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ART. I.—*A Compendium of Christian Antiquities: being a brief view of the Orders, Rites, Laws, and Customs of the Ancient Church in the Early Ages.* By the Rev. C. S. Henry, A. M. Philadelphia, Joseph Wheatham. pp. 332. Svo. 1837.

A PETTY ambition to be recognised as authors is, we fear, a growing vice among Americans. One of the lowest forms in which the passion shows itself, is that of abridgment. Not that abridgment, in itself, is evil; but because the abridger, in the cases now referred to, cannot deny himself the happiness of being thought a *bona fide* author, by that class of readers who confine themselves to title-pages. On the elegant title of the volume now before us there is no intimation that the book is not the offspring of the Rev. C. S. Henry. A very little turning of the leaves, however, suffices to show that it is all from Bingham, and on looking at the preface, we are gravely told, that “it makes no pretension to originality of investigation.” This is not strictly true; for the *pretensions* of a book are to be looked for in the title-page; and besides, there is some pretension in the affected statement that “the work of Bingham has been relied upon, as to facts and authorities—as well as followed

ART. VII.—*An Examination of Phrenology, in two Lectures, delivered to the Students of the Columbian College, District of Columbia, February, 1837.* By Thomas Sewall, M. D., Professor of Anatomy and Physiology. Published by request. Washington City. 1837. 70 pp. 8vo.

IN despite of all the ridicule and argument which have been levelled at phrenology, it has, of late years, made considerable advances; and it now excites more attention, and numbers more disciples than at any former period. Its advocates have abated nothing from the lofty pretensions of their favourite science;—for *science*, they assure us it is, and the first of all the sciences in intrinsic dignity and importance. They claim that it is the greatest and most valuable discovery ever communicated to mankind,—that it casts the only certain light upon the nature and operations of the human mind,—and that it will contribute more important aid towards the education and the general improvement of the race, than can be obtained from any other source. “The discoveries of the revolution of the globe, and the circulation of the blood were splendid displays of genius in their authors, and interesting and beneficial to mankind; but their results, compared with the consequences which must inevitably follow from Dr. Gall’s discovery of the functions of the brain, sink into relative insignificance.” So says Mr. George Combe, the ablest of the phrenologists.

A science which promises such wonderful results—which professes to subject the most abstruse problems in mental science to the ordeal of the sight and touch,—which, from its lofty elevation, compassionates the wandering bewilderment of Locke, and wonders that Newton did not study skulls instead of stars, or that Harvey should have wasted his time in discovering the circulation of the blood, when he might have been so much more profitably employed in measuring the bumps of the cranium,—deserves certainly the most respectful consideration from all who desire the increase of knowledge or the welfare of mankind. Such consideration, its friends seem disposed to think, it has not yet obtained. Mr. Combe commences the last edition of his *System of Phrenology* with an affecting account of the unfavourable reception which most other great discoveries have met with

upon their first announcement, and consoles himself and his collaborators by calling to mind the opposition, ridicule and persecution which were encountered by Aristotle, Galileo, Descartes, Harvey and Newton. Mr. Combe is not very well read in the history of the hardships endured by the pioneers of philosophical discovery, or he might have increased his catalogue by many additional names, such as ——; our readers may fill the blank with Anaxagoras, Socrates, Tycho, and Kepler, or by Symmes, Mesmer, and Perkins, according to their different estimates of the persecuted science of phrenology.

We do not feel disposed to cast ridicule upon any set of men who are labouring, with an honest purpose, and a sincere love of truth, to extend the boundaries of human knowledge in any direction. We can look with something like complacency upon what would be swaggering and impudent pretension, were it not supposed to originate in the harmless enthusiasm of fancied discovery, and thankfully receive the truths that are offered us, even though we should rate them at a less value than is affixed by those who have, with great research and labour, produced them. To the untiring labours of the phrenologists; we have therefore looked with much interest, hoping that they would contribute something valuable to our knowledge of the mutual functions of the mind and body, and assured that if this hope should not be realized, we should at least have the benefit of what may be called a negative experiment, proving that there is no knowledge to be gained in the region which they have so assiduously cultivated. They have had among them some men of eminent abilities, united with keen ardour, in the pursuit of their favourite object; and sufficient time has been allowed, according to their own representations, to put their system in an available form, and complete it, except in some of its subordinate details. With the fearlessness of conscious strength, they challenge the rigorous investigations of all who are competent to form an opinion of its claims. We propose, therefore, to institute an inquiry into the validity of the grounds on which their science rests, and the value of the results it has produced.

Phrenology, as now set forth, is a modern science; but the opinion that separate portions of the brain are employed in different mental operations, is of very ancient date. Aristotle speaks of the brain, as consisting of a congeries of organs, and assigns to different parts, different mental functions.

The anterior part of the cerebral mass, he apportions to common sense,—the middle, to imagination, judgment and reflection,—and the posterior, to memory. Galen seems to have been acquainted with the views of Aristotle, and to have adopted them. Nemesius, the first bishop of Emesa, in the reign of Theodosius, taught that the sensations had their origin in the anterior ventricle of the brain, memory in the middle, and understanding in the posterior ventricle. Albertus Magnus, Archbishop of Ratisbon, in the thirteenth century, drew a head, upon which he delineated the supposed seats of the different faculties and affections. Peter de Montagnana, Michael Servetus, Ludovico Dolci, and many other writers, have published similar hypotheses respecting the locality of the various mental powers. But the most elaborate work upon this subject, with which we are acquainted, is the treatise of John-Baptista Porta, or, as he is called by the Italians, Giovan Batista de la Porta, an eminent philosopher of Naples, in the latter part of the sixteenth century. He was famed for his skill in mathematics, philosophy, natural history, and medicine, and he published many works connected with these various branches of knowledge. Among these was the curious treatise to which we have alluded, entitled “*De Humana Physiologia*.” He maintains that the character of every man, his intellectual and moral qualities, may be learned from his bodily configuration, and explains minutely the indications afforded by the different forms and sizes of its several parts, confirming his opinions by the testimony of previous writers, chiefly of Aristotle and Albertus, and by analogies between certain conformations of the “human face divine,” and some of the races of brutes. In his system, every lineament of the face, and every member of the body, even the fingers and nails, bear their testimony to the qualities of the mind, but he lays the greatest stress upon the form of the cranium. The reason which he assigns for attaching so much importance to the shape of the head, is that the form of the brain depends upon that of the skull, and that a deficiency in any part of the skull discloses therefore a corresponding deficiency in the brain, and indicates the feebleness of the faculties which have their seat in that portion. “*Cerebri forma cranei formam sequitur, et si ejus figura corrupta fuerit, etiam cerebri forma corrumpetur.*” This is a clear and precise statement of one of the fundamental positions of modern phrenology.

It is no part of our intention, however, to detract from the

originality of Dr. Gall as the discoverer of phrenology. Nothing but general hints had been thrown out by previous writers. No one had ventured further than the opinion that certain large portions of the brain were devoted to distinct classes of mental operations, and only Baptista Porta had suggested the general truth that the form of the brain might be learned from the external configuration of the skull. Dr. Gall has done for this subject what Newton did for the theory of the universe,—he has proved that to be true which before was but conjecture. The account which he has given of the manner in which he was led to make his great discovery is substantially as follows. His attention was strongly drawn, while he was yet a boy, to the various tastes, dispositions and talents displayed by the different members of his family. At school he observed similar differences among his companions, and in particular was led to remark that the boys who were distinguished for their retentive memories had large and prominent eyes. When he subsequently went to the university, he found this same peculiarity of feature in all the students who were distinguished for tenacity of memory. Following out the general idea which was thus suggested, he imagined that other mental qualities might have their signs in the external features, and he, at length, supposed that he had discovered certain peculiarities which were indicative of some other intellectual endowments. Afterwards, when he came to study medicine, it occurred to him that the differences in the configuration of the head, which he had observed in connexion with certain dispositions, were owing to differences in the form of the brain. This happy idea was the initiative of his whole system. It inspired him at once with the hope that with this clue he might successfully trace the windings of that labyrinth where every previous explorer had been lost, the connexion between the body and the mind, and the secret causes of that great variety which we see in moral disposition and intellectual ability. He immediately began to direct his researches to this object, by collecting animals of various kinds, and studying the relations between their external forms, and their natural instincts and dispositions. He procured, at the same time, all the skulls which he could obtain, of persons whose history or character was known. Upon hearing of any one who was distinguished for a particular mental or moral quality, he never rested until he had seen and, if possible, felt the form of his cranium. He would then inquire diligently for some

noted case of deficiency of the same trait or faculty, that he might compare together the positive and negative indications. If on the other hand, he met with one whose head presented any singularity in shape, he spared no pains to ascertain his intellectual and moral character, and when all other means of investigation failed, he would not hesitate to inquire of the individual himself, whether he was remarkable for any faculty of mind or disposition of heart. He was also in the habit, while walking in the streets of Vienna, where he at this time lived, of collecting the boys around him, and, after observing their skulls, bribing them to confess their faults, and betray those of their companions. He would even seek to involve them in quarrels that he might learn which possessed the most courage. Upon the death of any celebrated individual, he used all possible exertion to procure his skull, and as this propensity of the Doctor became known, it spread a very general alarm among the inhabitants of Vienna, not a few being haunted by the fear that their heads would hereafter grace his anatomical cabinet, instead of resting quietly in the grave. The aged librarian to the Emperor of Austria, Mr. Denis, inserted a prohibitory clause in his will, to protect his head from the keen scalpel of Dr. Gall. He contrived nevertheless to collect a large number of skulls. In the meantime he visited schools, prisons, houses of correction, and lunatic asylums,—he invited companies of beggars, porters, and coachmen from the street into his house, and then excited them to act out their characters before him,—he neglected no means of observation within his reach, to acquaint himself with the internal dispositions and the external protuberances of the skull, in all to whom he could gain access. During this lengthened period of observation, he was often involved in perplexity and confusion. The induction from many previous instances, assigning the locality of a particular faculty, would often be overthrown by a new skull, and a careful revision of all the former cases would be rendered necessary. By degrees, however, his conclusions became stable, and the multitudinous phenomena which he had observed, being all reduced within the compass of a few general laws, each comprising under it a large number of particular instances, the *science* of phrenology was the result. As in other sciences, the general law which he had proved to be true by an extended process of induction, was then applied, in the way of deduction, to the explanation of such phenomena as came within its range. In 1796, Dr. Gall consi-

