generally assigned to them by physiologists, the central lobe is connected with the genital function. Several cases have been recorded in which some such relation appeared to be indicated: and the author has been made acquainted with at least six, in which an extraordinary salacity developed itself at an advanced period of life, whilst concurrently with this or following upon it, there was that kind of unsteadiness of gait, which may be held to indicate chronic disease of the Cerebellum."—*Carpenter. Hum. Phys.* § 770. 771.

Organs as described by Combe.

In justice to myself I ask a comparison of my description of the functions of the organs of Destructiveness, Combativeness, Concentrativeness and Secretiveness with those given by Combe, whose work is confessedly the most comprehensive and accurate of all the books on Gall's system. The comparison which I invite does not extend to elegance of composition or literary merit of any kind, but to the extent and correctness of the substantial information clearly conveyed in regard to the influence of the organs under consideration. As I understand him (for there is no one brief passage setting forth the functions of these several organs suitable for quotation) he teaches that Destructiveness gives the disposition to murder, to hunt, to take animal life, to have a ruffianly thirst for blood, to take pleasure in carnage, to have "ability to act with energy in certain situations, in which with that organ small, the individual would be completely paralyzed," to give edge to satire and sarcasm, to prompt the conception of images of terror, and of scenes of devastation and destruction, and to give indifference to suffering. As abuses of the organ he mentions irascibility, cursing, and harsh and angry language.

He describes Combativeness as giving courage, intrepidity, disposition to oppose, to resist, to fight, to make aggressions, to love disputation, contention and war.

Concentrativeness he treats as having no other influences than those of giving the power of concentrating the mind on a given subject and the disposition to pursue a train of thought once commenced.

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He says that Secretiveness gives the disposition and ability to conceal the feelings and thoughts, to be reticent and reserved, to govern the expression of the face, to be cunning, to love concealment, stratagem, intrigue, to practice deceit, duplicity, lying, theft, and desire to know the secrets of others.

Case of an Impulse to commit Murder.

"A German girl, servant of Humboldt, who had charge of a child, entreated to be sent away, from fear that she should destroy it, as whenever she undressed it and noticed the whiteness of its skin, she was seized with an almost irresistible desire to tear it to pieces." Wigan, who quotes the above, mentions five other similar cases.

Conscientiousness an inborn Mental Faculty of Man.

"It must be obvious to every one who carefully considers the matter, that while a notion of right and wrong attaching itself to certain actions is as much part of the moral nature of every individual, as the feeling of pleasure or pain, attaching itself to certain states of consciousness is to his sensational nature, yet the determination of what is wrong is a matter to a great degree dependent upon education, habits of thought, conventional associations, &c., so that the moral standard of no two men shall be precisely alike, and the moral standards of men, brought up under entirely different circumstances, shall be of the most opposite nature."—*Carpenter. Hum. Phys.*, § 837.

Jesus said that all the Teachings of Morality were comprised in two Sentences of Moses.

"A lawyer asked him a question tempting him, and saying, 'Master, which is the great commandment in the law?'

Jesus said unto him, 'Thou shalt love the Lord thy God with all thy heart, and with all thy soul and with all thy mind. This is the first and great commandment. And the second is like unto it. Thou shalt love thy neighbor as thyself. On these two commandments hang all the law and the prophets.'"—*Matthew, XXII.* 35–40.

"Thou shalt love the Lord thy God with all thine heart, and with all thy soul and with all thy might."—*Deut. VI.* 5.

"Thou shalt love thy neighbor as thyself."—*Lev. XIX.* 18.

Heathen Morality previous to the Time of Jesus.

"Do not that which you would disapprove of in others."—*Thales*, 600 *B. C.*

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"All virtues are comprised in justice; he who is just is a good man."—*Theognis*, 500 *B. C.*

"Tsze Kung asked if there was any one word which expresses the proper conduct of one's whole life. Confucius [500 B. C.] replied, will not the word *shoo* [love?] do it, i. e. do not to others what you do not wish them to do to you."—*The Four Books, XV.* 23. —*Translated by the Rev. David Collie.*

Confucius said, "I compile and transmit to posterity, but write not anything new. I believe and love the ancients, taking Laou Pang for my pattern."—*Ibid. VII.* 1.

