EXAMINATION

OF THE

OBJECTIONS

MADE IN BRITAIN AGAINST THE DOCTRINES

OF

GALL AND SPURZHEIM.

BY

J. G. SPURZHEIM, M.D.

ARTICLE OF THE

FOREIGN QUARTERLY REVIEW,

BY

RICH. CHENEVIX, Esq. F.R.S. &c.

WITH NOTES BY

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'Opinionum commenta delet dies naturæ judicia confirmat.'—*Cicero.*

FIRST AMERICAN EDITION,
WITH IMPROVEMENTS BY DR. SPURZHEIM.

BOSTON:
PUBLISHED BY MARSH, CAPEN & LYON.
1833.

Entered according to Act of Congress in the year 1833,
By Marsh, Capen & Lyon,
in the Clerk's Office of the District Court of Massachusetts.

BOSTON:
James B. Dow, Printer,
122 Washington-St.

INTRODUCTION.

Discussions, properly conducted, are of great utility. For that reason, I am always ready to examine every objection against our doctrines. But I am sorry to observe, that scientific pursuits are so often degraded by selfish passions and the spirit of party; that literary publications are employed for the purposes of calumny and detraction; that invectives are used instead of arguments; and that, by praising friends and blaming rivals, the progress of the arts and sciences, and the improvement of men, are mightily retarded.

Such behavior I will never imitate; nay, the illiberal and uncandid manner in which some British Reviews have taken up our investigations, has hitherto prevented me from attempting justification. As, however, many persons have no inclination, and a greater number no time for comparing the original works with the reports of the critics; and as in science the majority of readers believe, without examining for them-

selves, I cannot entirely avoid controversy. We have never published a separate answer to single pamphlets, but merely considered the objections in our lectures or in our works, when treating of the respective objects. Our maxim is, never to fight with darkness, but to endeavor to bring light.

I am now to submit to the public some observations on the objections of our principal antagonists in Great Britain, confining myself to the points in question, and depending on the moral sense, the judgment and observation, of my readers. In short and concise expressions I will state the real object of our inquiries, and the true import of our propositions, and then compare the interpretations of the chief Reviews, especially of the literary gospel of Edinburgh. At the same time I will mention an antagonist, who was at first anonymous, but did not long conceal himself; who then appeared as an author on the structure of the brain, and at last as a historian of the anatomy of that organ.

The Edinburgh Reviewer speaks (No. 49. p. 229.) of 'a conscientious discharge of duty on this occasion;' it therefore is right to name him accordingly. The author of the Treatise on the Brain, in a pamphlet, asserts, that the anatomy

of the brain is imperfectly known, even to the distinguished teachers of the medical art in Edinburgh; that the persons I have addressed, never perhaps have completed their studies in this department, (p. 4.) that I have shown the corpus dentatum to spectators, most of whom had never seen it before, and not one of whom had rendered himself familiar with its appearance by dissection,' p. 73.* Hence, if there be only one person in Edinburgh who can judge of the appearances of brown and white, he deserves the name of anatomist *par excellence*. As in his Treatise on the Brain he states (Pref. ix.) that he has scrupulously avoided the intro-

* As the reader may wish to know who my auditors were, I will mention the names of some gentlemen. At the first demonstration were present, Dr. John Thomson, Prof. Regius of Military Surgery; Dr. Barclay, Lecturer on Anatomy and Surgery; Dr. Duncan, junior, Prof. of Medical Jurisprudence; Drs. Emery and Irvin, of the Military Staff. At the second, were Dr. Rutherford, Prof. of Botany; Dr. Home, Prof. of Materia Medica; Dr. Thomas Brown, Prof. of Moral Philosophy; Prof. Jamieson; Drs. Farquharson, Dewar, Sanders, Anderson, and a great number of professional gentlemen. At the Physical Society I gave the demonstration in presence of Dr. Monro, junior, Prof. of Anatomy and Surgery; Drs. Rutherford, Barclay, and Sanders; Mr. Bryce, President of the College of Surgeons; Mr. George Bell, and a numerous audience of medical gentlemen. Since that time, I have often repeated these demonstrations in private parties, and always to the satisfaction of the spectators. *It is worthy of notice, that the essential point alluded to, was, whether there is brown matter in the corpus dentatum? This had been denied by the Edinburgh Review, p. 264.*

duction of any physiological matter; and as in the pamphlet he maintains, that the anatomy of the brain, *in a physiological point of view*, is fortunately not of essential consequence in the practice of medicine, (p. 3.) I will style him a mechanical dissector. Another name which he merits, is that of historian, because he has compiled facts, excellent indeed,—concerning the history of the anatomy of the brain.

The profession of a critical reviewer is acknowledged to be very extensive; his infallibility is understood: hence, without any previous study, he can decide all questions on anatomy, physiology, pathology, philosophy, the arts, and, in short, on all the branches of knowledge; nay, he can criticise books without reading them. He is never at a loss, and arrogates at least the the appearance of talents. If his own authority is not sufficient to impose on the public, a sacred band of literary oligarchs answer for his correctness, and, for that reason, he assumes the mighty *we* of sovereignty.

Every one will perceive, that our adversaries are very witty men. They deal extensively in the ridiculous; and when they have leisure to become serious, they speak of the motives and

dangerous consequences of our inquiries; but their generous minds need not be apprehensive, since they declare our doctrines 'incredible and disgraceful nonsense, absurd theories, trash, and despicable trumpery.' If that is the case, while, as they admit, we make proselytes, they have, indeed, very little confidence in the discernment of their countrymen. Why do they not rather listen to our constant declaration, that one fact, well observed, is more decisive to us than a thousand opinions, and all the metaphysical reasoning of the schools; and that facts alone can expel such intruders as our doctrines?

These observations will be divided into three Chapters. The first will contain Anatomical, the second Physiological, and the third Philosophical considerations.

OBSERVATIONS, &c.

CHAPTER I.

ANATOMY.—SECTION I.

We have examined the anatomy of the nervous system in general, and of the brain in particular, *in strict relation to physiology and pathology.* This we have repeated in our demonstrations and in our works. When we delivered the Memoir on our Anatomical Inquiries to the French Institute in 1808, we mentioned in a letter to that learned Society, that we present '*Une Déscription du Systeme Nerveux, moins d'après sa structure physique, et ses formes mécaniques que d'après des Vues Philosophiques et Physiologiques que des hommes habitués à des considérations superieures ne refuseront point d'accueillir.*" The same idea is expressed in my work on Physiognomy, p. 13. and in the article CERVEAU for the *Dictionnaire des Sciences Médicales.* vol. iv. Paris, 1813, § 1. and 2. In our works we have positively stated, that physiological and pathological facts have induced us to examine the structure of the brain.

The conscientious critic, however, instead of examining our views, and of judging accordingly, thought it his duty only to abuse our propositions, (or, in their polite phraseol-

ogy, to cut them down,) and to declare that "in this department we have displayed more quackery than in any other; and that our bad faith is here the more unpardonable, that it was so much more likely to escape detection,' p. 254. The anatomist *par excellence*, has scrupulously avoided the introduction of any physiological matter. He confines himself to descriptions of mere mechanical forms, measurements, and shades of color of individual and isolated parts.*

* There are, however, many discoveries of that kind in his book, which ought not to be overlooked. He, for instance, has discovered, that the dura mater must be excluded from the membranes of the brain; because 'it seems more natural to regard it as forming a part of the sides or walls of the cranium,' p. 150. while other anatomists speak of two lamellæ of the dura mater; one of which belongs to the internal sides of the skull, and the other to the brain.

Another great discovery of the mechanical dissector is the number of cul-de-sacs in the encephalon. A small one is mentioned, p. 84. shaped like a point of a writing pen; another, in p. 98. about a sixth of an inch deep; a third, in p. 99. of a conical shape; a fourth, p. 104.; and two more, p. 112. A deep triangular pit is mentioned, p. 180.

Other anatomists speak merely of two sorts of substance in the brain, of a grey or cineritious, and of a white. The mechanical dissector has first described a variety of colors, such as a brown, a wood-brown nearly the same as a nut-brown, a dark-brown, a greyish-brown, a reddish-brown, a wine-yellow; a white, an orange-white, a yellow-white, a reddish-white, and a bright white.

Important discoveries with respect to the supposed cerebral nerves will be mentioned afterwards. Here I will only notice his discoveries concerning the brain. He imagines, that, in the natural 'situation of parts, the anterior commissure is seldom more than a tenth of an inch in length,' while it is continued to the middle lobes; and 'he imagines also, that it is placed anterior to the pillars of the fornix, and seems to unite them together,' p. 100. while it is quite detached from them. He

Willis, Vieussens, Haller, Vicq d'Azyr, Prochaska, Soemmerring, Reil, Bichat, Cuvier, Portal, Sabatier, and all living anatomists of distinction, examine conjointly the structure and functions of the parts, and even intersperse pathological remarks. Every practical man of the profession will agree with Mr. Lawrence, (*Two Introductory Lectures*, p. 116.) when he speaks of separating anatomy and physiology from one another; and says, 'What would you think of a person who should describe to you a watch or a steam-engine in this way? who would exhibit to you all the parts, and show their position, without any explanation of their uses; without any reference to that nice adjustment and mutual action, which render the one subservient to the important purpose of marking the division of time, and enable us by the other to execute the most stupendous movements of human labor, and to produce the most striking results of human ingenuity? As I cannot for my own part discern, what purpose of utility, much less what end of interest or amusement, could be answered by a merely anatomical detail; and as the separation of the science of organization from that of life, seems to us *most*

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has discovered, that the appearances which may be seen without actual dissection, or with very little dissection, or by removing the cerebellum, may be called external, p. 95.

An important discovery consists in the invention and application of new names. By this discovery, every thing appears new in the description, at least so far as the names are concerned; and that you may not suspect that you are reading about things which you knew before, the old synonymes are suppressed. This is particularly the case with the description of the ventricles, p. 104. Indeed, such discoveries as the preceding cannot fail to amuse the man of mechanical genius.

violent and *unnatural*, I shall not disjoin anatomy and physiology.'

Our ingenious mechanician affords novel information, when he tells his readers, that anatomical knowledge of the brain, in a physiological point of view, is *fortunately* not of essential consequence in the practice of medicine; and that skilful and eminent practitioners are satisfied, *and justly so*, with a general view of this organ, p. 3.; and that anatomy of the brain may be studied less with a view to refined physiological research, than to the practice of physic, p. 183. All other physicians, however, of sound judgment, at all times have admitted as a principle, that pathology is to be founded on physiology, and that without understanding the functions in the state of health, it is impossible to judge of their derangements. Who believes, that in the practice of medicine it is of no importance to know the anatomy and physiology of the heart, of the lungs, liver, stomach, &c? Are the structure and functions of the five senses not of equal importance? And will those of the brain and its parts be deemed less worthy of consideration? Shall the most delicate or most complex organization be declared useless? If, on the contrary, the brain alone explains the various instincts of animals, and all the modified manifestations of the human mind; if it alone accounts for the innateness of genius; if it is certain, that each species of manifestation of the mind has its appropriate part in the brain; if all manifestations of the mind, in the state of health and disease, find their explanation only in the cerebral organization; if the influence of the affections and passions on the bodily constitution is indubitable, and

vice versa; how is it then possible, that a lecturer on the institutions of medicine can separate the structure and functions of the organization? can maintain, that a skilful physician does not need accurate knowledge of anatomy and physiology? is justly indifferent with respect to the structure and functions of the brain, as well as to the connexions of its parts with each other, and with the whole body?