dered his system sufficiently perfected to be announced to the world, and he accordingly gave a course of public lectures in Vienna, in explanation and defence of the new-discovered science. He continued to lecture annually for five successive years, his opinions being eagerly received by many, and giving rise to much warm discussion, when, in 1802, an order was issued by the Austrian government, forbidding him to lecture, on the ground that his doctrines savoured of materialism and atheism, and were dangerous to the cause of morality and religion. The decrees of courts cannot fetter the mind. The effect of this interdiction was to stimulate public curiosity, and phrenology was studied with greater zeal than before. A strong party was soon gathered on the side of the silenced philosopher, through whose influence at court, the prohibition was so far removed as to permit him to lecture publicly to such foreigners as might be resident in Vienna, the Emperor, it may be supposed, feeling little concern for the 'morality and religion' of any but his own subjects. About this time Dr. Gall associated Dr. Spurzheim with him, and they laboured together for several years. They refrained from committing themselves by any publication. The first published notice of the new science was given in the *Deutsche Merkur* of Wieland, in 1798, in a letter from Dr. Gall, announcing his intention of publishing a large work upon the subject, and giving a glimpse of his theory. In 1802, an outline of his system was given in a published letter from M. Charles Villers to Cuvier. It was through this letter, and the review of it in the *Edinburgh Review*, that the subject was introduced into England. While the promised work in exposition of the system was delayed, surreptitious copies of Dr. Gall's lectures were circulated throughout Germany, and they excited so much attention, that he was induced, in company with Dr. Spurzheim, to visit the principal universities and cities of Germany and Prussia, for the purpose of explaining his doctrines. In 1809, these two co-labourers commenced the publication of their great work on the anatomy and physiology of the brain, which was completed ten years afterwards, in four quarto volumes. They subsequently separated, Dr. Gall taking up his residence at Paris, and Dr. Spurzheim continuing to travel extensively through Europe, collecting new facts, and teaching phrenology wherever he could find hearers. In 1832, he visited the United States, and died at Boston, a few months after his arrival. Dr. Gall died at Paris, in 1828.

Were we attempting to give a full history of the origin and progress of phrenology, we should assign a conspicuous place to Mr. George Combe, of Edinburgh, whose writings have done far more to recommend the subject, than those of Gall and Spurzheim. Edinburgh has been for several years the stronghold of this science. A monthly journal, devoted to the inculcation of its doctrines, is published there under the auspices of Mr. Combe.

In our own country phrenology has attracted much attention. The writings of Spurzheim and Combe have been extensively circulated, and we have had several 'Manuals' and 'Outlines' of native growth. Itinerant lecturers too, emulating the zeal of the peripatetic fathers of this sect, have travelled through the land, expounding the principles of the science, and guaging the heads of all who were willing to pay their dollar to be informed of their true character and prospects. It is not surprising that these lecturers have been popular. They find something good in every head submitted to their inspection, outside of the walls of a prison. If there should chance to be in any case a suspicious development of a wicked organ, they are at no loss to find a controlling influence in the unwonted strength of some good propensity. It is so exceedingly pleasant to be flattered into a good opinion of one's self, not by astrology, reading the character in the stars, nor by palmistry, detecting it in the lines of the hand, but by a true science, uttering its oracular responses upon indubitable evidence, that we do not wonder that Merlin, with his white beard and mystic wand, is quite out of fashion, and that the wandering gipsy has been fairly driven from the field. The cheapness too of this mode of self-knowledge renders it highly attractive. Who, that has toiled in fulfilment of the "heaven descended, *know thyself*;" with much meditation and inward searching, seeking to penetrate into the recesses of his heart, and with much wearisome watching, endeavouring to detect in his actions the outward manifestation of feelings not otherwise discoverable, and after all his labour, never fully satisfied that some coming emergency may not reveal to him unsuspected weaknesses and defects of character, would not willingly open his purse to pay for a knowledge of himself, furnished upon principles as certain as those which make known to us the motions of the heavenly bodies, and so precise in its accuracy, that it will give us numerical expressions for the relative strength of all our propensities. The troublesome process of ascer-

taining the character is reduced to a simple operation of arithmetic. Benevolence on a particular head is five, destructiveness three, and acquisitiveness two,—how comforting to the owner of it to know that there is a clear balance of two, against the probability of his ever being led to commit murder or break windows, and a still more decided balance of three, against his committing burglary or highway robbery. But let us leave these mountebank practitioners of the art, and enter on the examination of the principles of the science.

† The principles of phrenology, as given by Dr. Sewall, are ten in number. All that is essential to the system, however, may be comprised in the following propositions. 1. That the brain is the material organ of the mind, and necessary to all its operations. 2. That in proportion to the size of this organ will be the vigour of the intellectual faculties. 3. That the brain is a congeries of organs, thirty-five in number, each commencing at the medulla oblongata, and thence extending upward, in the form of an inverted cone, to the upper surface of the brain. 4. That each of these organs is the instrument of a distinct faculty, propensity, or sentiment of the mind, and that no mental operation can be performed without the aid of its appropriate organ; and further, that in proportion to the size of any organ will be the strength of the faculty which works by its means. 5. That we can judge of the size of the organs, and therefore of the character of the mind, by the external projections of the skull.

The opinion contained in the first of these propositions is not peculiar to the phrenologists. Three different theories have been held of the dependency of the mind on the body. That all the mental phenomena are the results of organization, thought being the necessary product of a material organ like the brain; secondly, that the mind is an immaterial principle, superadded to the organized structure of the body, but still requiring the intervention of a material organ for the performance of its acts; and, thirdly, that though the mind is in some mysterious way connected with the body, yet it does not employ any material instrument in carrying on its processes, except in such acts as have reference to material objects. The first of these opinions is materialism, and it can scarcely be stated in terms which do not convey its refutation. It supposes that matter, in a certain state, is capable of thought, volition, and affection. The second opinion, which teaches that the mind is a distinct principle from the

body, and yet so united with it, as to require the direct instrumentality of the brain in all its manifestations, is the one which has been generally embraced by physiologists and metaphysicians, and universally by the phrenologists, to whose theory indeed it is essential. In support of this opinion it has been urged that we find no symptoms of intelligence in animals that are not furnished with a brain, and, on the other hand, that wherever this organ is found, it is accompanied by some manifestations of mind. Those creatures which stand as the frontier instances of animal life, affording the feeblest and lowest indications of its properties, are found to possess merely a nervous thread or ring. As we ascend the scale of animal existence, we discover first a line of ganglions, or nervous plexuses; then a double column of distinct portions of nervous matter, forming a spinal marrow; this is succeeded by a cerebellum; and this again by a cerebrum, or brain proper. Each of these additions to the nervous system always includes the inferior parts. A cerebrum is never found without a cerebellum, nor the latter without the subordinate system of nervous ganglions. Commencing with the animals that possess the simplest form of the brain, we find this organ, as we ascend, becoming more complicated and perfect in its structure, until we reach the human brain; and at every step of the scale in tracing its gradual refinement, we find each successive improvement marked by some addition or enlargement of the powers of the animal. It has been moreover found that the human brain is gradually evolved from a much simpler form. Its earliest state shows no symptom of that elaborate organization which it ultimately attains. From a laborious examination of the condition of the foetal brain, Tiedemann has shown that this organ attains its complicated structure by gradual progress through much simpler forms. This might have been anticipated, for Harvey had already proved that the growth of the human foetus was not by the mere enlargement of parts already possessed, but by the evolution of successive forms of organization. Tiedemann has succeeded in proving not only that the brain is thus developed, but that there is an exact parallel between the *temporary* states of the foetal brain, during the periods of advancing gestation, and the *permanent* development of that organ at successive points of the animal scale.

The gradual unfolding of the intellectual faculties from infancy upward, corresponding with the advance of the brain from its soft and pulpy state to its perfect form, is urged as

another reason for believing that this organ is the instrument of all mental manifestations. And in old age, when the brain becomes shrivelled and dry, the powers of the mind decay. These facts are deemed irreconcilable with the supposition that the exercises of the mind are the exclusive product of a spiritual or immaterial principle, since such a principle cannot be supposed capable of alteration, of growing with the growth of the body, and of decaying with its decay.

Nor are other plausible arguments wanting. Whatever destroys the integrity of the brain, impairs or deranges the mental faculties, if it do not utterly abolish them; and even a functional disorder of this organ never fails to manifest itself in the complete delirium, or at least the weakened energy of the mind. In cases of fractured skull, when a portion of bone, or the extravasated blood of some of the encephalic vessels, compresses the brain, there is a total suspension of all mental activity; and the mind awakes again from its unconscious lethargy as soon as the operation of the trephine has removed the compressing cause. When the brain has been exposed, as in the noted instance of the female cited by Richerand, the pressure of the finger upon it has been instantly followed by a state of unconsciousness, which would continue until the pressure was removed.

The phenomena of sleep and dreaming also are supposed to be inconsistent with the hypothesis that the mind acts without a material organ, while they are easily explicable, if we consider the mind dependent upon the brain, and therefore controlled in its actions by the partial suspension of the functions of this organ during these states. Since an immaterial principle is simple and indivisible, it must be incapable of any alteration of structure or disarrangement of function, and of course exempt from disease. The frequent occurrence of temporary delirium and of permanent insanity is therefore urged in further proof of the proposition that the brain is the organ of the mind.*

Such, substantially, are the facts and reasonings by which it is thought that this truth is established. Nor are they des-

* We have omitted purposely one argument urged by Mr. Combe, and repeated by others, in defence of this proposition. He asserts that "consciousness or feeling localizes the mind in the head, and gives us a full conviction that it is seated there." If Mr. Combe really has this consciousness, he needs no better evidence than it affords, that *his* mind thinks by help of his brain, but this gives no help to those of us who are unfortunately not conscious of the locality of our minds.

titute of force. They unquestionably prove that there exists some connexion between the brain and the mind, in virtue of which they exert a reciprocal influence, but so may it be proved also that all the other vital organs act upon the mind, and the mind upon them. Strong emotions generally show their first physical symptom in the accelerated or retarded action of the heart. And hence some modern physiologists, particularly Bichat, who hold that the brain is the organ of the intellectual faculties, have revived the ancient doctrine of the Greek physicians, that the affections and passions have their seat in the viscera of the abdomen and thorax. And certainly if any stress is to be laid, as is usually done, in argument upon this subject, on the common sentiment of mankind, as indicated by their language, referring intellectual exercises to the *head*, we have equally good reason for affirming that the feelings have their local habitation in the *heart*.