Some one asked Diogenes the way to be revenged on an enemy? The cynic replied: "Become more virtuous."—*Plut. de aud. poet. Quoted by Barthelemy.*

Socrates said: It is not permitted to return evil for evil.—*Plato in Crit. Quoted by Barthelemy.*

"As much as it has been disputed wherein virtue consists, or whatever ground for doubt there may be about particulars, yet in general there is in reality, an universally acknowledged standard of it. It is that which all ages and all countries have made profession of in public,—it is that which every man you meet puts on the show of,—it is that which the primary and fundamental laws of all civil constitutions over the face of the earth make it their business and endeavor to enforce the practice of upon mankind, namely justice, veracity, and regard to common good."—*Dr. Butler "Dissertation on Nature of Virtue," subjoined to "Analogy of Religion."*

Case of an Impulse to Steal.

"There are persons who are moral to the highest degree as to certain duties, but who nevertheless live under the influence of some one vice. In one instance a woman was exemplary in her obedience to every command of the moral law, except one—she could not refrain from stealing. What made this vice the more remarkable was that she was in easy circumstances and not addicted to extravagance in anything. Such was the propensity to this vice, that when she could lay her hands upon nothing more valuable, she would often at the table of a friend fill her pockets secretly with bread. She both confessed and lamented her crime.—*Rush. Medical Inquiries.* See Montaigne Essays, Bk. II., Ch. 8.

Memory affected by Injury to Brain.

Pritchard in his work *on the Nervous System* records the particulars of the case of a Welshman, who had spoken no language but English for thirty years, and his mother tongue was completely forgotten when it was restored to him, and the English lost during a fever, brought on by a severe wound on the head.

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There is one case recorded of a man who during a fever lost completely all recollection of the events of four years.

"Structural changes of the brain are sometimes followed by partial loss of memory; facts relating to certain periods of time or certain kinds of names, substantives or adjectives, being forgotten." —*Müller.*

Power to resist Temptation.

—Who can answer, when temptation comes,
For calm resolves. When windy passion swells
The turbulent thoughts, our weakly-builded dykes
Burst, and the overbearing sea, let through,
In one wild rush pours in, and swirls away
Our boasted resolutions, like light ships."—*W. W. Story.*

"I have known one in that state, when he has tried to abstain but for one evening—though the poisonous potion had long ceased to bring back its first enchantments—though he was sure it would rather deepen his gloom than brighten it—in the violence of the struggle and in the necessity he has felt of getting rid of the present sensation at any rate, I have known him to scream out, to cry aloud, for the anguish and pain of the strife within him. Why should I hesitate to declare that the man of whom I speak is myself?"—*Charles Lamb. Confessions of a Drunkard.*

I make the statement (as on page 17) that there is no sight except by means of the eye, and no hearing except by means of the ear, in full knowledge of the fact that persons in cataleptic, somnambulistic, mesmeric, and spiritualistic trance have (if numerous witnesses are to be believed) perceived by other means than those of their eyes and ears, things which men in the normal condition could perceive only through those organs. There may be other means of perception which may supply the place of vision, but that faculty, as all physiologists assert, depends on the material organization of the eye.

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Will publish, about the 1st March, 1857,

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Referring to the first Edition,—a mere skeleton of the present work, published in San Francisco,—the *Westminster Review*, for July, 1856, said: "We would recommend those who still think that they can maintain the position of the infallibility of Scripture to obtain, if they can, a little book published in San Francisco, entitled, 'The Evidences against Christianity.' Scriptural discrepancies, contradictions, and difficulties are therein very cleverly put together."

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CALVIN BLANCHARD

Will publish, about the 1st February, 1857,

"A PLEA FOR PANTHEISM," by JOHN S. HITTELL.

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