Such notions will not, I trust, induce those of the medical profession to neglect the most interesting study of all, viz. that of man. Indeed, the examination of the nervous system is not only important, because all functions of the body, such as digestion, circulation, respiration, nutrition, secretion, and excretion, depend on it, but also because the five senses, all inclinations and sentiments, all moral and intellectual faculties, and all the characteristics of humanity, are evinced by means of the nervous system alone. Thus, the medical profession is not only interested in studying the human mind with respect to bodily health, and particularly with respect to insanity; but it is their province to improve the knowledge of the mental powers, since these can be discovered only by the study of the brain and its parts. No profession is better prepared than that of the physician by accessory knowledge, and by the study of nature in general; nor is any one so frequently and so seriously admonished to revise opinions, and to forsake hypothetical reasoning, in order to follow the simple method of experience. No philosopher is more intimately convinced, that all our knowledge ought to be reduced to a rational mode of judging from experiment and observation; while a spec-

ulative philosopher thinks, that 'the labors of metaphysicians can only be rewarded by attentive and patient reflection on the subjects of their own consciousness.'—(*Dugald Stewart's Elements of the Philosophy of the Human Mind.* 5th edit. p. 8.) According to such a precept, every one has a right to take himself as a standard for the rest of mankind: A Caraib metaphysician may find, that destruction is the first moral principle.

The physician, besides, is placed in circumstances the most conducive to a profound and certain knowledge of man. No one has such opportunities of observing men at all times, and in all situations. He alone is present during the night and the day, to witness the most intimate concerns, and the most secret events of domestic life. Good and bad men, when sick, with difficulty conceal from him their true sentiments. Who desires not the friendship of the man, whom he trusts with his own life, or with that of his wife and of his children? To such a man, as knowing all that belongs to our nature, we unfold the most secret thoughts, and we acknowledge our frailties and our errors, in order that he may judge truly concerning our situations. There is consequently no man more called upon, no man more necessitated to study mankind, than the physician. I leave it now to the reader, and to those who practise the healing art, to decide, whether a person contributes to the celebrity of his profession by inculcating such doctrines?

Thus, only according to a philosophy, which states that every one may take his own consciousness as the measurement of that of all men, are our British antagonists excusable—according to such a philosophy alone, is it unnecessary

for them to study the spirit of our inquiries. As they cannot raise their minds above mechanical forms and shades of color; as they do not even feel the necessity of considering the parts of the nervous system in connexion; as they even invent artificial divisions; how could their judgment of our investigations be sound, equitable, and just?

SECTION II.

In our anatomical views, which are always connected with physiology, pathology, and philosophy, the first point to be considered is, that there is no common origin of the nerves; that all descriptions of the spinal cord as a prolongation of the brain are incorrect; that no nerve, and no cerebral part, owes its origin to any other; but that all of them, on account of their mutual influence, are in communication. (*Vide* Memoir to the French Institute, sect. 1.; *Dictionnaire des Sciences Médicales*, Art. CERVEAU, § 3. No. 1, 2, 3 and 4.; Physiognomical System, p. 13—18.)

Such considerations have entirely escaped the conscientious Reviewer and mechanical Dissector.

SECTION III.

The second point to be considered is, that the general form and arrangement of the nervous system are modified in different beings. In the superior animals, it is divided into the nerves of the abdomen and thorax, the spinal cord, the supposed cerebral nerves, and the cerebellum and brain.

The spinal cord is composed of a series of swellings between two undulatory lines. These swellings are proportionate to the nerves, which go off.

The conscientious Reviewer is satisfied with stating, that our descriptions of the spinal cord 'abound in conjectures, and assumptions, and inaccuracies,' p. 267. The mechanical Dissector has not attended to comparative anatomy, and does not mention any thing of that kind. The Historian is in unison with the Reviewer, and merely declares, that our statements are unfounded, p. 179. Comparative anatomy, however, shows great modifications in the general form and arrangement of the nervous system, as in the caterpillar, lobster, frog, fish, bird, or quadruped. At the Physical Society, and in Dr. Barclay's lecture-room, I have shown to my auditors the swellings of the spinal cord of a calf. As our statements are not attacked in detail, I do not repeat what is mentioned in our works.

SECTION IV.

The next points to be examined concern the medulla oblongata, and the supposed cerebral nerves. The medulla oblongata does not belong to the spinal cord, and the supposed cerebral nerves have different origins from what anatomists generally believe.

The literary gospel does not embrace these points; I have only to consider the respective discoveries of the mechanical Dissector. He believes, that the medulla oblongata, though situate in the head, belongs to the spine; he calls it the cranial portion of the spinal cord, and fixes its termination to the lower edge of the pons Varolii, p. 175.

In our views, a great portion of the medulla oblongata belongs to the greatest number of the supposed cerebral nerves; the rest to the cerebellum and brain. In my second demonstration in Edinburgh, before a numerous and respectable audience, the mechanical Dissector repeatedly protested against my stating, that the medulla oblongata is not interrupted, but continued to the cerebellum and brain, or rather that both, by means of the medulla oblongata, are in communication with the nervous mass of the rest of the body. The gentlemen who were present will recollect, that I twice asked the Dissector, whether he could show the interruption of the pyramids, since he protested against their continuation? Now, as a historian, four months later, he tells us, that the idea of that very communication of the pyramids with the crura cerebri has been known a century and a half. The man of duty either was or was not acquainted with the fact. In the first case, why did he protest against it? and why did he not state it in his book, professedly written on the brain? There he terminates the brain at the upper edge of the pons, ascribes the mass of the pons to the cerebellum, and the medulla oblongata to the spinal cord. In the second case, he has learned it since, though he might have found in our works the same authors quoted, whom he, as historian, now appeals to, to prove that the idea is not original. More of this tergiversation afterwards.

This discoverer calls the abductor, trigeminal, facial, and auditory nerves, *cerebellar*, p. 202. and places their origins in the peduncles of the cerebellum, p. 207—210. viz. in the lateral portion of the annular protuberance, p. 112.

Comparative, as well as human anatomy, however, shows the contrary. These nerves exist in fishes and birds, though these animals have no annular protuberance, and in the greater number of quadrupeds these nerves go off behind the pons; how then can they originate from the pons? Even in the human brain, we can trace the fifth pair through the pons to the corpora restiformia of the medulla oblongata. I have done it in presence of many in Edinburgh, as well as in other places.

He has further discovered that the facial and acoustic nerves originate from the same spot, p. 209, 210. while they go off at quite different places, the facial nerve at the external edge of the corpus olivare, and the auditory nerve behind the medulla oblongata in the fourth ventricle. He has also discovered, that the optic nerve arises from the anterior corner of the commissure of the tractus optici, p. 205. viz. 'from the part situate before the pituitary gland and infundibulum,' p. 83. while even in the infancy of anatomy, the optic nerve has been traced farther back. Comparative and morbid anatomy amply elucidate this point. In many fishes, the optic nerves are placed only over each other without adhesion; and in quadrupeds and man, when one of the optic nerves is injured and diminished in size, the diminution is not only visible as far as their union or partial decussation, but passes across to the opposite side, backward, and proceeds to the anterior pair of the corpora quadrigemina.

By comparative views we have proved, that the optic thalami in birds and quadrupeds have been confounded, and the same name given to quite different parts of the

brain; and that the optic thalami in quadrupeds do not belong to the optic nerves, but to the brain proper.

SECTION V.

The fourth consideration is with respect to the communication of the cerebellum and brain with the rest of the nervous system.

The conscientious Reviewer, and Anatomist *par excellence*, had nothing to say in this respect; but the Historian, 'after a painful research' of four months, (p. 3.) has contrived to find matter for opposition. He maintains, 'that it is impossible to trace any fibres, either from the corpus restiforme or from any other part of the medulla oblongata, into the corpus dentatum,' p. 3.

The Historian is wrong in ascribing to us the discovery of the communication between the cerebellum and the corpus restiforme. During his 'painful research,' he might have found the history of this communication, as well as that of the brain with the medulla oblongata. This very name *oblongata*, is only explained by the medulla of the brain and cerebellum having been considered as continued to the spine. A great number of anatomists speak of prolongations, or crura, or processus cerebelli ad medullum oblongatam, and distinguish them from the crura or processus or pedunculi cerebelli ad pontem. We consider this ancient view of communication as correct; the ancients only erred in imagining that one part gave origin to another. In fact, the connexion between one bundle of the corpus restiforme and the corpus dentatum of the cerebellum, is easily shown in

scraping off the auditory nerve from the external surface of the corpus restiforme, and following the direction of the bundles. I have shown it in Dr. Barclay's lecture-room, and I am ready to do so to every one who procures a fresh brain.

The communication of the brain with the rest of the nervous system, requires more full exposition. Here the Dissector appears in *his* proper *light and colors.* He himself calls the attention of the public to the second demonstration. I therefore must be excused for speaking of it. When I demonstrated the decussation of the pyramids, he began the controversy with the question, Whether we maintain to have first discovered the decussation? As Historian, he tells us, that he thought it *his duty*, in justice to preceding anatomists, to make their claims known to my audience, p. 74. My answer was, that our works show the contrary, and that we have given the history of the decussation. I then remarked, that before us, many anatomists have spoken of a decussation of the nerves, because injuries affecting the brain are often propagated on the opposite side of the body; that, however, there are other observations on record, where injuries of the brain are visible on the same side with the injury; that we have first discovered, that *only a part* of the brain is in communication with the opposite side of the nervous system, and the other part with the nerves of the same side. He was obliged to allow that this distinction is new.

I beg leave to make a few observations on this occasion. The man of duty, when he wrote professedly on the brain, did not mention a single author who had spoken of the

decussation. He himself speaks of 'two or three ridges, which would hardly have been worthy of particular notice, were it not for absurd theories with which they have often been connected in physiological writings,' p. 177. On the other hand, in our works, the names of all the authors, whom he, as historian, quotes, are given, and many more. He speaks of Mistichelli as the first, while in our Memoir we have stated, that the decussation has been described by the most ancient anatomists, such as Aretæus and Cassius; that afterwards it had been neglected; but that pathological facts called again the attention of Fabricius de Hilden to it in the year 1581. We have quoted Mistichelli, in 1709, Petit, Lieutand, Santorini, Winslow, Soemmerring, and Portal. Has now the man of duty, as historian, a right to accuse us '*of neglect and ignorance against every preceding inquirer*,' p. 2. while he, on this occasion, as author, does not quote one, and we have quoted them all, and a greater number than he as historian?' Is it not rather our duty to mention the preceding authors when we write a book, than when we give outlines of a demonstration, and in an oral communication?

This is not yet the whole. The Historian says, p. 69. 'The structure in question (decussation of the pyramids) has been taken notice of, ever since its discovery, in elementary works of the highest reputation, and such as anatomists still daily consult; and it has been particularly mentioned in the best and most generally known treatises on the brain, so that there is as little room for maintaining that it has been overlooked by modern anatomists, as that *the*

description of the corpora pyramidalia themselves has been forgotten.'

Does the man of duty not accuse himself by this passage? Let us admit the case to be as he says; I then reply, that he had no reason to put his question. If the decussation is so generally known, no one could be mistaken. In that case, he could have asked me with the same propriety, whether we maintain to be the first who have described the pyramidal bundles, since, according to his own words, 'the decussation is as little overlooked as the description of the pyramids?'

But the reader would be mistaken, did he think the decussation as generally known as the Historian alleges. To prove that this anatomical point was not sufficiently understood, nor completely ascertained by the modern anatomists, I shall examine a few works of those authors whom the Historian has quoted. Vicq d'Azyr, for instance, did not know the true decussation, nor did he represent it. He speaks of such a thing, and points out a place where he looked for it; but there it does not exist. This is evident from comparing his own passages with nature. In explaining the 22d plate, he says, 'Lorsqu'on écarte le sillon 12, 15, entre les corps pyramidaux, on apercoit de petits cordons blanchâtres et medullaires qui se portent d'un coté à l'autre comme autant de petites commissures dont la direction varie.' In explaining the 23d plate, he marks the same place by b. b. b. b. and says, that these are transverse fibres. Plate 17. fig. 1. 57, and 58, he says of the pyramidal bundles, 'Elles sont séparées de la portuberance annulaire par un petit enforcement 82, 82, et entre ces corps se trouve une

fente ou division longitudinale 59, 59, au fond de laquelle on voit, lorsqu'on écarte les bords, plusieurs cordons blancs qui se dirigent d'un coté à l'autre en maniere de commissures, les uns transversalement, les autres obliquement.'