In considering the question, whether the brain is the organ of the mind, we find a difficulty in arriving at a conclusion, from not knowing exactly what is intended. We understand what is meant when it is said that the lungs are the principal respiratory organ, or the heart the chief organ of the circulating system. The alternate expansion and contraction of these viscera produce respiration and circulation. When they are in healthy action, the presence of the air or of the blood is all that is necessary to the production of their several effects. They are, therefore, very appropriately called the organs or instruments by which those effects are wrought. So long as the vital forces animate them they accomplish their ends without the aid or concurrence of any other agent. It will not be maintained that the brain is, in this sense, the organ of thought by any but the materialists. We can see a fitness too in designating the eye as the organ of vision, and the ear, the organ of hearing. The eye is evidently and expressly constructed for the purpose of conveying the image of the external object to the retina of the eye, and thus producing the mental state called seeing. It is directly and causatively employed by the mind as its instrument in every act of vision. And since the eye, the ear, and all the apparatus of the external senses, communicate by their appropriate nerves, with the brain, we are led to suppose that the last physical state, antecedent to the mental perception of external objects, takes place in this apparent centre of the nervous system; and this may be deemed a sufficient reason

for styling the brain, the organ of sensation. A similar ground exists for supposing that the brain is the necessary instrument of the mind in executing such volitions as have for their object any change of its bodily state. The nerves of voluntary motion are connected, through the intervention of larger medullary masses, with the brain, and this arrangement, together with some corroborating facts, induces us to suppose that the motive impression of the will is propagated from the brain to the muscle in which the motion takes place.* We may consent, on this account, that the brain should be called the organ of the mind in all its states and acts which connect it with the material world. But we suppose that much more than this is meant by those who contend for the unqualified proposition that the brain is the organ of the mind. Indeed Mr. Combe illustrates the sense in which he uses these terms by a reference to the eye as the organ of vision, and asserts that "if the brain be the organ of the mind, it will follow that the mind does not act in this life independently of its organ, and hence that every emotion and judgment of which we are conscious, are the result of mind and its organ acting together; and, secondly, that every mental affection must be accompanied by a corresponding state of the organ, and *vice versa* every state of the organ must be attended by a certain condition of the mind." We are prepared here to join issue, and maintain that we have no sufficient evidence for believing that the brain is, in this strict sense, the organ of the mind in all its operations. When the mind wills to move the arm, we are ready to admit that it may employ the brain in transmitting the motive impulse to the muscle, but when we are told also that it cannot frame the volition itself, without some pre-

* The opinion that the immediate physical antecedent of a mental sensation, or the immediate physical consequent of a volition, takes place in the brain, is by no means incontrovertible. It may be maintained, and with much plausibility, that the physical state which exists in immediate proximity to the mental one is in the nerves, while the office of the brain is to supply that influence, whatever it may be, which maintains the vitality of the nervous system. This hypothesis is equally consistent with the anatomical structure of these organs, and will explain equally well, most, if not all, the facts of the case. If the optic nerve, for instance, be divided, the power of vision is destroyed. On the one hypothesis this would be explained by stating that the image on the retina of the eye no longer conveyed to the brain the impression which must necessarily affect that organ in order to induce the mental act or state of vision. On the other, it would be accounted for by the consideration, that the nerve, being dissevered from the brain, had lost its vitality, and was therefore incapable of discharging its appropriate function in influencing the mind. It is an extremely difficult matter to establish the proximate relation of cause and effect between our mental and our bodily acts.

vious stimulus or concurrent help of the medullary substance, we are constrained to demand some further evidence than has yet been given.

The law of continuity which is said to prevail throughout the animal creation, connecting, at each point of the ascending series, a brain of more elaborate construction with higher manifestations of intelligence, is of very slender force. Such laws are at no point of the scale so likely to be interrupted by a discontinuous instance as at one of its extremities. The law of gravitation, which is true for all sensible distances, gives place to some other law when the distance between the attracting particles becomes insensible. Admitting the instrumental dependence of the mind upon the brain, in the inferior animals, are we entitled to infer from this that the mind of man is thus dependent upon a similar organ? The analogy of anatomical structure has no weight in this argument, except upon the assumption of analogous functions. But is there such an analogy between the acts of a brute in the perception of external objects, or in any of its manifestations of intelligence, and the movements of the mind of man, when he reasons upon abstract truths and principles which have no relation to a material world, or when he feels the obligations which he is under to virtue and truth, that the same instrument which is employed in the production of the one, being somewhat more elaborately finished, will answer for working out the other? There is not more difference between the two acts of seeing and hearing, than exists between the highest instance of brute intelligence, and the act of the human mind in adoring and loving its Creator. But we believe that the eye, however exquisitely finished, can never become transformed into an organ of hearing; and why should we not as well believe, that the same organ which is employed by the brute creation in their low and limited manifestations of intelligence, cannot avail for the higher and dissimilar functions of the human mind? The difference in kind between these two classes of functions, would lead us, if we sought any material organ for the latter, not to look for one more exquisitely finished than that employed by the brutes, but for one entirely different. The greater complication and higher finish of the brain of man are sufficiently explained by the greater complexity of all his organs, and the higher kind of animal life which he sustains. Many vital arrangements are completed in the human body, of which we find only the first rudiments, or rough sketches, in the

lower animals. We need not, however, waste words in shewing the irrelevancy of the argument from the uniform proportion between the degree of intelligence and the finish of the brain in the lower animals, since the facts themselves from which the argument is generalized are insufficient to sustain it. It is not true that this proportion is observed with sufficient uniformity to warrant the general assertion. The brain of the beaver is not more elaborate or complicated in its structure, nor larger in its proportions, than that of the sheep. And, as if in mockery of this hasty generalization, of all the animals with which we are acquainted, the bee and the ant perhaps mimic most closely "the adaptive functions" of the human understanding.

We cannot attach much importance to the other argument, drawn from the correspondence between the growth and decay of the brain, and the progress and decline of the intellectual faculties. This argument, it will be seen, derives all its force from the synchronism between the two classes of phenomena, but this synchronism is not invariable. There have been many instances of precocity in children, whose brains presented, upon examination, the usual soft and pulpy appearance; and there have been many old men who have preserved their mental faculties to the last in an unusual degree, and whose brains have been found as dry and hard as in other cases where the powers of the mind have almost entirely disappeared. These, however, are exceptions. The general law is undoubtedly true, that while the brain is undergoing one series of changes, the mind is passing through another series. But is this sufficient, even if invariable, to establish between them the relation of cause and effect? Certainly not, if there be any other hypothesis than that of their mutual dependence, which will equally well explain the facts. There is nothing in the change that takes place in the brain, that seems to bear a natural relation to the altered functions of the mind. In infancy when the brain is pulpy, the child is a creature of sensation;—when the brain has become harder, we find the child capable of reflection; but we can discern no reason in the anatomical structure of the organ, why a hard brain is any more fitted than a soft one, for the instrument of reflection; or why when it has become hardened beyond a certain point it should be again unfitted for this office. The structure of the organ does not, as in the case of the eye or ear, give us any information respecting its office. There is nothing but the cotemporaneous occurrence of the changes in the brain

and the mind from which we can infer any relation between them. But something more than this is necessary to prove that they are connected as cause and effect. Since the changes which take place in the brain are but part of a train of changes which are going on throughout the vital economy, there must be some sufficient reason for selecting them as exclusively connected with the growth of the mental faculties. No such reason can be found. The changes in the brain, and in the mind, may both, for aught we now know or are likely to know, be independent effects of some third cause. The varying state of the mental powers from infancy to manhood, and from manhood to old age, proves that the mind is so connected with the body as to be influenced by the state of its vitality. We can have no reason for believing that this influence is communicated solely through the brain, unless it can be shown from the structure or other functions of this organ, that it has been adapted to fulfil this purpose; or unless by a series of experiments we can eliminate the changes in the brain from the other changes which take place simultaneously throughout the system. It has indeed been urged that we are acquainted with the functions of all the other organs of the body—that each part has its particular office—that the use of the brain is not understood—and that if it is not the organ of the mind, “there is left for it nothing to do, no purpose to answer in the economy, for no one has yet suspected that it has any other function than that connected with mental manifestation.”* It would be a sad thing indeed to leave an organ of such rare and curious construction as the brain with nothing to do, but there have been very violent suspicions that it has some important duties to perform besides assisting the mind in its labours. Whether in partnership with the mind or not, it carries on a pretty important business on its own account. M. Legallois has published a learned essay, detailing many experiments, all going to prove that the principle which animates each part of the body, has its seat in that portion of the medullary substance whence its nerves originate; and it has been very generally supposed that what has been vaguely called the nervous influence, subserved important purposes in the animal economy. Dr. Wilson Philip has attempted to prove that secretion is due to nervous influence; and Magendie has clearly shown that the nutrition of the eye depends upon the fifth pair of nerves.

* *Christian Spectator*, vol. vi. p. 504.

Though great obscurity rests upon the functions of the brain, no one has doubted that this organ, with its associated system of medulla, spinal marrow, and nerves, distributes to the heart, the lungs, and through the whole frame, some influence necessary to the perfection of its organic life. And if this were not so, in admitting the brain to be the organ of the mind in sensation, and in producing voluntary motion, we have assigned to it an office of sufficient importance to relieve us from the necessity of finding some other duty for it to perform.

The remarks already made will be found to apply to the other arguments drawn from the suspension of the mental powers from injury to the brain, and from the phenomena of idiocy and insanity. The brains of the idiotic and the insane have been examined in hundreds of cases, and in by far the greater part of them there has been found no peculiarity of organization, no alteration of structure, no symptom of disease. The comatose state produced by compression of the brain does not prove that the intellectual faculties depend solely upon this organ, unless it can be shown that no other part of the body suffers at the same time with the brain. The intellect may possibly be connected with the life of the body at some other point, which, by the injury of the brain, has lost the supply of an influence necessary to the healthy discharge of its functions. While we have no sufficient reason therefore from the coincidence between an injury of the brain and the loss of intellect to believe that the one is the immediate cause of the other, we have, on the other hand, many facts which are hardly reconcilable with the doctrine that the brain is the organ of the mind. This organ may often receive the most extensive injury without any detriment to the mental faculties. Though the sudden effusion into its substance of a portion of blood, not larger than a pea, is often followed by the total loss of consciousness, yet, in other cases, large tumours have been found in the encephalon, which must have compressed the brain for years, without producing the least mental defect or aberration. Hydrocephalous patients, it is well known, will live for years with undiminished mental faculties, though there may be several pounds of water in the skull, entirely displacing the brain, and compressing it greatly, if not absorbing the larger part of its substance. Hundreds of cases are also upon record similar to the one of which we have recently seen an account, reported by M. Nobil to the Medical Society at Ghent. A

young man fired a pistol, loaded with two balls, at his own head. The balls passed through the head and came out at the same orifice, and with them came a portion of the brain sufficient to fill two moderately-sized tea cups. The wound was dressed for twenty-eight days successively, and at each dressing a portion of the brain came away. He recovered from the injury, with no other inconvenience than the loss of sight. His intellectual faculties were unimpaired, though the loss of cerebral substance amounted to not less than the whole of the left anterior lobe of the brain.* If the brain be the organ of the mind, it is difficult to understand how it can receive such injuries, occasioning in some cases the loss of even half its substance, without interfering at all with the mental operations. Neither the heart, the liver, or the lungs, can undergo as extensive lesion, as the brain has often suffered with impunity, without destroying all the manifestations of mind. It is by no means characteristic of the only material organs which we are sure that the mind employs, the apparatus of the external senses and of voluntary motion, that they can be subjected to great mechanical injury without interference with their functions. Reasoning by analogy, therefore, from the only fixed and certain point in our knowledge of the material instruments employed by the mind, we should be led to doubt whether the brain could be its chief organ.

In the total absence of any conclusive arguments against it, this doubt is greatly strengthened by the *a priori* probabilities in its favour. The mind is furnished with material organs to assist it in all its operations that are connected with matter. We can see a necessity for this arrangement. There must be some point of transition at which the impressions made by material objects shall pass into mental perceptions, and at which a volition to move any part of the body, shall commence its physical effect. Without instruments properly constructed in adaptation to the susceptibilities of the mind, and the properties of matter, we must have remained forever ignorant of the external world, and incapable of producing any effect upon it. But we can see no fitness in the provision of a material organ for carrying on purely intellectual operations. That the mind cannot execute a volition, to move any part of the body, without the aid of the brain and nerves, is very certain; but we can discern no impediment to

* New Monthly Magazine, 1837, p. 144.

its forming the volition without the help of a material organ; nay, we find it difficult to conceive that it can need any.* And it would surely be a very anomalous arrangement if the same organ should be employed for two such different purposes as that of forming and then executing the volitions of the mind.

The natural expectation which we would be disposed to form of the independence of the mind upon the use of material instruments for its spiritual operations, is confirmed by our not finding in the body any organ which seems to be fitted for this office. All the organs of which we have any certain knowledge, have an anatomical structure and arrangement, which disclose their purpose and use. But we find nothing in the structure of the brain which would lead us to infer that it was intended to assist the mind in its intellectual and moral exercises. The only safe inference which we can draw from the anatomical structure of the nervous apparatus, is, that the stomach, heart, lungs, and all the vital organs, derive directly from the nerves, or through them from the brain, some influence which assists them in the discharge of their several offices; and that the nerves, in like manner, either immediately, or as channels of communication with the brain, are employed by the mind in the perception of material objects, and in the production of voluntary motion. These inferences from the anatomical affiliations and dependencies of the several parts of the bodily system, have been confirmed by observation and experiment; and the distinct offices performed by some portions of the machinery of the nervous system have been discovered. It has been found that there are nerves dedicated to the functions of sight, of smell, and of hearing, and that they are severally incapable of conveying to the mind any other than their appropriate impressions. If the retina of the eye, or the optic nerve, be touched or lacerated, the only sensation is that of a flash of light. It has been proved too, by Sir Charles Bell, that the nerves of sensation are distinct from those of motion,

* We are always glad when we can strengthen ourselves by the high authority of Bishop Butler, and we therefore quote, as pertinent to the present discussion, the following passage from his *Analogy*. "For though from our present constitution and condition of being, our external organs of sense are necessary for conveying in ideas to our reflecting powers—yet when these ideas are brought in, we are capable of reflecting in the most intense degree, and of enjoying the greatest pleasure, and feeling the greatest pain, by means of that reflection, without any assistance from the senses; and without any at all, that we know of, from that body which will be dissolved at death."

and that the former communicate with the brain through the two posterior, and the latter through the two anterior columns of the spinal medulla. Except these, and a few similar facts, nothing is certainly known of the physiology of the nervous system; and of all the conjectures which have been hazarded, that which supposes the brain to be an instrument, which, by the play of its medullary fibres, or the molecular action of its globular elements, or by some other mechanical or chemical operation, enables the mind to think, to reason, and to love, is the most preposterous and the least likely to be verified in the further progress of our knowledge. It is supported by no analogy from what we already know of the functions of the brain, and of the dependency of the mind upon material organs; it is confirmed by nothing that anatomical research has disclosed of the structure and collocation of the brain, with its subordinate members; and the facts which are adduced in its favour, lend it but a questionable aid, while other facts, equally well authenticated, bear their testimony against it. It is, at best, upon upon the most favourable construction of its claims, but a doubtful hypothesis; and the age has passed away in which it was allowable to construct a science upon an assumed hypothesis.

We might very justly rest the case with the phrenologists here, and call upon them for further proof of their fundamental position, that the brain is the organ of the mind. But we may admit the truth of this proposition, and yet we will find darkness and doubt gathering over the next step. It is worthy of special observation that the science of phrenology does not consist of a set of compacted truths, so articulated together as to impart mutual support, and establish firmly, by their combined strength, the system which they compose; it rests upon a series of disconnected propositions, in such a manner that the failure of any one destroys the whole superstructure. Let it be proved that the brain is the organ of the mind, this renders us no assistance in establishing the next essential doctrine, that the vigour of the intellectual faculties will be in proportion to the size of this organ. Let both of these be true, and we have yet to prove the entirely independent proposition, that the brain is composed of a plurality of organs, each one devoted to the elaboration of some particular faculty or sentiment, and working with an energy proportioned to its size. Or grant the truth of all the previous assumptions, and yet the whole science will be destroy-

ed, unless it can be demonstrated that the form of the brain may be determined by the external configuration of the skull. Every one of its doctrines can be shown to be doubtful, if not highly improbable, though the demonstrable truth of each of them is essential to the integrity of the system. No science ever was established, nor ever can be, with such a liability to error multiplying at every step.

The doctrine that the vigour of intellect will be in proportion to the size of the brain, is supported by arguments too loose and vague to deserve a place in a process of serious reasoning. Those of our readers who have never examined the foundations of phrenology, will be surprised to find that Mr. Combe, the great hierophant of its mysteries, can produce nothing stronger than the following arguments in favour of this important proposition. "First, the brain of the child is small, and its mental vigour weak, compared with the brain and mental vigour of an adult. Secondly, small size in the brain is an invariable cause of idiocy. Phrenologists have in vain called upon their opponents to produce a single instance of the mind being manifested vigorously by a very small brain. Thirdly, men who have been remarkable, not for mere cleverness, but for great force of character, such as Napoleon Bonaparte, have had large heads. Fourthly, it is an ascertained fact, that nations in whom the brain is large, possess so great a mental superiority over those in whom that organ is small, that they conquer and oppress them at pleasure. Lastly, the influence of size is now admitted by the most eminent physiologists." The last of these arguments we shall not examine, since we have no disposition just now to search for the conflicting opinions of eminent physiologists, and an appeal to authority is so questionable a procedure in establishing the foundations of a science, that we cannot consent to abide by its issue. The other reasons are scarcely worthy of consideration, as a proof of the influence of the size of the brain upon the strength of the intellect. Taken at their fullest value, they create only a very slender probability in favour of the opinion in question. The brain of the child, it is true, is small, when compared with the brain of the adult, but it is also true that it undergoes other changes in the progress from infancy to manhood, quite as important in character as its increase of size. In the foetus the brain is semi-fluid, in the infant it is still so soft as to be almost incapable of dissection, and it becomes gradually more consistent in its substance, and more distinctly marked with convolu-

tions through the successive years of youth. The addition to its volume is a much less remarkable circumstance than the change in its character, and there can be no reason therefore for selecting the former as the cause of the increase of mental vigour. If the phrenologist replies that he means his assertion to be limited by the condition of "other things being equal," we have no objection so to receive and discuss it; but in this case it is strange that the comparative states of the brain and the mind, in the infant and the adult, should be brought forward as an argument, when it is impossible that the limiting condition can take place. Other things are not equal in the infant and the adult brain, and the phenomena exhibited by its two states can of course have no bearing, either one way or the other, upon the doctrine that the size of this organ, *ceteris paribus*, determines the vigour of the intellectual manifestations.