Dumas and Boyer maintain that palsy of the opposite side in injuries of the head is not at all explained by the anatomy, because the decussation of the medulla oblongata can by no means be proved, ' qu'il n'est rien moins que prouvé par l'anatomie.'

Sabatier quotes the passage of Francois Pourfour du Petit; but he adds, that ' le pretendu entrecroisement des fibres de la moelle allongée n'est rien moins que certain.'

Chaussier, who with Vicq d'Azyr, belongs to the few quoted by the Dissector, also quotes the passage of du Petit, and speaks of Santorini and his plates. ' Mais, dit il, en examinant les objets de plus près, en suivant attentivement les progrès de la préparation, les changements que produit l'écartment, le tiraillement des parties, il nous a paru que ces pretendus faisceaux des fibres transversales ou obliques sont uniquement le resultat de la traction que l'on exerce sur le tissu de la partie, qui avant de se déchirer, s'allonge et prend l'apparence fibreuse,' p. 142.

How could the impartial Historian overlook such passages in books he quotes? and if he did not overlook them, how can he say, that the decussation was generally known? I can affirm, that at the universities and colleges where we have demonstrated the brain in Germany, Denmark, Holland, France, Great Britain, and Ireland, the decussation was not shown to the pupils before the publication of our

works. The French commissioners felt the truth, and allowed that we had recalled the attention of physiologists to the decussation of the pyramids, though they deny us the merit of having discovered it. They ought to have said, that we had not discovered it the first. We can assert, that we were not taught it in the school, nor had we learned it from books. Pathological facts alone called our attention to it. Without pathological considerations it must appear indifferent. For that very reason, the mechanical Dissector speaks of it as scarcely worthy of particular notice. He himself, also, may still become acquainted with some modifications which the decussation presents. The description of two or three ridges is very incomplete. We think that our mode of demonstrating it is preferable to that of Santorini, who employed a long and peculiar maceration, while, by our mode of proceeding, we can show it in every fresh brain.

SECTION VI.

The fifth point which may be discussed, is our method of dissecting the brain. The common way consists in slicing it, whether to begin from above, as most commonly is done, or from below, or from the sides; or in cutting off small portions, and showing their mechanical appearances. Every one who has attended anatomical lectures, or will look at anatomical works, is aware that I speak truth. The descriptions given by the mechanical Dissector himself, and the macerated pieces which he showed in the second demonstration, prove the same statement.

We consider the parts in connexion with, and in relation to one another: we observe what is general or constant, and we are as much convinced of the modifications of every part of each brain, as of those of every other part of the body. We always begin the dissection at the medulla oblongata, and examine the successive additions and distributions towards the convolutions. We seldom cut, but mostly scrape; because the substance, on account of its delicacy, when cut, does not show its structure. The conscientious Reviewer had suggested, that our proceeding is limited to the use of the handle of the scalpel alone. The Historian adds, 'the blade of the scalpel, and the points of our fingers;' but he calls this proceeding rude, p. 26. It seems he had forgotten what he wrote on the previous page 17. There he has said, 'Every anatomist, who has enjoyed frequent opportunities of examining the recent brain, must have observed, that there are particular portions of the white substance, which *tear* much more readily in one particular direction that in any other; and that the surfaces of the *lacerated* parts in the former case, but never in the latter, put on an appearance similar to that exhibited by a piece of muscle, or of any other fibrous nature, when torn in the direction of the fibres.' May I not suppose, that this hero of the scalpel tears and lacerates with his fingers; and that, if he had used them more dexterously, he would have made fewer mistakes. I sometimes make use of my fingers, to obviate an objection which has been made in Germany, France, and even in Edinburgh, viz. that we artificially form the appearances in the brain by the handle of the scalpel, or that we play a trick on the spectators. The con-

scientious Reviewer himself maintains, that we must know the incorrectness of our assertions, and show to our less knowing pupils the fibrous structure of the white matter in some portion of the brain, where, in consequence of the two kinds of matter, the white is disposed in threads through the brown, p. 256.

For the demonstration of many parts, we prefer fresh brains. The structure of others may be better seen, when they are previously macerated in diluted acids or alcohol. Our works attest, that we have employed various means, especially in examining the structure of the convolutions. Several adversaries in Germany, particularly Prof. Ackermann at Heidelberg, objected against the preparation of the brain by maceration. They maintained, that this appearance is not natural, but the result of a chemical process. An example may be mentioned with glass, which is a uniform mass. In the southern countries, in Paris, for instance, windows exposed to the sun and moon split into innumerable scales; this appearance is not natural, but the result of a chemical process. To obviate that objection, we prefer proving our statements on fresh brains. At the same time, we have always answered, that the white substance of the brain must have naturally a fibrous disposition, because the appearance is the same under all the very various circumstances, whether, for instance, examined fresh or coagulated.

It is, however, conceivable, that in towns, as in Edinburgh and Halle, where we cannot procure a number of fresh brains, the dissector may prefer to keep the parts in spirits. Even in towns where there is a great facility of

procuring fresh brains, we get some which are entirely unfit for demonstration. If we unfortunately meet such a one, shall we draw the inference, that in no fresh brain whatever the structure can be seen? Indeed, in the dissecting rooms at Halle and Edinburgh we may be induced to say with Reil, that our method in dissecting fresh brains is not sufficient, and that the cerebral mass is too pulpy and too deliquescent, (zu breyigt und zerfliessbar) for being examined in connexion. The conscientious Reviewer, p. 236, quotes this passage of Reil; and the only meaning is, that Reil at Halle found the brains too soft, and thought it necessary to prepare them by maceration. The Historian must know very little of the German language, on account of his erroneous interpretation of this passage, p. 188. If ignorance of the language be not the cause, he has invented a story worthy of a conscientious Reviewer. I shall afterwards give the history as it happened between Reil and us. In answer to Reil, I here only state, that in London, Dublin, Paris, and Vienna, we can easily procure brains, the parts of which are firm enough to be examined in connexion, without any previous coagulation.

The proceeding of Vieussens has only in common with ours, that, in examining the parts of the brain, he scraped: In the rest he was guided by quite other principles; began with the convolutions, and cut them off round the hemispheres, to shew the centrum ovale, which, to this day, is demonstrated and called by his name. He first considered all medullary fibres to originate from the cortical substance of the convolutions, and to be concentrated in the midst of the hemispheres; he then examined the corpus callosum,

the fornix, plexus choroides, nates, and testes. In the first thirteen plates he represents only cuts from above downward. At the end he examines the cerebellum and medulla oblongata, so that he represents the connexion between crura and the medulla oblongata in his last plate. Proceeding from above downward, he speaks of his usual method, (institutum servando sectionis ordinem).*

The Historian accuses us of having learned our proceeding from other books: Why has he not learned to consider the cerebral parts in connexion? why has *he* continued to slice and cut the brain like cheese? None of our predecessors has proceeded in the way we do; hence it was impossible to learn our method from them. I have no objection that the brain should be examined in various ways; but one method may be preferable to another, and we think ours the best to show the connexion of the parts, and we think it indispensable for those who examine the brain with physiological and pathological views.

SECTION VII.

A sixth consideration concerns the two sorts of substances, of which the nervous system is composed; one greyish and soft, and of unknown organization, the other white, and of fibrous structure. Both are together, and proportionate to each other.

The Historian quotes Vieussens, Haller, Mayer, Reil, Portal, and Cuvier to prove, that the fibrous structure of the brain was known. The reader would be mistaken if he

* Nevrol. univ. p. 87.

thought, that in our works we have not quoted authors of that kind. We have mentioned the same and others, such as Loewenhock, Stenon, Prochaska, Soemmerring, Sabatier, and others. In a passage of our memoir, p. 248, we say, 'Bonnet ne trouve dans le cerveau que des fibres dont chacune auroit sa fonction particuliere.' We have never thought of being the first who maintain that the brain is fibrous, though we know also that the most erroneous opinions have been entertained with respect to its structure. Our principal ideas are the successive additions, and the aggregation of various parts; the two great sets of fibres, and the unfolding of the convolutions, as I propose to detail in the sequel.

I have already mentioned, that we do not limit our proceeding to the handle of the scalpel, as the conscientious Reviewer, p. 256, and Dissector, p. 150, insinuated. When the Dissector wrote his book, the fibrous appearance could never be displayed by dividing the cerebral mass with a sharp scalpel, p. 126.; as Historian, however, he proves, that many authors, who have only sliced the brain, were acquainted with its fibrous structure. As Author, he speaks of nervous cords, p. 128.; nervous threads, p. 132.; nervous fibriles, p. 123.; nervous fibres as fine as hairs, p. 137.; nervous fibres traversing, p. 128.; innumerable fine fibres *diverging*, p 138.; and what is more, 'when a portion of brown nervous matter, which forms a covering to the convolutions, is exposed to the action of alcohol, or acids, or boiling oil, and is then *torn* asunder, it exhibits a fibrous appearance,' p. 127.—As Historian he equally states, that 'the apparent fibrousness of the white substance, both in

the recent state, and after coagulation with boiling oil, alcohol, acids, &c. has been long known, and no opinion has been more prevalent than that this substance is really fibrous,' p. 16.

Now, after that language as Author and Historian, what shall I think of such a man, who, in my second demonstration, before a numerous and respectable audience, came forward and protested against my using the name of fibres, and diverging fibres? who asked me, like a school-boy, what I call *diverging*? and who, when I requested him to give a name to what he saw, called it '*fibrous appearance*.'

According to our ideas and observations, there is a brown and white matter in the medulla oblongata; and the white goes out of the grey. The Historian replies, p. 34, 'that the origin of all or even of any of the fibres from the grey substance of the medulla oblongata, is a mere assumption.'— No such matter or grey substance has been pointed out as attached to the fasciculi, or intermixed with them, p. 35. He doubts, whether the corpora pyramidalia increase during their ascent, p. 76. and, therefore, in his book on the brain, has chosen the name of oblong bundles; but he calls upon us, according to our own hypothesis, to point out the grey matter which affords the reinforcing fibres, p. 76.

How shall I prove the existence of brown matter to him, who, in presence of two hundred spectators, declared he saw no brown substance, while all beside declared they did? I know that there are persons who cannot distinguish one color from another, brown or red, for instance, from green; but the mechanical dissector having found in the brain so many shades of brown cannot be excused by that natural defect.

The only explanation in his favor may be, that nervous affections are often intermittent. Hence it may be, that just on that day his sight was disturbed, and could not distinguish either fibres or colors. But what astonishes me is, that his affection continues so long, and that he cannot yet see brown matter in the medulla oblongata, and in the pons. As he cannot see it, he adheres more to the literary gospel, which, p. 265, denies the brown matter in the pons, than to his recent quotations in his historical treatise. If he himself has no confidence in Santorini, why does he represent to his readers that writer as an excellent author? ' (which by the by I believe him to be).' The Historian, however, quotes, p. 66. the passage of Santorini, relative to the decussation, where Santorini states, that he employed a long maceration; 'for in this way, the fibres being very much washed, and the *intervening cortical or cineritious* matter in great part dissolved, and the filaments of the membranes becoming loose, they are each of them more clearly seen;' and yet, ten pages latter, he states, that there is no grey substance to afford the reinforcing fibres. In speaking of the pons, we shall find that the Historian, with respect to Vieussens, commits the same error of which he is here guilty against Santorini. Why does he consider his readers endowed with so little power of comparison?

SECTION VIII.

In our views, the cerebellum offers the following considerations: It is a particular apparatus, in connexion with, but independent of, the rest of the nervous system as to its existence and functions. In reptiles and fishes it is single

and smooth, in birds single and lamellated, in quadrupeds lamellated and augmented by lateral parts. Animals with a single cerebellum have no pons; in quadrupeds the pons is always proportionate to the lateral parts; the cerebellum is in communication with the medulla oblongata by a fasciculus of the corpora restiformia; at the spot of this communication there is greyish matter, the whole of which is called by anatomists the corpus dentatum, or serratum, or rhomboideum, or nucleus, or zig-zag: The brown matter of the cerebellum is proportionate to the white: Finally, the cerebellum is smaller in young animals and in children than in adults, and most commonly smaller in females than in males.

By the conscientious Reviewer, Dissector, and Historian, only some mechanical appearances are spoken of. The Historian reproaches me for not having shown, in the second demonstration, the set of fibres which bring the cerebellum, especially the corpus dentatum, into communication with the medulla oblongata, nor that set of fibres which we were accustomed to call converging. It is true I did not do so in the second demonstration, but I have done it in other towns as well as in Edinburgh, to a great number of professional gentlemen; and I offer to show the fact to any one who shall procure a fresh brain. For the second demonstration, I trust, I was sufficiently patient with such mechanical dissectors, who tried my temper for nearly five hours in beginning their attacks with a moral question, and quibbling about mere words, such as continuation, fibres, diverging direction, the existence or non-existence of brown matter, and other mechanical definitions; about expressions which they had partly used in their own works, and which

they now maintain to have been known 150 years ago. Supposing that I had not shown every thing in one demonstration, it is easily understood, that this must be the case, as it is quite impossible to proceed through the range of demonstration in one brain, particularly if it is turned about and frequently exposed to two hundred spectators. Did I not offer to the mechanical Dissector to repeat the demonstration whenever he might feel inclined, and opportunity occurred? Why has he then rather avoided my presence than contrived to promote mutual information? Why, like the rest of the opposition, does he not make himself acquainted with the real meaning of our investigations? Why does he turn away his eyes from the facts which I submit to the examination of my auditors?

In our works we speak, with all other anatomists, of greyish substance in the interior of the cerebellum, called corpus dentatum. As this appearance is generally known, I was amazed to read in the literary gospel, p. 269, 'Be it known to the reader, that the corpus dentatum, which they have described and represented in their engravings as a great ganglion for the reinforcement of the diverging fibres of the cerebellum, does not contain one particle of brown matter.' The mechanical Dissector makes use of the name nucleus, which hitherto was used as synonymous with corpus dentatum, but he means by that expression the nucleus of the nucleus.

The Historian had many words to say about the corpus dentatum, and he complains, that I did not listen to his observations. It may be, that my answers were sometimes different from what they would have been, had his manners

and language accorded with the usual rules of decorum and politeness. Our idea is, that the bundle which comes from the corpus restiforme, meets greyish substance, which is in proportion to the cerebellum. The form in which the brown matter appears, is secondary in our views. The corpus dentatum is modified as to size and form in every man. It also presents a modified configuration in each brain according to a vertical, oblique, horizontal, lateral or mesial section. In the plates of our large work, we have given five different representations of five sections in different directions. We maintain, that the appearances are different, on account both of the sections in different directions and of five different brains. How then could the Historian compare his figure of the corpus dentatum with one of ours, while both cerebella were different in size and form, and the corpora dentata are not cut in the same direction? The cerebellum of our plate was larger, that of his figure smaller: we have cut more towards the mesial line, he more externally. In addition to which, the interior of the corpus dentatum in our plate xii. and in its diminished copy in my book on Physiognomy, plate iii. fig. 2. contains more white matter than he has represented in the copy which he has taken from our plate. Is this whole proceeding consistent with candor?

SECTION IX.

The next point to be considered is the pons or annular protuberance. Besides the transverse fibres belonging to the lateral parts of the cerebellum, it contains brown matter and longitudinal threads, viz. the continuation of the pyramidal, oval, and a part of the restiform bodies and new additions.

The conscientious Reviewer states, p. 265, 'These infallible anatomists have also described the annular protuberance as another large ganglion, containing much brown matter. This too is incorrect; it is composed chiefly, if nor entirely, of white substance.' The mechanical Dissector says, p. 140, 'The nervous matter of this protuberance is chiefly, if not entirely, of the white kind; the quantity of the brown, I believe, will be found exceedingly small.' The Historian affirms, p. 77, that 'the annular protuberance, instead of containing a large quantity of grey matter, seems scarcely to contain any of this matter at all.'

It is easy to shew the brown color to every one who has eyes to see. Many anatomists speak of cineritious substance in the pons. Wherever I have demonstrated the brain, and in Edinburgh also, every other spectator has distinguished two colors, a brown and a white, in the pons; the Anatomist *par excellence* alone cannot see it. Does he not believe in its existence to be consistent with the literary gospel? But how will he reconcile such a state of his vision with his confidence in Vieussens? As Historian he says, p. 14, 'That Morgagni *justly styled* Raymond Vieussens, "*Monspeliensis Academiæ decus et lumen,*"' and he himself, p. 82, calls Vieussens an 'able anatomist;' but Vieussens has seen and described cineritious substance in the pons. I can only account for his inability to find brown substance in the pons, by his macerating small portions of brain in alcohol or acids. In that way the brown color may disappear. He therefore will do well to examine a

fresh brain. If he then cannot see it, he must find his consolation in other persons who cannot distinguish colors.

The Historian complains, p. 63, that I hesitated to define the boundaries of the corpora pyramidalia. The spectators will recollect that I have answered twice, that we call pyramids what all anatomists call so; that we disapprove of this mechanical name, but make use of it to be understood; that the essential point in our views is the connexion of the cerebral parts with the rest of the nervous system, viz. that in each hemisphere only a part is connected with the opposite side. The spectators will recollect also, that when the Dissector repeated his demand, I repeated the former ideas, made them a longitudinal incision through the pons, and went round to show that mass, in the figure which the Historian has copied from our plate, f, bounded by n-o, which he describes, p. 210, as the line of separation between the posterior set of the diverging fibres and the anterior set, *f*, or those proceeding from the corpus pyramidale. The mechanical Dissector was not yet satisfied, but desired me again to mark the boundaries of the pyramids. To procure quiet, I marked them on the bit which was cut transversely, at the lower edge of the pons. The Historian says, p. 64, that I marked 'from the forepart of the medulla oblongata to the fourth ventricle:' I do not believe it, since I went round among the spectators, and did not shew the mass from the anterior surface to the fourth ventricle, but only backward to the marked line n-o; and since I spoke distinctly of a posterior set of fibres which do not decussate. Why did the mechanical Dissector not correct me at the moment, as he was so anxious to oppose? In short, the

description which I gave in the second demonstration, and what I have shewn to the spectators, and all our works, and all other demonstrations which I have given in Edinburgh, and even what he has copied, p. 210, from our description, prove that we are better acquainted with the structure of this part.

The Historian, after a painful research, proves, that the connexion of the medulla oblongata with the crura cerebri was known to many anatomists before us. Have we ever maintained the contrary? In the description of this part, in the memoir to the French Institute, we say, p. 134, 'Pour bien voir ce passage, *connu de la plupart des anatomists*, on fait une incision,' &c: we believe only to have given a better description, especially with respect to the longitudinal threads, and to have first shewn the new additions, which the Historian does not yet admit, because he says, p. 84, 'Supposing it to be true, *which is far from being proved*, that the longitudinal filaments in the annular protuberance are largest towards the upper part, where they are connected with the crura cerebri, it is in no degree more accurate to describe them as extending from the pyramidal bodies, and receiving an increase of fibres as they proceed, than it would be to say that they descend from the crura cerebri, and that part of them are prolonged to the corpora pyramidalia, while part of them are lost in the protuberance.' At all events, however, this physical appearance, which we have first described and represented, has some interest for a mere mechanical Dissector. Besides, as it is preferable to describe the fifth pair of nerves and others from the medulla oblongata, rather to the tongue and organs of mastication,

than from these apparatus to the medulla oblongata; and as in the lower animals nerves exist without brain, and in many quadrupeds a large spinal cord and small brains, we think we can describe the cerebral parts, added to the nervous mass, more properly as beginning with the medulla oblongata. But in the year 1815, when the Dissector wrote professedly on the brain, he did not know this passage of the pyramids though the pons; or if he knew it, why did he terminate the brain proper at the upper edge of the pons, ascribe the mass of the pons to the cerebellum, and the medulla oblongata to the spinal cord?

SECTION X.

One of the most important points in our anatomical inquiries concerns the two orders of fibres, viz. diverging and converging, or uniting.

The conscientious Reviewer very modestly decided on this point, stating, p. 261, 'Such is the grand system of the diverging and converging fibres of the brain, of which Drs. Gall and Spurzheim are the sole inventors and proprietors; a discovery truly, which, at some future time, may throw light on the most obscure operations of the microcosm. In the meanwhile it is our painful duty to remark, that the system is a complete fiction from beginning to end. The incorrectness, too, of these gentlemen, on this occasion, admits of no explanation or apology on the score of ignorance: their unceasing professions of the time and labor they have bestowed on the dissection of the brain, entirely preclude this excuse; we must ascribe their inaccuracies solely to intention. It is a wilful misrepresentation

in them, therefore, to affirm, that in portions of the brain, *which are composed purely of white nervous matter*, (this phraseology is an invention of the Reviewer,) either diverging or converging fibres can be shown by the method they have described. They have represented such fibres, it is true, in various plates of the folio engravings; but we can confidently affirm, that no such appearance as they have thought proper to represent between them, is capable of being demonstrated in the human brain by the manipulations which our authors all along profess to practise.' (Hey, ho! is it so?)

The mechanical Dissector has not ascribed the two orders of fibres. The Historian, however, is very anxious to prove, that there our ideas are not original. But we positively maintain, that they are not found in the works of any anatomist before us, and that, as the conscientious Reviewer says, we are the sole proprietors. All that has been observed by our predecessors is, that the external part of the crura are connected with diverging fibres, which since Vieussens have been described as descending to and communicating with the medulla oblongata. Even Reil (to whom the learned Historian will not do the injustice to insinuate, that Drs. Gall and Spurzheim have borrowed from him their views without acknowledgement, p. 99.) deserves to be mentioned here, only with respect to his essay published in Gren's Journal for 1795. The description he gives, quoted by the Historian himself, p. 98, is applicable only to the same parts which Vieussens had shown, and which Monro and Vicq d'Azyr had attempted to represent. The passage does not leave the least doubt.

It is, 'Each crus, *being embraced by the optic nerve*, spreads out like an unfolded fan, almost horizontally, below the great cavity of the brain, towards the inferior and lateral parts, and towards the extremities of the brain.*' There is no mention made of the two orders of fibres diverging and converging, none of the two sets of the diverging fibres, not even of the diverging bundles in the great cavities of the brain. After having spoken of the convolutions, I will show, whether Reil, on whom the Historian bestows so much praise, can be considered as entitled to original claims in the two essays inserted in his Archives of Physiology for 1809 and 1812. At all events, the literary gospel, and Anatomist *par excellence*, when he wrote his book, were not acquainted with that structure. Even now the Historian denies evident appearances in the crura and their lateral distributions. He says, p. 103, 'The crura cerebri, according to Drs. Gall and Spurzheim, contain throughout their whole length a great quantity of grey substance, by which they are continually reinforced with new fibres; whereas the quantity of this substance mingled with them is just perceptible, and no more, and the reinforcement of fibres from it is a mere averment, for which there is no foundation. Nor are there better grounds for the statement, that they receive a still greater increase just where they are embraced by the optic nerve; neither their greatest increase

* Jeder Schenkel breitet sich alsdann, nachdem ihn der Sehnerve umfasst hat, als ein entfalteter Faecher fast wagerecht under der grossen Hirnhoehle gegen die unteren Flaechen, Seitentheile und gegen die Extremitaeten des grossen Gehirns aus. *Gren's Journal*, I. p. 162.

of all, nor the means by which, according to their own principles, it must be accomplished, are susceptible of demonstration.'