But we are further told that a small brain is the invariable cause of idiocy. This information is at variance with the notions which we would naturally form. If the brain be the organ of the mind, we should expect that the entire deficiency of medullary substance would be accompanied by complete mental imbecility, but that a small portion of it would be attended by some exhibitions of mind. Why should not a small instrument suffice the mind for working out small results? This reasonable expectation must, however, yield to experience and observation. Has it then been ascertained that, except in cases of disease, a small brain and idiocy are invariably associated together? Such has not been the result of our observation. We have seen idiots whose heads were of a very respectable size, and some even in whom this member was uncommonly large. The heads of many such have been examined after death, and no symptoms of disease in the structure or functions of the brain have been discovered; and none were visible during life, unless, by a *petitio principii*, the idiocy itself, of which we are seeking the cause, is to be taken as evidence of a diseased brain. There have been many instances, too, in which idiocy has been produced by a moral cause, as in the following case, reported by Pinel. Two brothers, conscripts in Napoleon's army, were fighting side by side, when one of them was shot dead. The other was instantly struck with complete idiocy, and, upon being taken home, another brother was so affected by the sight of him, that he was immediately seized in like manner. In such cases the size of the brain remains unaltered, and

there can be no other disease than one of function. It is indeed barely possible that the mental emotion may act injuriously upon the brain, and this organ then re-act upon the mind, but it is to the last degree improbable, and there is no necessity for supposing this order of sequences to take place, except the necessity that phrenology should be true. These cases are decisive of the question, so far as the argument from idiocy is concerned. They show that while the brain has remained *in statu quo*, unchanged in size, and, so far as we have any evidence, free from any organic or functional disease, the mind has passed from a state of activity to one of complete torpor. Nor are there wanting countervailing facts at the other end of the argument. Not only do we find idiocy connected with a large brain, but we are met also by numerous instances of vigorous intellect where the brain is unusually small. In proof of this we shall content ourselves, and we presume satisfy our readers, with the testimony of Professor Warren, as given by Dr. Sewall. This distinguished anatomist has had, in the opinion of Dr. Sewall, as great opportunities for dissecting the brains of literary and intellectual men of high grade, and of comparing these with the brains of men in the lower walks of life, as any anatomist of our country, if not of the age. The result of his observation is, "that in some instances, a large brain had been connected with superior mental powers, and that the reverse of this was true in about an equal number. One individual who was most distinguished for the variety and extent of his native talent, had, it was ascertained after death, an uncommonly small brain." Dr. Sewall adds, that the experience of eminent anatomists of all times and countries, who have paid attention to the subject, will be found in strict accordance with that of Doctor Warren. But let us now grant what we have shown to be not true, that the facts of the case are as stated by Mr. Combe, and it will nevertheless be seen that his inference from them is altogether unwarrantable. Though it should be true that a small brain was invariably connected with a feeble intellect or entire idiocy, it by no means follows that the diminutive size of this organ is the cause of the mental deficiency. How can it be ascertained that the small development of the brain is not itself caused by the original febleness of the intellect? Or how shall it be proved that the smallness of the brain and the febleness of the intellect are not both produced by some early defect in the kind of action, whatever it may be, chemical or mechanical, which

must take place in the brain to assist the mind in its intellectual operations ?

Mr. Combe can hardly be considered more fortunate in his third argument for the influence of the size of the brain. All men, he asserts, who have been distinguished for great force of character, as Napoleon Bonaparte, have had large heads. If the remark is intended to be confined to men of the same grade of character with Bonaparte, we deny that we have the necessary knowledge of a sufficient number of heads to afford ground for a general induction. We presume there are no authentic casts of the heads of Alexander, Julius Caesar, Hannibal, or Mohammed. We know not how we are to gauge the skulls of the mighty conquerors of past ages, and in the present, there are not enough who can be placed in the same category with Bonaparte to warrant us in inferring any connexion between the magnitude of their heads, and the greatness of their achievements. If the assertion is not to be so strictly limited by the instance adduced, it is effectually turned aside by the testimony which we have already adduced to prove that high intellectual ability is as often found in connexion with a small as with a large brain.

But it is an ascertained fact that nations, in whom the brain is large have always conquered and oppressed at pleasure those who were so unfortunate as to have smaller heads. When, and by whom, has this important historical fact been ascertained ? The only confirmation of it given by Mr. Combe is the subjugation of the Hindoos, and the native Americans, by Europeans. Are these two instances sufficient to establish a general truth ? Had the Romans larger brains than the Greeks, and the Goths still larger than the Romans ? When the many nations that, in the history of our race, have stood in their pride of place, with their feet upon the necks of others, have been overthrown, and reduced to a state of dependence or servitude, has it been owing to a gradual decrease in the size of their skulls ? Have we any reason for believing that the heads of the ancient Egyptians diminished after the time of Sesostris ? Were the brains of the Moors smaller when expelled from Spain than they were at the period of its subjugation ? Are the heads of the Popes, since Luther's day, more diminutive than those which enabled the Urbans and Gregorys to domineer at will over Christendom ? If this fact be indeed ascertained, then is your grave-digger the only true historian. National pride may have led to the forging of boastful records, but the skulls of the past genera-

tions, if we can but find them, will give us a true account of the relative position of the people to whom they belonged. The charnel house and the mummy pit are the true depositories of the secrets of the past.

Such are the arguments by which the most learned and able of the advocates of phrenology establishes one of its fundamental truths. We will engage to prove, by a train of reasoning equally sound, that any other variable attribute of the human body, the colour of the hair, or the projection of the nose, is the true original cause of the different degrees of intellect observable among men. But liberality of concession in argument with the phrenologists is so small a virtue, that, without any danger of self-elation, we may again grant all that they ask. Supposing it then to be demonstrated, beyond all reasonable doubt or captious cavil, that the brain is the organ of the mind, and that its size determines the vigour of all intellectual manifestations, what light have we to guide us in our farther advance?

The brain, we are told, is a congeries of organs, thirty-five at least in number, each appropriated to the service of some faculty, sentiment or propensity of the mind, and proportioned in size to the vigour of the intellectual property which is manifested through its agency. Each of these organs is supposed to be double, composed of two cone-shaped portions of medullary substance, which have their origin at the base of the brain, and thence extend to opposite points of its outer surface. In proof of this plurality of organs, we might reasonably expect to be furnished with some evidence from the anatomical structure of the brain. But it is not even pretended that any such exists. When the integuments of the brain are removed, its surface is seen to be marked by convolutions, separated from each other by grooves, more or less deep; but these convolutions have no correspondence in size, position, or form, with the organs of the phrenologists. The brain has been, in thousands of instances, subjected to the most rigid examination; chemical tests of all kinds have been applied to it, and the microscope has been called in to aid in the scrutiny, and yet there has been nothing found to warrant the belief, nor even to create a surmise, that it is composed of a number of distinct organs. Whether the brain is or is not thus divided into thirty-five organs is an anatomical fact, and it must be decided by the scalpel of the dissecting room. Mere abstract reasoning, upon general probabilities, or by analogy from the single functions of our

other organs, except it be for the purpose simply of forming a conjecture to guide in the anatomical examination, is utterly out of the question, and can serve no other purpose than to make known the stupidity of the reasoner. It is at all times a sufficient refutation of what purports to be the statement of a fact, to show that the only kind of evidence by which the fact could possibly be ascertained does not exist. And we maintain it to be utterly impossible to prove that the brain is divided, as the phrenological hypothesis supposes, in any other way than by discovering the evidences of such division in the structure of the brain. Should any one propose to examine, as indeed Flourens, Bouillaud, Rolando, and others have done, whether the cerebrum, the cerebellum, the thalami optici, the corpora striata, the medulla oblongata, had each a distinct office to perform, we should listen respectfully to the account of his experiments, and to the arguments founded upon them. These are distinct portions of the brain, some of them separated by an interposed membrane from others, and all of them capable of separate anatomical demonstration; and it is possible that they may preside over different functions. But when the phrenologist offers to explain the distinct offices of thirty-five separate organs in the brain, it could hardly be deemed an incivility if we flatly refused to hear one word of his explanation, until he had first proved the existence of the organs in question. But instead of any such proof, we are told, that since the mind exercises different faculties there must be different organs, by means of which they operate. Because of a difference between two mental affections, we are to believe that each of them has its own separate cone of the brain wherewith to work out its effects, although we have the evidence of our senses that no such conical organs exist. It is impossible for the wit of man to frame thirty-five different classes of mental phenomena, in which many of the lines of division shall not be shadowy and evanescent; and yet on the ground of these uncertain distinctions we must believe that there are thirty-five separate cones, though no symptom of the existence of any one of them can be discovered. We are not yet quite ready for this; and we hope not to be chided for our unbelief; perhaps we may be better prepared for it, after we have gone through a course of discipline in homœopathy and animal magnetism.

No traces of separate organs in the brain, not the least vestige of any internal fibrous structure at all correspondent to

them, was ever supposed to exist until Dr. Gall's theory rendered it necessary to imagine them. With singular hardihood, he proceeded to map out the skull into portions answering to the termination of his twenty-eight internal cones of brain, while in the profoundest ignorance of the real structure of this organ. We are aware that we are somewhat singular in bringing this charge of ignorance against Dr. Gall. It has become quite fashionable, in controverting the doctrines of the phrenologists, to laud them for their valuable contributions to physiological science.* We do not profess to be very learned in these matters, but in what we have said of Dr. Gall we lean upon the testimony of one, who of all living men is perhaps best entitled to speak authoritatively upon this subject. Sir Charles Bell, in the *Philosophical Transactions* for 1823, thus speaks of the great founder of the sect. "But the most extravagant departure from all the legitimate modes of reasoning, though still under the colour of anatomical investigation, is the system of Dr. Gall. It is sufficient to say that without comprehending the grand divisions of the nervous system; without any notion of the distinct properties of the individual nerves; or without having made any distinction of the columns of the spinal marrow; without even having ascertained the difference of cerebrum and cerebellum; Gall proceeded to describe the brain as composed of many particular and independent organs, and to assign to each the residence of some special faculty." Though Dr. Gall's successors may have better understood the anatomy of the brain, they have as yet given us no better reason than the original metaphysical necessity for believing that there are separate cone-shaped portions of matter, where our senses, however acutely exercised, cannot discover them.

* We have even met with an eulogium upon the phrenologists for the benefits they have rendered to the cause of education, and the general improvement of society. And to prove that there was no exaggeration in this praise, reference was made to Mr. Combe's work, "On the constitution of man considered in relation to external objects,"—surely a most unfortunate illustration. The great object of Mr. Combe in this work is to show that man has been made subject to three classes of laws, physical, organic, and those which characterise an intelligent and moral being; and that suffering is the penalty for violating any of these laws. In other words, if he steps over a precipice he will fall, and injure himself,—if he overloads his stomach he will suffer from indigestion,—and if he is cruel, his bump of benevolence will take offence and hurt him. Strip this book of its phrenological cant, and it will be found to contain only stale truisms, some of which are known to the child after a few of his first falls, others from the time he has been made sick by eating green fruit, and all, when he has read Butler's *Sermons on Human Nature*, and any elementary treatise on Political Economy.

And what are the reasons given, for believing, in opposition to our senses, the constituted judges of material existences, that the brain is composed of separate organs? We are informed, in the first place, that the liver secretes bile, the stomach digests food, that every organ, in short, performs but a single office, and it is therefore contrary to analogy to suppose that in the different operations of the mind the same organ is employed. None but the merest sciolist need be told that analogy, in searching into the unknown processes of nature, is at best an uncertain guide, and that its only use is to furnish us with hints and probabilities of what may happen, to stimulate and guide us in our search. But least of all are analogical deductions worthy of confidence, when they are applied to a department of nature widely different from the one from which they are drawn. The liver, the lungs, the stomach, and the other bodily organs, under the stimulus of the vital forces, produce their several mechanical or chemical effects. They act upon matter, and their product is material. Can we expect these organs then to furnish us with any analogies that can shed light upon the action of an organ which does not act by itself, but in direct connexion with the mind, and which produces not a material, but a spiritual effect? We would much rather take our chance of lighting on some useful discovery, in company with the German scholar who has applied the law of gravitation to elucidate the mysteries of Greek metre.

If the phrenologists still adhere to their analogical argument we should be disposed to try upon them the practice of another sect of German origin. The same thing that has made us sick, it is said, will make us well again; or according to the poetic mythos which first shadowed forth the doctrine, the man who has scratched out both his eyes by jumping into a bramble bush, will scratch them in again by jumping into the same bramble bush. Let us try then a similar specimen of analogical reasoning. All the organs of the body, which perform different functions, are widely different from each other in form, structure and substance. The eye bears no resemblance to the ear, nor the heart to the lungs, nor either of these to the liver or the spleen. Let any one of these, or any considerable portion of one of them be dissevered from the rest and presented to an anatomist, he will at once identify it. What then can be more certain than that the mental organs, the separate existence of which is inferred from the difference of their functions, must, for

the same reason, be dissimilar in their appearance and their internal mechanism. We have the same argument for their distinct and recognizable unlikeness, that we have for their existence. But unfortunately these organs are all alike in their form and substance. Precisely the same kind of medullary matter, and fashioned into the same shape, will work out love or murder, arithmetic and algebra, or Greek and Hebrew, veneration for the Deity or destruction to a street lamp, according to its position within the skull. Our analogy is however as good as theirs, and if they insist upon different organs, we shall insist upon a substantial difference of structure between them. Not much subtlety is requisite to involve the phrenologists in any number of like absurdities, by following their own line of argument, and without pressing it beyond the limits to which their example leads us.

The unexplained mysteries of sleep, dreaming and somnambulism, are also pressed into the service of the phrenologist. These wonders are all easily explained by the consideration that some of the organs are active, while others are in repose, whereas, "were the organ of mind single, says Mr. Combe, it is clear that all the faculties should be asleep or awake to the same extent at the same time." It is no more clear to us that all the faculties should be awake or asleep together, than it is that all the organs should follow the same law; and it strikes us as really surprising that any man of common penetration should imagine that he had at all simplified the difficulty of this case, by stating that some of the mental organs happen to fall asleep while others keep awake. All the facts can be as well explained, better indeed, by the imperfect action of one organ, modified by the periodical state of the system, than by the hypothesis of different organs, some of which are standing sentinel over their sleeping comrades, and meanwhile playing all sorts of fantastic vagaries.

Another proof is afforded by the fact, "that genius is almost always partial, which it ought not to be if the organ of the mind were single." When bald assertions of this kind are given out as arguments, and the premises to which they lead boldly assumed, there can be no difficulty in constructing new sciences at pleasure. Philosophy may rock herself again in the cradle and dream true sciences without end. We are utterly unable to see why an aptitude for excelling in particular pursuits may not as well be owing to some peculiar condition of one organ, as to the comparative state of different organs; nor can we perceive why the diversities of

talent which we observe among men, may not be still better accounted for, than on either of these hypotheses, by supposing an original disparity of mind. We have not the least ground furnished by abstract reasoning upon the nature of the mind, and surely none from observation, for believing that all minds are alike in their original susceptibilities and powers.

The phenomena of partial insanity are also said to contradict the notion of a single organ of the mind. It will not be expected, under this head, that we should discuss the adjudged case of the man who heard angels sing with one side of his head, and devils roar with the other. Nor yet that of the worthy clergyman of Spurzheim, who was insane on the left side of his head, while with the right side he perceived the insanity of the left, and who, though cured, had a recurrence of this one-sided insanity whenever he got drunk. Phrenology is welcome to all the aid it derives from these cases, and they are the only ones with which we are acquainted, that lend it any support. Very often, in partial insanity, a single hallucination is visible, while in all other respects and upon all other subjects, the mind acts with its usual clearness and precision; and in no case that has come within our knowledge has there been any thing like a complete disorder of any one faculty or set of faculties. Instead then of giving countenance to the phrenological theory, they constitute an unanswerable argument against it. If this theory be true, the insanity which affects one organ ought to affect all the operations of that organ, unless we are to suppose that every particular fibre in that organ has its separate duty, that every particle of matter is consecrated to some one thought. To carry out the phrenological explanation of the phenomena of partial insanity, we must have as many organs as there are thoughts that pass through our minds and objects upon which we look. Insanity sometimes manifests itself in an unreasonable and unnatural dislike to a single individual, while the affections in all other respects, seem to flow equably in their usual channels. This ought to result therefore from the disease of an organ for loving that one person. There is a case reported by Pinel, of an ingenious mechanic of Paris, whose only symptom of insanity consisted in the belief that he had been guillotined in company with several others, and that when the judges, repenting of their cruelty, ordered his head to be replaced, the wrong head was unfortunately put upon his shoulders. He ever afterwards believed

that he was wearing another man's head. The difficulty here could not have been in the organ which is imagined to supply us with the feeling of personal identity, for the man had no doubt that he was still the same person, his only mistake was in relation to the sameness of his head. We cannot account for this, in consistency with the demands of phrenology, but by supposing that there is an organ whose sole prerogative it is to teach us the identity of our heads. It is singular that Mr. Combe could be so blind as to wind up his argument on this subject, with the question, if there be but a single organ of the mind, how comes that organ to be able to manifest one but not all the faculties? What more obvious than to ask in reply, how comes it that one of your detached organs should be able to work, on behalf of its faculty, with perfect soundness on some subjects, but not upon all? To carry out his objection, and give phrenology the advantage claimed for it, he must multiply the mental organs till they equal in number the hairs of the head.

This is not the only instance in which the phrenologists have seized upon a weak point, and attempted to convert it into a defence. The effect of partial injuries to the brain is also maintained to be in favour of their theory. The brain, as we have already remarked, may often receive considerable injury without any detriment to the mental powers, and it appears strange, says Mr. Combe, if the whole brain is a single organ, that all the processes of thought should be manifested with equal success, when a considerable portion of it has been destroyed. "The phrenologists," he adds, "are reduced to no such strait to reconcile the occurrence of such cases with their system; for as soon as the principle of a plurality of organs is acknowledged, they admit of an easy and satisfactory explanation." What that explanation is, he does not inform us, and we are left to conclude that this paradoxical trifling is put forth for the same reason that sometimes leads a man who is inly trembling with cowardice to affect the braggadocio. Nothing can more completely demonstrate the utter falsity of the phrenological theory, than the effect of these same partial injuries of the brain. Were all other presumptive evidence against it removed, that which arises from this source would be sufficient to prove its unsoundness. We have attested cases of injury of the brain in which portions of this organ, varying greatly in size and position, have been destroyed. Every one of the phrenological organs has been in turn annihilated or greatly injured, and yet in no one case

does it appear that the corresponding faculty was in the least debilitated. In the list of cases drawn up by Haller, and subsequently extended by Dr. Ferriar, and among the hundreds of like cases which have been reported by the most respectable medical authorities, we have accounts of injuries which cover the seat of all the faculties, and which have yet left the mental vigour undiminished. If it be strange then that the brain, being supposed to be the single organ of the mind, should work as efficiently when partially destroyed as when entire, shall it be thought less strange that all the faculties should get on quite as well when their several organs are entirely gone? Nothing more conclusive need be desired. That large portions of the brain can be removed, and their loss not be at all felt, does indeed cast doubt upon the opinion that the brain is, strictly speaking, the organ of the mind; it renders more than doubtful the doctrine, that the quantity of the brain is the measure of the intellect; but it proves, beyond all question, that the fancied organs of the phrenologists have no existence.

All their explanations on this point are feeble and unsatisfactory. They talk of the difficulty of estimating the degree in which any faculty is manifested, so as to compare accurately the mental condition of the patient before and after the injury, forgetting that this same difficulty must have beset them, with ten-fold force, in making the observations which have led to the location of the different faculties, and that if it is of any avail in disparagement of the testimony in question, it must operate with equal force to impeach the credit of their whole system.