The mechanical Dissector will excuse me; I never said he could do it, I only say, that I can demonstrate all these statements to be facts to any one who shall procure a fresh brain.

The Historian prefers, p. 105, a singular accusation, in stating, 'Their description excludes the posterior lobe of the brain-proper altogether from any connexion with the crura, which is an error of unaccountable magnitude; in so far as the mass of fibres which radiate from the crura into this lobe, is fully as great as that extending into the other parts of the hemispheres, if not greater.' It seems the Historian, in writing this, had forgotten the passage, p. 62, where he says, 'The second set are distributed on the convolutions of the posterior lobe, and on those which are situated along the whole upper margin of each hemisphere towards the median plane; and their description occupies the paragraphs of the Appendix, from 30—33.' Page 7, he tells his readers, that he has inserted verbatim the Appendix, that 'it will enable them to perceive, *whether or not* he has, *on all occasions*, *correctly* interpreted the meaning of the descriptions which are the object of his criticism.' I copy these paragraphs verbatim from the Appendix. § 30. Il nous reste à parler de la formation du lobe posterieur et des circonvolutions situées au bord superieur de chaque h misphère, vers la ligne médiane du cerveau. § 31. Le faisceau qui sort des corps olivaires et quelques autres faisceaux posterieurs montent, comme les faisceaux des pyra-

mides, entre les fibres transversales de la commissure du cervelet. Dans ce trajet, ils acquierenet un renforcement qui est bien moins considerable que celui des pyramides, et ils forment la partie posterieure et interieure des grands faisceaux fibreux (des cuisses) du cerveau.' (Thus, we are arrived at the crura.) 'Ici ils acquierent leur plus grand accroisement par la masse épaisse de substance grise qui s'y trouve, et qui avec les filets nerveux qu'elle produit, form un ganglion assez dur, applati au milieu et inégal en haut et posterieurement. § 32. Ce ganglion a jusqu'à present, été connu sous le nom de couches optiques; mais une couche nerveuse du nerf visuel est seulement attachée à la surface posterieure externe de ce ganglion. D'abord ce ganglion n'est nullement en raison directe avec le nerf optique, mais il l'est avec les convolutions qui sortent de ce ganglion. Ensuite en examinant l'intérieur de ce ganglion, on trouve une grande quantité de filets nerveux très fins qui tous vont en montant, et dans une toute autre direction que le nerf optique. Ils se réunissent à leur sortie, au bord superieur du ganglion, en faisceaux divergens. Les anterieurs de ces faisceaux traversent un grand amas du substance grise, et prennant un nouvel accroirement de cet amas, de sorte qu'ils suffident pour former les circonvolutions *posterieures*, et toutes celles qui sont situées au bord supérieur de chaque hemisphère vers la ligne médiane du cerveau.'

Now, if the posterior internal part of the crura enters into the optic thalami, and these form the posterior lobe, I ask every intelligent reader, 'whether our description excludes the posterior lobe of the brain-proper altogether from

any connexion with the crura?' or whether the interpretation of the Historian is 'an error of unaccountable magnitude?'

I can conceive, that an anonymous Reviewer, endowed with his proper modification of consciousness, states what seems suitable to his purpose; but it passes my conception, that the Historian could write, p. 109, 'These gentlemen have passed over in silence the numerous delicate filaments of white substance, which shoot out from the anterior radiations of the crura into the inner bulbous part of the corpora striata, and are there entirely lost; an omission which is the more remarkable, as these fibres present another instance of a distribution quite irreconcileable with their system of continued reinforcement.'.

I only answer, that in our plates v. vi. and xiii. are represented the numerous delicate filaments of white substance, which (to use the Historian's expressions,) 'shoot out from the anterior radiations of the crura into the inner, as well as outer, bulbous part of the corpora striata.' The outer part is marked L, the inner l, and the large fibrous bundles between them are marked S.

Another singular accusation may be read in the pamphlet, p. 111, It is said, that in the second demonstration I have not allowed to my spectators 'a moment's time for close examination.' I depend on the veracity of the spectators, whom I purposely requested to leave one bench empty, that I might show every preparation as near as possible. In fact, I dare say I took more trouble in showing the preparations than is commonly the case in anatomical demonstrations, and that, though repeatedly and captiously inter-

rupted, I continued, for near five hours, to go round and between the benches.

This accusation affords me the opportunity of amusing the reader with an anecdote, which will show the zeal of our antagonists in promoting anatomical knowledge. A girl with chronic hydrocephalus and a considerable extension of the head, had died in the clinical ward in the Infirmary of Edinburgh. A friend of mine was so kind as to inform me that the dissection was to be made at half past twelve o'clock, the 28th of December, 1816. As this is one of the cardinal points of our anatomical inquiries, and one that has been the most determinately opposed by the Edinburgh Review, I placed myself, as might be supposed, among the spectators.

Without informing the spectators what was to be done, the dissectors set to work. They employed more than sufficient time to take off the scull-cap; but the spectators, excusing the anxiety of the operators not to spoil their important work, remained quiet. The scull-cap, when taken off, was handed round:—Meanwhile the dura mater was removed, and every spectator, I suppose, expected to see the appearances exhibited, OR AT LEAST TO HEAR THEM MENTIONED; but no such thing. The dissectors in the area surrounded the body, *put their heads together*, so that no one could see what was going on, except themselves. The pupils expressed their disapprobation by hisses. This induced the great dissector to promise that the particulars should be made known. The water was taken out of the ventricles, the cavities were laid open, and the cerebral parts divided into pieces, which at least ought to have been

handed round. In vain the spectators repeatedly hissed. The dissectors in the area continued to keep close together round the hydrocephalus, and proceeded silently with the dissection. A gentleman in the area moved sidewards, to give me at least a distant view. But he who accuses me of not having given to my spectators a moment's time for examination, placed himself in the opening just before me. The spectators of my second demonstration, however, will recollect, that all his cavilling could not induce me to neglect him in any thing. Though the particular appearances were kept out of view, yet by chance I perceived that the brain had not been absorbed, but that the convolutions were shallow and greatly distended. So much for the boasted agency of absorbing vessels!

I have witnessed many morbid demonstrations in various countries, but in no university or college did I ever see a public dissection made with less advantage and less instruction to the pupils. The child was kept in the hospital for many months, and the clinical Professor expressed his desire, that the pupils should derive every possible information from it. To him I give my particular thanks for his kind intention in affording me this opportunity. I regret the more his indisposition, which prevented him from being present at the dissection. I am convinced that he would have gratified me with the inspection of this hydrocephalic head. I consider it in general but justice to state, that neither the professor, nor any of the other gentlemen eminent in medicine, had any share in preventing this case from receiving its proper publicity. *Who was capable of doing so, I leave the conscientious Reviewer and mechanical Dissector to determine.*

The Historian also avers, p. 117, that his figure of the corpus olivare is after nature, and ours imaginary. He cannot have dissected the corpus olivare very often, because he has not yet learned that it varies, like the corpus dentatum, in size and form, in different individuals, and that the form appears different according to the section. His is horizontal, and ours vertical; hence the appearances must be different.

There is still a singular accusation: I am happy that there were so many present who will recollect what happened. Pages 28 and 112, the Historian states, that I denied assertions contained in our works. This, however, I have never done. The first passage of my book was read, when the Dissector intimated, that we maintain, that *all the fibres* of the crura originate from the medulla oblongata. He then read, p. 36—37, 'I shall now examine the organization of the brain. Immediately before their entrance into the pons Varolii, the pyramids are slightly contracted, but as soon as they enter this mass, they are divided into many bundles, which spring out of the large mass of grey substance contained in the pons Varolii. These longitudinal bundles are covered by a thick layer of transverse cords, which comes from the cerebellum, and which I shall describe hereafter. Some longitudinal bundles are disposed in layers, and others are interwoven with transverse cords. They ascend, and are successively enlarged, so as to form at their exit forward and outward, at least two-thirds of the crura cerebri. Thus, the anterior and external bundles of the crura cerebri are the continuation and gradual completion of the primitive pyramidal bundles.'

Immediately after the second demonstration, I caused an anatomical prospectus to be printed to prevent all cavilling suggestions. There, p. 7. I mentioned this peculiar opinion, and ask, 'Was he anxious to defend the Edinburgh Review, because, at the same time, he insisted on another suggestion, which he could have learned only from page 258 of the Edinburgh Review, where it seemed suitable to state, that all the diverging fibres take their origin, it seems, in the brown matter of the medulla oblongata?'

When the passage of my book was read, I publicly declared, that I still maintain the same assertions with respect to the successive reinforcement. Thus, I denied not what was in the book, but only his suggestion, that all the diverging fibres of the brain take their origin *in the brown matter of the medulla oblongata.*

The next passage was read, when I examined the structure of the external part of the corpus striatum, and when the Dissector protested against the name fibre; when he maintained, that the brown matter is firmer than the white, and that the former may give to the latter its fibrous appearance. Then he read pages 20, 21, of my book, where I speak of the fibrous structure of the white substance. He insisted upon the idea of the Edinburgh Reviewer, p. 256, 'We suspect that when our authors are desirous of demonstrating to their less knowing pupils, that the white matter is fibrous, they exhibit some portion of the brain, where, in consequence of the alternations of the two kinds of matter, the white is disposed in threads through the brown. Our readers will perceive, however, that this is quite a different species of fibrousness from that of either

kind of matter taken by itself.' We maintain, that the white is fibrous whether it is intermixed with brown or not. But how could the Historian relate, p. 112, that 'I denied to have ever affirmed, that the white substance, apart from the grey, exhibited a fibrous structure.' Is not the whole order of our converging fibres entirely white? A great number of auditors, not only in Edinburgh, but wherever I have demonstrated the brain, will recollect, that I have shown the fibrous structure of the corpus callosum. It seems the Dissector is accustomed to contradict, and under whatever form he appears, likes to follow his natural inclination.

I leave to those who have seen the demonstration of the brain, to judge whether or not the following remarks of the Historian are correct. Page 134, he says, 'that under the denomination of diverging and converging fibres, we have described and represented as demonstrable, and even gone so far as to delineate in our engravings, parts which have no existence in this organ; and that we have maintained connexions to subsist betwixt all these parts for which there is no foundation in nature, and which they are under the necessity of denying when called upon to display in their public dissections.' I, however, have more than once, even in Edinburgh, been told, that in nature the appearance of diverging and converging fibres is more distinctly seen than in our plates. As the Anatomist *par excellence* in many respects differs from other anatomists and physiologists, I may suppose that his eyes are of a peculiar conformation.

SECTION XI.

The last point of our anatomical considerations concerns the structure of the convolutions. We were the first to teach, that they can be unfolded or distended into two layers or fibres.

The literary gospel states, p. 262, 'We affirm it as the result of many experiments, made under every variety of circumstances, that there is no foundation whatever for the supposition, (for supposition at best it is,) that the convolutions consist of two layers contiguous only in the middle.' The mechanical Dissector passes over in silence this anatomical point. The Historian, though he has great confidence in the correctness of Reil, and though he has translated a passage from Reil's archives, stating that the medullary laminæ in the middle of the convolutions cohere the most weakly (die Markplättchen in der Mitte der Windungen hangen am schwaechsten zusammen) maintains, however, throughout his pamphlet, that the convolutions cannot be unfolded into two layers.

The most curious is the weight he lays on our not being able to demonstrate the existence of a fine nevrilema between the two layers. This remark particularly characterises a mechanical Dissector. We maintain, that the convolutions can be more easily separated in the middle line, and unfolded into two layers; he, from mere fondness of contradiction, does not reflect, that the non-existence of the fine nevrilema is in our favor, because the separation will

be still more easy. I will give a few details that the reader may the better understand this point.

When we submitted our memoir to the French Institute, the commissioners related, that we consider each convolution 'comme une espèce de petite bourse ou de canal,' &c. We replied, that this is not our meaning, but that we admit 'une adhérence de contiguité entretenue *peut-etre* par du tissu cellulaire, mais non une adhérence de continuité par confusion de substance; une adhérence dans le sens d'agglutination (Anklebung) mais non dans le sens de concretion (Verwachsung).' *Memoire*, p. 200.

I never speak of this fine nevrilema, and have not done so in any demonstration in Edinburgh; its existence is quite a secondary consideration, the possibility of separating the convolutions into two layers is the leading point. How then could the pamphleteer represent it as the most important matter, and repeat five times, that, if we can unfold the convolutions, we cannot show the very fine cellular tissue? The mechanical Dissector may amuse himself with its discovery and demonstration; our great pathological point is ascertained, viz. the unfolding of the brain in large hydrocephalic heads.

As nothing is more easily demonstrated in every brain, than the separation of each convolution into two layers, I will not lose time in detailing unmeaning and secondary protestations. I only mention, that the Historian confounds the bottom with the top of the convolutions. It seems, however, very natural to understand what part of the convolutions we call bottom; because we begin the demonstration

of the brain with the medulla oblongata, and consider the successive reinforcement from below upwards. Now it seems natural, that we come first to the bottom of the convolutions, then to their top. It should be the more difficult to misunderstand our meaning, that we always in our demonstrations (and I have done so in Edinburgh) repeat, that the bottom of the convolutions corresponds to the ceiling of the ventricles, particularly to that spot where the diverging and converging fibres cross each other.

The structure of the convolutions is intimately connected with the appearance of large hydrocephalic heads. The cerebral mass is not absorbed, but distended by the water contained in the ventricles. The principal changes take place in the corpus callosum, its appendices, and the convolutions of both hemispheres. The corpus callosum is entire and lifted towards the top of the head, the falx is elongated, the convolutions sometimes quite distended like a thin membrane of cerebral substance, from within white with horizontal fibres, and covered on the external surface with cineritious substance. The distension, however, is not mechanical, but also vital and susceptible of modifications, on account of the continual decomposition and new composition which takes place in the organization in general. At all events, the brain is never annihilated while the mind continues to manifest itself.

The literary gospel states, p. 262, that our conjectures about hydrocephalus internus are quite of a piece with our other discoveries; hence, trash, a complete fiction from beginning to end, trumpery, quackery. The objections of the conscientious man have the appearance of reasoning; I

will therefore answer them as I have done in my Anatomical Prospectus.

1. 'Pressing against the convolutions, we presume, would equally succeed, if the brain were made of putty, or tallow, or soft wax.' The Historian speaks the same language.

Ans. This is by no means the case: a convolution can be extended only to the double of its vertical depth, and during that proceeding it shows an internal groove.

2. 'It is not conceivable, that the secreting vessels should pour out the serous fluid with a force sufficient to account for the distending power in this case.'

Ans. This view is too mechanical; has been invented by the conscientious Reviewer, and is now supported by the Historian, p. 158. I say in my Prospectus, 'Two things must be considered,—a vital process, and an extension by pressure.' The skull, dura mater, and falx, cannot be extended by mechanical force alone, any more than the orbit by a carcinomatous eyeball. This happens by a continual change of matter, during which, according to a general law of nature, the parts which contain, in their new composition, are deposited according to the circumference of the contents. Moreover, the hydrocephalic heads are not formed suddenly, and a slight successive pressure would separate parts which a sudden pressure would destroy. Finally, in the distension of any part by dropsy, &c. such as of the eye or skin, we can never account for it by the force with which the secreting vessels pour out the serous fluid. It is the more astonishing that the Reviewer has imagined such a power, and the Historian continues to

speak of it, while the third remark refutes their inept suppositions.

3. 'It is the very height of improbability, that any such distending power as is here maintained' (suggested by the Reviewer) 'should not produce insensibility, or even death in the individual, the instant it began to operate.' The Historian, p. 158, expresses the same idea, 'that no individual could survive the operation of such a pressure on this organ beyond a few minutes.'

Ans. The invention of such a distending power of the secreting vessels shows the mechanical tendency of this changeable person.

4. 'It is quite incompatible with the physical properties of the cerebral matter, so far as they are yet known to us, to imagine, that the parts immediately forming the sides of the ventricles can admit of a degree of extension such as this theory supposes, without great and obvious laceration.'

Ans. Because it was not known, we looked for an explanation. An extension of the brain takes place, the ventricles are enlarged by the accumulation of water, the convolutions disappear proportionately, the vertical fibres of the convolutions become horizontal, the internal surface remains white, and the external brown. These are facts to be seen in every hydrocephalic head; but nothing can explain them better than the gradual separation of the convolutions from within into two layers.

5. 'If there be merely a stretching and unfolding of parts in large hydrocephali, as much cerebral matter, surely, ought to be found distributed through the sides of extended

as of the unextended cavities, though somewhat differently disposed; and yet, we believe, there never was an instance of a large hydrocephalus, in which, upon attentive examination, a greater or less deficiency of cerebral matter was not exceedingly obvious.'

Ans. So he may say, who has never opened a hydrocephalic head, or, at least, not with the attention which the Reviewer recommends. We have opened such heads, and rely on it, that accurate anatomists in future will find as much cerebral mass in the extended as is commonly found in the unextended state. It rather appears to me extraordinary, that the parts which undergo the changes are sufficient to form the envelope which contains the water.

6. 'With respect to the argument deduced from the observation, that persons with hydrocephalus often retain their intellectual faculties, is so manifest a petitio principii, as not to require pointing out.'

Ans. This is certainly no proof for him, who is not aware of the importance of the brain, who considers its physiology as useless to the medical profession; or for a Reviewer who thinks, that his limbs are fit for voluntary motion without a spinal cord. After his assertion, that 'numerous unequivocal instances are on record, and are even occurring every day, in which large portions of the brain, nay, almost the whole, if not actually the whole of this organ, have been completely destroyed by the progress of this very affection; as he holds this to be a fact just as certain as that there are many persons now alive whose legs have been removed by the knife of the surgeon,' it ought not to be difficult for him

to show every day such facts to accurate anatomists. If he can ascertain only one fact, that a hydrocephalic head has continued to manifest the operations of the mind, while the whole brain was completely destroyed and absorbed, I will abandon my investigations into the structure and functions of that organ, and will be satisfied with ignorance. But as long as such a fact is not shewn, I continue to maintain, that the mind cannot manifest its powers without brain, any more than a limb which has been removed by the knife of the surgeon can exercise voluntary motion.

The Reviewer then concludes his sapient remarks on hydrocephalus, 'We have only to add, that we have always been accustomed to consider the changes produced on the cerebral mass in every degree of hydrocephalus, as the effect of an increased and peculiarly regulated absorption; and that we never dreamt of any other agent being concerned in the process, or ever heard of any other explanation of the phenomena being suggested by persons whose opinions have the least weight in physiological matters.'

Ans. This is dogmatism in all its glory. In the same manner the whole of modern chemistry might be spurned at, because formerly phlogiston was considered as sufficient to explain the phenomena; and all persons, whose opinions had the least weight in chemistry, were satisfied with this explanation.

We have hitherto seen, that in general the Historian had very little regard for the literary gospel. Not once has he quoted it; on the contrary, he has always proved by quotations from excellent anatomists, that the propositions which the conscientious man denies in the most

positive, and not always in the most polite expressions, have been known for centuries. With respect to the existence of brain in hydrocephalic heads, the Historian places the critical Reviewer in a singular situation, and stops him short, by proving that the brain exists, and that Vesalius, Tulpius, Petit, and Morgagni have known it to exist. I now call the attention of the reader to my book on Physiognomy, which it was the duty of the conscientious man to review, instead of asserting what suited his purpose. In this very book he will find the same authors quoted whom the Historian mentions. I even flatter myself, that I have given the history of hydrocephalic heads more complete than the Historian himself. Therefore his conscientiousness forsook him, when he neglected my quotations. The Reviewer and Historian may settle the dispute; we meanwhile continue to maintain our first proposition, that in large hydrocephalic heads the brain always exists.

The Historian speaks of three sorts of large hydrocephalic heads; first, p. 149, of those, as we have described, where the brain begins to increase in its external dimensions, and the convolutions become shorter and shorter, and at last disappear. 'In other instances,' says he, p. 151, 'if the patient does not sink before such extensive changes are accomplished, even the thin remaining layer of white and brown substance forming the vault and sides of the ventricles, gradually disappears, and with this, at last, portions more or less extensive of the parts of the brain situated towards the basis.' We deny any existence of this sort. The thin layer or membrane of the brain never entirely disappears. Morgagni, long ago, has proved

how it comes that superficial and inaccurate dissectors have formed such an erroneous opinion; and the Historian might have rectified his error, if he had paid due attention to the details related by Morgagni. (Epist. xii. de vuln. capitis.)

Of the third sort, the Pamphleteer speaks as follows: 'Sometimes it would appear that the brain may be very greatly enlarged in consequence of effusion into the ventricles, and yet the convolutions not be at all affected. Such a case occurred to Reil; and he mentions expressly that the extension was confined entirely to the ventricles, and that all the convolutions were solid, and not split up, (gespalten).'

We have seen such cases, and maintain, that the convolutions never appear split up, and cannot appear so on account of the tissue formed by the diverging and converging fibres at the bottom of the convolutions. The convolutions, wherever, and with whatever depth or height they appear, are solid; they only become shallower by degrees; and the vertical fibres are extended into a horizontal position. The hydrocephalic head of which Cuvier speaks in the report on our Memoir, we had shown to him in Paris; the convolutions were thinned, and partly effaced, but, as far as they existed, preserved their internal solidity, as is the case in every other brain.

Thus we admit only one sort of large hydrocephalic heads. The brain is always present. The cavities are distended, the convolutions more or less disappear, and proportionately become shallower; their vertical fibres become horizontal, and sometimes these parts lose their convoluted form, though the substance of the brain suffers no diminution.

SECTION XII.

The most grave accusation, and which, if true, were indeed formidable, remains to be repelled. At the end the Historian positively states, p. 187, that Reil has been defrauded; and in p. 99, that Reil has the sole merit of having revived the investigation of the fibrous structure of the brain in modern times; that he is the original discoverer of our ideas, and that we have borrowed them from his writings.

How will the conscientious Reviewer here extricate himself? Why did he deny such things as we maintain in our works, since his Historian asserts that Reil has discovered them, and refers to his Archives of Physiology for the year 1809 and 1812? The Dissector himself, in writing his book on the brain, *forgot* these essays of Reil. But why have we not acknowledged that we owe our anatomical information of the brain to the writings of Reil? The reason is simple; viz. because it is not the case. The proof of this assertion is equally simple: I have only to state the history of our investigations.

While at Vienna, we spoke of the great leading points of our anatomical demonstrations; viz. of the aggregation of various cerebral parts, and their connexion with the medulla oblongata; of the proportion between the grey and white substance; of the diverging and converging fibres; and of unfolding the convolutions.

In the year 1805, the 6th of March, we left Vienna for Berlin, where we repeated our anatomical demonstrations n presence of the medical Professors, and numerous audi-

tors. Outlines of our anatomical and physiological propositions were published, during that spring, by Prof. Bishoff. From Berlin we went to Potsdam, then to Leipzig, where Dr. Knoblaach published an account of our doctrines on the brain. Then the usual demonstrations and lectures were delivered in Dresden, and Mr. Bloede published outlines of our anatomical and physiological views. From Dresden we went to Halle, where Prof. Reil and Loder, and numerous gentlemen of the profession, honored us with their presence at the public lectures and demonstrations. With Loder we repeated several times the anatomical demonstrations, and once we dissected with Reil a brain *quietly* in his own room. He was so much pleased with our demonstrations, that he gave to Dr. Gall some drawings with which he was formerly occupied, *de structura nervorum et cerebelli*. Thus, I beg to observe, that in the summer of 1805 we demonstrated to Reil the same leading points in the anatomy of the brain, which we still maintain. We then continued to lecture and to demonstrate the brain, that very same year, in Weimar, Jena, Geottingen, Brownschweig, Hamburgh, Kiel, and Copenhagen.