The hypothesis of double organs is also appealed to in explanation of the difficulties of this case. In many of the instances of severe injury to the brain, one hemisphere only has been affected, and the integrity of the intellectual manifestations is attributed to the duplicates of all the injured organs which remain entire in the other hemisphere, and which are supposed to be still capable of executing their functions, even as one eye answers the purpose of vision, when the other is diseased or lost. Now, in the first place, this hypothesis of a *double* set of organs is a sheer fabrication, invented for the sole purpose of meeting this very case, and upheld by no other evidence than the identical phenomena to the explanation of which it is subsequently applied. The effects of partial injuries to the brain are brought forward to establish the position that each faculty is provided with a double organ, and

the duplicity of the organs is then made to interpret the same facts from which it has been inferred. This combination of the inductive and deductive process, in reference to precisely the same set of facts, is a novelty in philosophical reasoning, and it may be doubted whether it can lead to any very brilliant or useful discovery. Those of our readers who have ever witnessed the dissection of the brain, will not need to be told that this hypothesis of double organs is effectually discredited by the dissimilarity which is always found to exist between the two hemispheres of the cerebrum. The lobes on different sides of the *falx cerebri*, not only differ in different brains, but do not correspond with each other in the same head. But, in the second place, there are many cases in which the injury has been sustained by both hemispheres, and in similar portions; and yet the faculties have continued to act with their usual vigour, though both parts of their organs have been destroyed. The decisive evidence of these cases cannot be deprived of its weight by the general imputation of inaccuracy in the observation of the injuries sustained, or of their mental effects. If the phrenologists are entitled to assume, as they in fact do, that a belief in their mysteries is an indispensable qualification for making any correct observations upon the brain or the mind, the game is, of course, entirely in their own hands. But we fear that such men as Haller, Cooper, Bell and Magendie, will continue to speak, and that the public will receive their testimony. Still less is this evidence to be disposed of by the blustering pretence that, instead of demolishing, it really establishes the system of phrenology.

But if we grant all the propositions which we have thus far controverted, we shall find the system again giving way at the next point. Granting the existence of the phrenological organs, we are then required to believe that the size of each of them determines the degree of its energy, and imposes a limit upon the exercise of the faculty which is manifested through its agency. We are to receive this upon such evidence as the following. 'An old man showed his sons a bundle of rods, and pointed out to them how easy it was to snap asunder one, and how difficult to break the whole. The strength of the bones is proportioned to their size. A tube of three inches diameter will transmit more water than a tube of only one inch. A liver of four square inches will secrete less bile than one of eight inches.' The specimens which we have already given of this kind of analogical reasoning

between things totally unlike, were sufficiently ludicrous; but here, as if the secretions of the bodily organs were not of themselves remote enough from the operations of the mind, the inanimate world is ransacked for analogies to illustrate the laws according to which mental effects are produced. The mechanical effects of two machines of similar construction, will be in proportion to their size, but if this is considered sufficient to prove that the mechanical or chemical energy of the medullary organs will be increased with their magnitude, how shall it be shown, in our entire ignorance of the nature of the connexion between the faculty and its organ, that when this action has passed a certain limit it does not cease to produce its greatest effect upon the mind. There are two questions here which the phrenologists have been too ignorant or too cunning to distinguish. The one respects the efficiency of the brain in carrying on its secretions, or the play of its fibres; the other, the law according to which the product of the brain influences the mind. We may admit that any of the organs will secrete a more abundant supply of its fluid, or move its fibres with greater momentum, according to its size, but where shall we find any analogies to prove that the most successful exercise of the mental faculty depends upon the greatest possible product of its organ? It would be superfluous to attempt to show the impertinency of every effort of this kind.

We come now to consider the evidence in favour of the existence of the phrenological organs, and of the influence of size upon the manifestations of the faculties, which is said to be afforded by observation. Thousands of heads have been examined, and it has been found that those who were distinguished for any particular talent or disposition, have had a protuberance on similar parts of the skull, while those who were deficient in the same respect have had a corresponding depression. Phrenology is therefore a science of observation. It rests upon an immoveable basis, since its principles are all inductions from a great number of facts. Its opponents are in consequence challenged to disprove the facts, or receive the inferences drawn from them. Now it would be an easy matter to collect a set of astrological facts, and frame a theory in correspondence with them, which would be quite as stubborn and unmanageable as phrenology. Time was, when learned men believed that the stars shaped the character and course of our lives; that men were made "fools, by heavenly compulsion; knaves, thieves, and treachers, by

spherical predominance; drunkards, liars, and adulterers, by an enforced obedience of planetary influence." By casting many nativities, and noting the character manifested for each planetary ascendancy, we could construct as impregnable a bulwark of facts around the doctrine that every variety of character may be fully accounted for by the horoscope, as is now thrown up in defence of phrenology. Who would waste his time in casting the nativities and prying into the characters of his neighbours, to obtain rebutting facts? The observers have all been phrenologists, and, like the sailor whistling for a wind, they have of course found the coincidences which they expected to find.

Whether a protuberance on a particular part of the skull is the invariable sign of some special quality of mind or attribute of character is clearly a question of fact. The phrenologists assert that in all the instances which have come under their observation they have found it to be true, and in illustration of it they describe the heads and characters of particular individuals. We assert, on the contrary, that we have known many excellent mathematicians who had no projection at the outer angle of the eye where the organ of Number is placed, and also many very worthy and harmless persons who had an alarming development of the organ of Destructiveness. We do not choose, however, to cite names and discuss characters before the public, and every man must therefore decide for himself whether the results of his own observation confirm our testimony or that of the phrenologists.

In the mean time it will not be difficult to invalidate the conclusions of phrenology, by showing from the nature of the subject, that it is in the highest degree improbable, if not absolutely impossible, that a sufficient number of facts can as yet have been collected to establish the science. There is, in the first place, an appalling difficulty arising from the number of organs to be located. These are thirty-five in number. At the outset of the investigation, nothing was known of the situation of any one of them, and the only means of determining their relative position was by a compound observation of characters and skulls. An individual must have been selected, who was distinguished for some quality, and out of the thirty-five protuberances with which his skull was marked, the one which was the true cause of his remarkable trait of character must have been eliminated by a process of comparison with other heads. Any algebraist who will un-

dertake to solve a problem involving thirty-five different equations, each containing as many unknown quantities, will need no other refutation of phrenology. But this would not be attended with the thousandth part of the difficulty which besets the attempt to locate the phrenological organs by observation. The problem of which the phrenologists profess to have given us the solution is of a much more formidable nature. Thirty-five different faculties are given, to determine by observation, the signs of each of them upon the cranium. Now the possible permutations of thirty-five different quantities surpass our powers of conception; the number which expresses them contains forty-one places of figures! The difficulty of proving that any particular one out of this infinite number of possible permutations in the organs is actually marked upon the skull, is so great that we may, without presumption or discourtesy, pronounce it insurmountable. Ages upon ages of observation would be necessary to verify any particular hypothesis; and in the mean time phrenology is not entitled to assume at best any higher character than that of a lucky guess.

The impossibility of demonstrating it to be true by facts, will be still further confirmed, if any confirmation be necessary, when we consider the inherent difficulties in the way of correct and satisfactory observation. It is alleged that facts have proved that the vigour of each intellectual manifestation is in proportion to the *size* of its organ. But the size includes two elements, the *length*, measured from the medulla oblongata, and the *breadth*, estimated by the superficial area of the base; and we need no better evidence of the difficulty which must have embarrassed the pioneers of the science in determining what influence was due to each of these elements, than is afforded by the fact that we are even yet furnished with no canons upon this subject. We are told that the size of the organs must be ascertained, and that in forming our judgment of the size, we must take account both of the length and breadth, but we are not told what relative weight must be allowed to these two constituent elements. Suppose two organs are found to be to each other in length as *three to four*, and in breadth as *three and a half to four*, what proportion do they bear to each other in size? What are the mental effects of the lateral expansion of one of the organs, in comparison with its projection? Is it the increased number of the fibres, or their increased length, or a certain determinate ratio of the one to the other, that produces the most

vigorous action of the faculties? Is it even pretended that this point has been satisfactorily decided? And yet it is plainly impossible that the fundamental position respecting the influence of size can have been proved by observation, without a preliminary or concurrent adjustment of this subordinate question.

Another ground of doubt as to the value of the facts by which it is said the science has been established, is presented by the evident difficulty of measuring the dimensions of the organs. The thirty-five organs are not so detached from each other that they can be examined separately; they are all crowded within a narrow compass; and the bases of most of them are extremely limited. No less than five are situated in the arch of the eye brow. The projection of each of these organs, and the area of its base, are to be determined by examining the skull. This determination it is utterly impossible for any mortal to make, unless he has been gifted with such an overwrought delicacy of sense that he can feel or see what does not exist. There are no conterminous lines between neighbouring organs; no boundary marks are found engraved upon the skull like the dotted lines which, on the phrenological busts, designate their territorial extent; nor is there any rule by which the area of any organ can be estimated, from its proportion to that of the whole skull or any part of it, for this area is, by hypothesis, a variable quantity. How is it possible then to determine the *breadth* of the organs, except by the use of such "optics sharp" as may enable us to see things which cannot be seen? How can it be told with certainty, or what is to guide us even to a probable conjecture, where one organ ends and another begins? How, but by divination, can we learn to what extent Causality, for instance, has been encroached upon and compressed by one or more of the six organs which surround it?

Mr. Combe asserts that each organ has a form and appearance from which it is possible, by practice, to distinguish its boundaries in the living head, "otherwise phrenology cannot have any foundation." Then it is very certain that this mighty science, with its millions of facts and its more than millions of blessings for the human race, has no foundation. Though it might require much practice to distinguish accurately the several organs, it does not require much to decide whether there are found upon the skull any marks by which a distinction can be made. Every man can settle this for

himself by simply passing his hand along the arch of his eye brow, and observing whether there are any lines or marks there by which five different organs are parcelled out; or by examining a skull, stripped of its integuments, in any anatomical cabinet, and endeavouring to detect the points at which an elevation or depression merges itself in the general level, or to discover any marks whatever by which the territorial limits of the different organs are designated. No such boundaries exist, and no practice can enable us to find them. They can be rendered evident only through some such process as that by which Dr. King proposes to make sounds visible, and show that they are of a blue colour.* Mr. Combe admits that there is much difficulty in determining the *breadth* of the organs,—that nothing more than an approximation to the truth can be made;—but he thinks that “if the opponents would only make themselves masters of the binomial theorem, or pay a little attention to the expansion of infinite series,” they would be satisfied. Those who have already paid some attention to the binomial theorem, and to the development and summation of infinite series, will probably be surprised to learn that they have been accustomed to processes of reasoning which involve “a liability to error within certain very narrow limits,” and that they are expected, in consequence, to be more tolerant than others of the uncertainties of phrenology. To those who have not tried this discipline, we would venture to recommend in its stead, that they should make themselves masters of Swedenborg’s visions and pay a little attention to the reveries of Jacob Behmen. If they can bring themselves to believe that the spectral illusions of the one were realities, and the incoherent ravings of the other, truth; they may, without doing farther violence to their reason, believe that the phrenologists can feel and see things that are not, as though they were.