In the year 1806, anatomical demonstrations were made in Bremen, Munster in Westphalia, Amsterdam, Leyden, Frankfort upon the Maine, Manheim, Stuttgard and Friburg in Brisgaw. In the year 1807, we went to Marburgh, Würtzburgh, Munich, (where we had the pleasure of conversing with Soemmerring,) Augsburgh, Ulm, Zurich, Bern, Bale; and in the autumn of the same year to Paris, where we dissected the brain, first in presence of Cuvier, Fourcroy, Geoffroi de St. Hilaire, Dumeril, Dr. Démangeon,

and others, and successively in many learned societies. Meanwhile numerous publications had appeared in Germany. Dr. Démangeon, who had attended the lectures in Hamburgh, published in Paris, 1806, his *Physiologie Intellectuelle*, and mentioned our anatomical views.

In March, 1808, we delivered our Memoir to the French Institute. The commissioners declare, at the beginning of their report, that they have hesitated a moment, whether they should examine our paper; because there is a rule, 'de ne point émettre avis sur les ouvrages *déjà soumis au grand tribunal du public* par la voie de l'impression, et l'on pouvoit croire que la doctrine anatomique de Mr. Gall a reçu, par l'enseignement oral que ce professeur en a fait dans les principales villes de l'Europe, et par les nombreux extraits que ses disciples en ont repandus, une publicité à peu-près équivalente à celle d'une impression authentique.' They, however, add, that Gall had not given his sanction to any one of the publications, and that this circumstance was one of the motives which induced them to examine our memoir.

After this, Reil published, in his archives, views essentially the same as ours, of the aggregation of cerebral parts, of diverging and converging fibres, and of the possibility of separating the convolutions in the middle line. He does not state, that he was the first who has conceived such general ideas; nor does he mention us as the inventors. He does not, and could not say, that we have learned them from him; he merely describes and represents them in engravings. As we had been in almost every remarkable town, and at all the universities in Germany, our countrymen

knew how to estimate the proceeding of Reil; and it is only the great publicity of our demonstrations, that can excuse Reil for not mentioning them.

It is true, Reil has chosen other names: he calls our apparatus of formation *Hirnschenkel system*, and our apparatus of union *Balken system*; our diverging bundles are his Stabkranz. We speak simply of fibres, he of various convexities, obtuse and acute angles of the fibres, of laminæ, fossæ, and radii of the white substance; of wings, mountains, lobules, teeth, of a comb, and of similar mechanical denominations. These minute descriptions of mechanical forms, and such names, may appear interesting to a mechanical Dissector, who is attentive to every little cul-de-sac, and declares the anatomy of the brain unnecessary to physiological and pathological views. We, on the contrary, think that there would be no end of such mechanical details in comparative anatomy. If, for instance, in the gradation of animals, every new additional part in the cerebellum is to be named, who will learn all the names? and of what use will such a study be? We therefore point out the structure of each part, well aware, however, that each part is modified in the individuals of different species, nay, in the different individuals of the same species.

This short account is sufficient to prove, that there is no occasion whatever for us to apologize in the least, with respect to the publications of Reil. A few years ago the Historian might have been easily pardoned for his ignorance of historical details; but in the present situation, what his merits are, let others decide.

The learned Historian insinuates, that Reil and Gall had

agreed, that the former was to examine the cerebellum, and the latter the brain-proper. But I affirm, that nothing of that kind happened, nor could happen, because our general views of the brain were discovered before we met Reil at Halle, in the year 1805. Reil, with such brains as he operated on, did not succeed by our method, and therefore thought it insufficient, and preferred maceration in alcohol or acids. His words are: 'The brain is too pulpy and too deliquescent to be examined in connexion without preparation.' He then made frequent use of laceration with the fingers, or of scraping. Thus, the essential difference between Reil's proceeding and ours is, that he prepares the brain artificially, while we prefer a good brain in its fresh state. With this narration I beg the reader to compare the following passage of the candid Historian, where he says, p. 188, 'Reil's expectations of assistance from Dr. Gall were altogether disappointed, so much so, that he seems not to have considered that person's investigations as worthy of attention; but pronouncing his method inadequate, extended his own inquiries to the department thus fruitlessly assigned to another.' This Historian and Critic is told by Reil, that he had tried our method and did not succeed, and hence concludes, that we have defrauded him. A finely contrived story!!!

The Pamphleteer, p. 9, finds it 'amusing to hear the committee of the French Institute occasionally named as supporters of our anatomical doctrines.' Cuvier, however, was too well acquainted with the German and European literature, to accuse us of plagiarism. He allowed that our method of dissecting the brain is preferable to that com-

monly used in the schools; that we are the first who have shewn the swellings in the spinal cord of a calf; the proportion between the brown and white substance in the brain; the true origin of the optic and other nerves; the certainty of the decussation; the successive reinforcement through the pons, crura, optic thalami, and corpora striata; the two sorts of fibres in the brain, and the generality of the commissures. As the Report is printed, even translated and inserted in the Edinburgh Medical and Surgical Journal for January, 1809, the reader, *in perusing the Report*, may satisfy himself. I also ask the Historian, why he has omitted to tell his readers, that Cuvier, in the Annual Report at the end of 1808, published, that our Memoir was by far the most important which had occupied the attention of the class?

SECTION XIII.

Before I finish with the Historian, I have still to reply to his remarks on our Plates. He relates, p. 2, that he has compared our descriptions and engravings *strictly with nature;* and according to p. 165, he has found, that in our plate iv. which represents the basis of the brain in a female, the medulla oblongata points directly backwards, instead of downwards; and the anterior surface of the annular protuberance downwards, instead of forwards; and the anterior lobes are too broad, the surface neither concave nor sloping enough, the middle lobes too wide and not pointed enough, and the forms of the convolutions not natural.

Ans. Who has ever shown or seen a brain, in which,

when taken out of the skull, deprived of dura mater, and placed on its upper surface, the parts of the basis remained in the same position as in the skull? Do not the parts sink more or less, according to the firmness of the brain? I beg the reader to compare with our plate that of Vicq d'Azyr, and see which is the better. I say, the basis represented by Vicq d'Azyr, looks like a soft, collapsed, and flat and deliquescent mass. Indeed, no philosophical mind will, and no mechanical Dissector ought to cavil, about minute changes in relative situation of the cerebral parts, when taken out of the head; since these, like all other bodies, must follow the laws of gravity. I also maintain, that a Dissector who adopts one general measurement, and one general form for all brains and their parts; who does not know that each lobe in every person, as to size and form, is modified, while each, even the minutest part of the brain, as well as of ears and noses, offers modifications, cannot have compared many brains. The important consideration, that each part is modified, is general, and applicable to the parts of every system. It has been well detailed by Dr. Barclay with respect to the blood vessels, in the preface of his Description of the Arteries, and will be admitted with respect to the nervous system, by all those who compare the parts in different individuals. The anterior lobes, as they are represented in our plate iv. may be larger than those of the *accurate* Historian, but they are too small for those men to whom the medical school of Edinburgh is indebted for its first celebrity. I also assert, that the females of Edinburgh, who are known for their talents, have the anterior lobes of their brains larger than those which we have copied.

The remarks of the Historian on our fifth plate can be made only by one who is accustomed to cut the brain mechanically, and who does not consider the parts in connexion, but thinks that all brains, and each part in every brain, are quite the same, without the least modification: I repeat, that we have represented nature, and do affirm, that the general structure of the brain, and its parts, will be found as our plates indicate; but that the modifications of each part are infinite. Such a configuration, however, as the Historian has given of the pons, in his plate i. fig. 2. can only be seen in a putrid brain; or if he gives it as the exact appearance of this part in a fresh brain, he must never have seen the real structure.

As each part in each brain is modified, how can the Dissector maintain, that in plate vi. our representations are not natural? The corpus dentatum, and the arborescent appearance of the cerebellum, seem to him exceedingly incorrect. The former is represented in five different brains and sections, and the latter is shown in seven different brains, partly in the same, partly in different sections; and in each the appearance is modified, for no other reason but because it was so in nature. It was, indeed, more difficult to copy nature exactly, than to make the appearance always the same. I rely on the decision of every anatomist who has had opportunity of comparing brains.

In the viiith, ixth, xth, xith, and xiith plates, the representations of the skull are particularly blamed, and declared fictitious or imaginary, so that they never could have been drawn from nature. In reply, I propose to the Dissector to open the head of a young man, of a very old person, and of

a third, who had long been maniacal, and he may then tell us, whether there is one and the same appearance in the bone. Those who will examine my collection, may convince themselves, that still greater varieties occur in nature than we have represented in our plates.

In plate viii. he finds fault with the outline of the cranium, particularly towards the forepart of the basis; he has never seen an occipital bone of such a form and of such dimensions; such arrangements of lobes and lobules were never observed; the cerebellum is even called a case of monstrosity. Such assertions may be made by a Dissector who never has examined the differences of heads; who thinks, that children of seven years have the full growth of their brains, (the contrary of which, however, any maker of hats might have told him), and that the brains of women and men in general do not show any constant difference. We maintain, that the anterior lobes, their bassilar convolutions, and the cerebella, vary as well as the other parts, and for that reason we have copied them different in size and form, as they occurred.

Plate xvii. is said to be in contradiction to plate xii. The Dissector cannot easily conceive how they may be reconciled. The answer is, that each brain was different, and in the former the bundles were larger, in the latter smaller, and in the latter the bundles are traced to a greater extent towards the convolutions.

In short, he who has not yet observed, that the arrangements, size, and form of the different parts of the brain, present various modifications, instead of speaking of unnatural forms, fictitious appearances, too large or too small, too

wide or too narrow, too thick or too thin, too perpendicular or too horizontal, or similar representations, ought to learn to distinguish the generalities from the particularities, and that one brain is no more the standard of all brains, than the feelings and dispositions of one man are the standard of the whole race.

The conscientious Reviewer complained, p. 154, that he was heartily tired of the mass of nonsense he had been obliged to wade through in my work. I only depend on the constant laws of nature. What has happened, will happen, and every one has the right to observe and to examine for himself. In anatomy, the eyes deserve more confidence than the ears, demonstration than fancy.

I cannot finish this chapter without calling the attention of the reader to a comparison of the statement of the critical Reviewer, the mechanical Dissector, and Historian. To the latter I am under great obligation; and I give him my public thanks for having entirely refuted the conscientious Reviewer, by proving that our anatomical views of the nervous system are not new, and, by detecting the ignorance of that empiric in criticism, has taught him, that not our assertions, but his, are 'mere nonsense, amazing absurdities, nay trumpery, and wilful mistatements.' The Historian also gives a lesson to the mechanical Dissector, and shows him how improper it is for any one not to quote preceding authors, when he writes professedly on a subject. Supported by the Historian, my labor has become easy. According to him, the teachers and practitioners in medicine of Edinburgh do not know any thing about the anatomy of the brain, and not one has eyes to see, or even to distinguish brown

from white; yet he has not ventured to affirm this of all the medical men of Europe; and as it is proved above that we have not borrowed any thing from Reil, we may continue to speak of our discoveries in the anatomy of the nervous system.

There is another great literary tribunal which has condescended to speak of our doctrines. These quarterly judges, however, do not display great anatomical knowledge. They confine themselves to mere general expressions, and are perfectly willing to give us praise in this respect; to allow us every merit for our method of dissecting the brain; for having shown that the nerves of the body have their origin in the respective parts of it, and not in the brain; and for having stated the morbid phenomena of hydrocephalus much more clearly than has been attempted heretofore. How merciful! Indeed I am obliged to their kind judgment. But as the chief judges of these inferior courts are at variance, we appeal to the great tribunal of the public.