But supposing both the length and breadth of the organs, and the ratio in which they must be compounded to determine the size of each, to be known, we see other very serious difficulties in the way of satisfactory observation. “It ought to be kept constantly in view, says Mr. Combe, that it is the size of each organ in proportion to the others in the head of *the individual observed*, and not their absolute size, or their size in reference to any standard head, that determines the predominance in him of particular talents or dispositions.”

* King’s Works, vol. ii. p. 100.

Let it be remembered that these organs all originate at the medulla oblongata and radiate from that point to the outer surface of the brain; and as some parts of the skull, in all men, lie much nearer this radiating point than others, that the organs in their natural state, are of unequal length. Supposing then the relative size of two organs to be accurately ascertained, we are not yet in a condition to judge which predominates over the other. No inference can be drawn from the greater size of the one, until we have first learned the relation which they bear to each other in their normal state, or that in which their respective functions are in proper equipoise. Nothing can be more absurd than the pretence of determining which of two or more unequal quantities has the *predominance*, without any reference to the natural relations which they sustain. The laws of the equilibrium of a system of forces must be known before we can tell what the resultant will be. The phrenologists have stultified themselves by pretending to determine the one without knowing the other. Suppose it to have been ascertained that Amativeness and Conscientiousness, in a particular head, are as three to four in size; how can we judge from this which will predominate, since, in every head, the latter of these organs is longer than the former? We cannot tell whether the man is likely to be more amative than conscientious, or the reverse, unless we know what is the proportion in the size of the organs, when neither of them prevails over the other. The facts of phrenology may all be set aside therefore by the simple consideration, that having failed to establish a model head, exhibiting the proportions between all the organs when in a state of equipoise, they have, of necessity, failed to establish the science.

An entirely distinct impeachment of the value of the facts upon which phrenology rests, may be found in the difficulty which must have been, in most cases, experienced in determining the true character of the individual who was the subject of examination. What manifold liabilities to error beset the attempt to discriminate nicely between the peculiar talents and dispositions of our fellow men? How difficult to distinguish between real and affected sentiment, to trace even with approximate accuracy the influence of different motives, and to penetrate the guise of artifice and dissimulation by which the real character is concealed? It is quite as necessary that each mental and moral quality, as well as each organ, should have "a form and appearance" whereby it may

be distinguished, "otherwise phrenology cannot have any foundation." This alternative, distressing as it is, will probably be adopted by most men, in preference to believing that the founders of phrenology have been able to fix the precise shades of character which existed in connexion with each particular configuration of the skull, in a sufficient number of instances to afford a safe induction. How did they acquire this wonderful insight into human character? How were their observations conducted, themselves being witnesses? By calling upon the individual himself to confess his excellencies and his faults,—by taking the testimony of his partial friend,—by gathering up the rumours of the tattling, and the scandals of the malicious,—by bribing boys, with cake and sugar-plums, to tell each others failings, and provoking them to engage in pugilistic contests,—by collecting porters and coachmen, drunk and sober, promiscuously from the streets, and exciting them to talk and act, to dispute and fight.* By these, and other equally doubtful means, the vast body of facts has been collected, in which the phrenologists entrench themselves and bid defiance to all speculative argument. Let it be considered, for a moment, how great is the exposure to error in both parts of the observation,—how difficult it is to adjust all the knotty questions which arise in determining the proportionate size of the different organs,—how perplexing, to ascertain the predominant dispositions and faculties,—and then how the separate errors of each of these investigations must run into each other and produce false results,—and the facts will have no value for any but those who are seeking for the proof of a foregone conclusion.

When opposing facts are presented the phrenologists are always ready with some mode of escape from the apparent discrepancy; and the outlets at their command are so numerous that it is impossible to close them all. Is Destructiveness found to be large in the head of a man who is known

* We find in the "Useful Transactions," No. II., a paper with the following title:

"New Additions to Mr. Anthony Van Leuwenhoek's Microscopical Observations upon the Tongue, and the White Matter upon the Tongues of Feverish Persons. In which are shown, the several Particles proper for PRATTLING, TATTLING, PLEADING, HARANGUING, LYING, FLATTERING, SCOLDING, and other such like Occasions. Communicated by Dr. TESTY."

This paper was published many years before Dr. Gall's discovery, and they who read it will find so great a similarity, both in the objects contemplated, and in the mode of observation, as to create the suspicion that the Glossology of Dr. Testy may have suggested the Craniology of Dr. Gall.

to manifest no destructive propensities, while another man, in whom this organ is relatively smaller, is a very Apollyon in mischief? Nothing can be more easily explained. We are not to consider the size of the organs as the sole cause of their power; and in the present case we must suppose,—we *must* do it, because “otherwise phrenology cannot have any foundation”—we must suppose that the smaller organ is of a finer texture, and therefore works with more vigour. Is a diminutive organ of Hope found in connection with a cheerful and trusting disposition? There is no difficulty at all in the case. The individual is of a sanguine temperament; and if we do not admit that the *temperaments* have a great influence in modifying the actions of the organs, “phrenology cannot have any foundation.” Is an uncommon development of Ideality discovered upon the skull of some Peter Bell, to whom every enamelled meadow is but a pasture ground, and every cataract a mill-seat? What can be more simple,—he was doubtless compelled, in early youth, to bear the brunt of the hard realities of life, and we must remember that the tendency of any organ may be repressed by unfavourable circumstances? Does an individual who has been, up to a certain point, a wasteful spendthrift, suddenly become miserly in his habits, without any corresponding change in his Acquisitiveness? This may be readily explained by the supposition that his Acquisitiveness has become diseased,—a chronic inflammation has seized upon it, and it will henceforth act with a vigour disproportioned to its size. “Education” too, “exercise,” and “favourable events” will impart to a moderately-sized organ, the power of a much larger one. How easy would it be, with such flexible materials, to construct any system whatever? How absurd to pretend that in the face of such difficulties, phrenology has been established by facts—that while the influence due to the mere magnitude of the organs may be neutralized by their quality—by the degree in which they have each been exercised—by the education and circumstances of the individual—by his temperament—and by diseases which have no other than mental symptoms—there have yet been found a sufficient number of cases, agreeing in these secondary respects, to furnish the induction that the size of the organs determines the vigour of the faculties, and to prove that out of the inconceivable number of possible combinations of these organs within the skull, a particular one has place?

The argument against this science is cumulative. Were

the considerations already presented devoid of weight, its facts are all overthrown, and the whole system demolished, by the impossibility of ascertaining the degree in which the different parts of the brain are developed, by the examination of the skull. For a complete discussion of this point, we refer to the able lectures of Dr. Sewall, who has constructed, upon anatomical grounds, an unanswerable argument against phrenology. He shows that the skulls of some individuals are eight times thicker than those of others—that in the same individual the thickness of the skull varies in different portions—and that in some parts its internal and external tables recede from each other, forming cavities, called sinuses, of greater or less extent.

The frontal sinus, situated in the anterior and lower portion of the frontal bone, renders it impossible to form any judgment of the developement of the brain behind it; and yet no less than nine of the organs are placed within the region occupied by this cavity. Eight others are covered by the temporal muscle, through which it is impossible that their size can be ascertained. Seventeen of the organs are thus placed absolutely beyond the reach of observation, nor can the size of any of the others be certainly estimated from the examination of the living head, in consequence of our inability to determine the thickness of the skull. These things being duly considered, the boastful challenge of the phrenologists to refute their facts, becomes superlatively ridiculous.

The examination of the merits of phrenology, as a theory of the mind, forms a distinct topic, upon which we cannot now enter. Their classification of the mental affections includes as paltry a collection of puerilities as was ever palmed upon the world under the name of philosophy. There are thirty-five different faculties, sentiments and propensities,—we believe a thirty-sixth has been added lately,—and yet some of the most important phenomena of the mind are left unexplained. The same grounds upon which many of the distinctions have been made between different faculties would lead to their indefinite multiplication; and it would be a decided improvement upon the present system, to maintain that there are as many faculties of the mind, as we have thoughts and feelings.

And the compounders of this medley of dogmatism and quackery are the men who have “opened up to mankind a career of improvement, physical, moral, and intellectual, to

which the boldest imagination can at present prescribe no limits!" These are they whom posterity will honour "as the greatest benefactors to mankind!" Benefactors doubtless they will be, though in a much humbler way than Mr. Combe supposes. The open shaft of the unsuccessful miner will at least save others from a useless expenditure of labour in the same spot. The problem of human perfectibility has not yet been so fully solved that we can afford to dispense with the aid to be derived from observation upon the fruitless efforts, and the anomalous movements of the mind. Every mistake and error will contribute to the increase of our knowledge, even as useful plants are nourished by the ashes of noxious and worthless weeds.

Phrenology was born some centuries too late. Had it come into being in the days when astrology and the theory of "herbal signatures" were sciences, and the philosophers were as imaginative a race as poets, it would have gained all suffrages. Porta would have been delighted to compare together the auguries of the stars and the skull; Albertus would have availed himself of it in superadding to the talking powers of his man of brass, the gift of reason; Paracelsus would have compounded no more recipes for making fairies; and Oswald Crollius would have sought to help the imagination by squeezing the skull into a proper shape, instead of applying to it the brains of swift-winged birds. The degree of popular favour which this pseudo-science has attained in the present day, is to be attributed, in part at least, to the fact, that its darkness shelters the incapacity of its professors, which could not fail to be visible in other pursuits; and that it flatters its disciples into the belief that they possess talents and excellencies of which they have no other evidence. But it must soon pass to its place in the history of the follies of the human mind; and all attacks upon it would be superfluous save for the hope of accelerating, in some degree, its natural progress towards its resting-place among the occult fancies of past ages.