CHAPTER II.

PHYSIOLOGY.

After several indirect attacks in the preceding numbers, the literary Oracle of Edinburgh, No. xlix. p. 227, spoke from his tripod, that 'the whole of our doctrines is a piece of thorough quackery from beginning to end.' The Quarterly Reviewer (No. xxv. p. 159.) had so little power of

discrimination, that he confounded my person with all my countrymen, and accounted for my conduct by my being a German and not an Englishman. I know, however, that he does not possess the characteristic qualities of an Englishman; and the incongruous thoughts of the Edinburgh Reviewer shew, that he does not belong to the most thinking people of whom he speaks, No. 49. p. 228. Hence, the reviewers themselves serve as proofs, that one individual ought not to be confounded with the whole of his nation.

SECTION I.

The object of our physiological investigations is the connexion of the manifestations of the mind with the organization. In this respect we maintain, that in this life the mind cannot manifest any power without the instrumentality of brain; and that each sort of manifestations depends on a peculiar part of the brain.

The literary tribunal of Edinburgh does not yet agree with the proposition, that the brain is necessary to the manifestations of the mind. In No. 48, the xth article aspires to prove the contrary. This article looks exceedingly learned, but all the cases, copied from various authors, may be reduced to two classes. The greater number of the facts mentioned prove that the brain may be injured on one side, while the manifestations of the mind continue. This, however, is easily explained, by the cerebral parts being double as well as the eyes, ears, and other senses. Was the Reviewer unacquainted with this circumstance?

Some cases are mentioned, where the whole brain was destroyed, while the mind continued to manifest its powers.

Dr. Quin's, and especially Sir Everard Home's authority is relied on, p. 447. This gentleman saw a 'female child, born hydrocephalic, the head being very large. She lived nearly five months; during this period nearly 128 ounces of fluid were drawn off from the head, at six successive tappings. She was not disordered by the operations, and, notwithstanding the progress of the disease, continued healthy and strong until within twelve days of her death, when she fell into a wasting. On opening the head, two quarts of a clear pellucid fluid were found within the cranium. The dura mater was complete, the edges of the falx and tentorium in contact with the fluid. The spinal cord was seen at the large hole of the occipital bone, and a little medullary bulb behind the orbits, but that was all that could be found for brain.'

There are many cases related in writings, where it is said that there was only water in the cranium, and no brain at all. Sir Everard Home, whose short essay gave to the Reviewer the occasion of writing a long article, seems to have been endowed with the *second sight*, relatively to hydrocephalic heads. It was a great omission, certainly, in the Reviewer, not to copy from Sir Everard's paper, that singular case, which never could occur, described as follows: (*Philosophical Transactions for the year* 1814. Part II. p. 473.) 'In a boy the enlargement of the head was perceived at three months, and increased for three years, and then appeared to be stationary; and the child till that period was sensible. The upper part of the skull, from that time, began to ossify; and in three years more there was only an irregular space of the os frontis remaining

open. The child continued sensible till three years old, and then became gradually less so; did not know what he did; heard sounds, but could not see. At six years old he died. The child was three feet three inches high; the skull twenty-seven inches round; the water contained in the two lateral and third ventricles, was six ale pints and a half in quantity. The cerebrum formed a thin case of medullary substance, surrounding this cavity. The cerebellum was entire.' In a note Sir Everard adds, 'The lining of the lateral ventricles was tough; the septum lucidum elongated, so that the corpus callosum was raised up close to the skull; the *falx of the dura mater being entirely obliterated. The water in the third ventricle had split the fornix and septum lucidum into two, and the thin membranes in the lucidum had holes in them, making a communication between the third and lateral ventricles.* The substance of the brain surrounding these cavities, as well as the pia mater covering it, had no convolutions; there was a continued smooth surface. On the right side, *upon which the child was usually laid, there were no remains of medullary or cortical substance, and there the pia mater and dura mater adhered together; there was no remaining brain between the third ventricle and sella turcica.* On the left side of the left hemisphere the medullary and cortical substance was only half an inch thick. The corpora striata and thalami nervorum opticorum were small and tough; the union between the thalami was elongated into a broad flat ligament. The two commissures and iter ad infundibulum had the natural appearance. The olfactory nerves were tough and small; the optic nerves had no medullary pulp; the

other nerves going out of the skull had undergone no change.'

Why has this infallible Reviewer written so many essays against miracles? Was it this case which induced him to exclaim, p. 448, 'This essay we have little hesitation in pronouncing to be one of the most creditable papers which Sir Everard Home has produced. The object of it is quite philosophical, and it is respectably executed.' I beg, however, leave to remark, that *such things* as are here stated by Sir Everard, are in absolute contradiction to nature and to reason. Who could see that the two commissures and the iter ad infundibulum had the natural appearance, while there was no remaining brain between the third ventricle and sella turcica, that the pia mater, viz. the blood-vessels of the brain, existed on the right side, while on that side there were no remains of medullary or cortical substance; that the corpus callosum was lifted up, the fornix and septum lucidum split into two, and therefore the communication between the third and lateral ventricles established; that six pints and a half of water were contained in the two lateral and third ventricles; that the cerebrum formed a thin case of medullary substance surrounding this cavity; that the substance of the *brain surrounding* those cavities, as well as the pia mater covering it, had no convolutions; that there was a continued smooth surface; that the lining of the ventricles was tough; while at the same time there were no remains of medullary or cortical substance on the right side; that the corpus callosum, the fornix, and the commissures existed without brain on the right side? He who believes in such assertions, places credit in them in the

direct ratio of their impossibility; because the existence of lateral ventricles, a thin case of brain, brain half an inch thick, and no brain, are employed to designate the same observation.

If the Edinburgh Reviewer can praise a paper which contains such things, I am proud that our works merited none of his approbation. At all events, 'Judex damnatur cum nocens absolvitur.' To support my judgment, I say, that the article gives a very imperfect idea of Sir Everard's paper. Every reader of the article thinks, that the original essay contains the adduced facts, while Sir Everard has not quoted a single author, as if he were the first who had begun to make observations of that kind. It is true, no other can make such observations as the above; but many authors were attentive to the results of injuries of the brain. The Reviewer himself states, p. 449, that 'the greater number of the cases in the paper before us, are so far valuable, only as they serve to confirm what had already perhaps been sufficiently made out by the authors we have just named,' (the Reviewer, not Sir Everard Home;) viz. 'That there is no sort of uniformity either in the kind or the degree of the symptoms which accompany the diseases of the brain.' Afterwards, when I speak of our means of discovering the functions of the brain, I will say more of the method employed by Sir Everard Home. Here it is sufficient to have shown, that the Edinburgh Reviewer deserves the application of the law established by himself.

With respect to the non-existence of brain in hydrocephalic heads, Morgagni already has severely blamed his predecessors, especially Duverney. He declares, that in cases

perfectly similar, he has always found the brain distended into a thin membrane; and he relates, that the same has been observed before him by Tulpius, Vesalius, and several other anatomists. He has also shown, how anatomists, by mere inadvertency, imagine, that the water is contained between brain and skull. The subject is treated at considerable length in my work on Physiognomy, p. 147—158.

In addition to the preceding remarks, it may be said, that the literary gospel of Edinburgh does not only believe in the manifestations of the mind without brain, but also in the possibility of exercising voluntary motion of the lower extremities without spinal cord. This curious article, in fact, refers to the case of 'a young man who had his cord completely cut across, opposite the tenth dorsal vertebra, by a musket ball, and yet did not suffer the slightest loss of voluntary motion in the lower part of the body.' If critical reviewers believe in such things, which are in contradiction to the observations of all ages and nations, they may, with the same propriety, believe in the stories of giants, of people without teeth, or without neck, in the existence of nations who have lost their tails, and others who still preserve this honorable mark of affinity with the brutes. And we may apply to them their own words: 'If they *succeed* in convincing a single individual of common parts and observation that this assertion is truth, they will find little difficulty, we apprehend, in persuading mankind in general, that they hear by their eyes, and see by their ears.' No. 49. p. 247. We think nature is constant in its laws, and never makes an exception. If the spinal cord is necessary to voluntary

motion, this latter will never occur without the spinal cord. The time will explode, I trust, such marvellous notions, according to which the manifestations of the mind can appear without brain, and voluntary motion without spinal cord, and able philosophers will explain the large hydrocephalic heads according to sound principles of anatomy and physiology.

Thus we maintain, that there is not one fact well ascertained, that the mind has shown its powers, while the brain, or rather both brains, were annihilated. As to the second part of our proposition, viz. that each species of manifestation of the mind depends on an appropriate part of the brain, I will not quibble long about indirect observations and inductions, but proceed immediately to direct facts and experiments.

SECTION II.

We endeavor to ascertain *the nature* of the functions of the cerebral parts, by the influence which the size of the organs has on the phenomena of the mind. I beg to remark, that we do not pretend to distinguish by the size of the organs with what degree of energy the mental powers appear. To do this, we must consider, besides the size of the organs, their internal constitution, their exercise, and the mutual influence of the powers. This distinction is kept in view throughout all my work on Physiognomy. In the second edition, which the Reviewer quotes, p. 190, 191, I have detailed our opinion concerning the absolute size of the brain, and conclude, 'It is not, however, possible, even in individuals of the same kind, to measure their faculties

according to the absolute size of their brain. Hence it is necessary to look for other means of determining the degree of the faculties of the mind.' Pages 215 and 216 I have said, 'In order to judge exactly of our proceeding, it must be considered, that we do not endeavor to determine every degree of activity of any cerebral part, but only the nature of its functions, and to this end its size is sufficient.' 'I admit even the possibility, that in the same individual, the internal constitution of the different parts of the brain may vary, in the same way as the optic nerve may be more irritable than the auditory or olfactory.' The critic might also have read, p. 526, 'I have often repeated, that in speaking of the actions of men, it is not sufficient to consider the size of the organs of the respective faculties, but that the internal constitution of the cerebral parts, the exercise of their faculties, and their mutual influence, contribute also to their different degrees of activity.' Notwithstanding, the conscientious Reviewer tells his readers, that 'Gall and Spurzheim, in affirming that the vigor of intellect is always proportioned to the size of the head, seem to have been desirous of trying how far their effrontery might be carried.' No. 49. p. 247.

The learned critic goes so far as to assert, p. 245, 'that there is not the slightest approach to a uniform connexion between the vigor of intellect, or the strength or peculiarity of inclinations in man, and the size of the brain; that intellect of every degree and of every kind, and inclination of every variety, is found combined with brains of all sizes. Page 246, he repeats, 'We deny, that there is any constant correspondence, or any connexion whatever, between the

dimensions of a man's head and his intellect and inclinations, either in kind or degree.'

When I first read the preceding passages, I was giving lectures in Dublin. My auditors at that time will recollect, that, in showing to them a cast, and the picture of a gentleman, I publicly declared, that 'If the conscientious person who had written the article on our doctrines in he Edinburgh Review, has such a configuration of head asthe cast or the picture, I would give up my farther investigations into the functions of the brain.' Since that time I have repeated everywhere the same declaration; and I am convinced that no one, whose head offers such a configuration as that above referred to, could have acted as the Reviewer, without subsequent repentance.

Our numerous observations concerning the influence of the size of the brain on the manifestations of the mind, induce us to maintain, that a too small brain is unfit for the operations of the mind; and that the greater number of idiots from birth have too small brains, and a few of them too large heads, that is, heads distended by water collected in the interior of the brain. We, however, do not say, that all idiots have small heads. Idiotism, in fact, may be observed in heads of every size.

The learned Reviewer replies, p. 246, 'We affirm it to be, that idiots in general have *uncommonly* large heads.' I should like to know where he has made his observations. On the Continent it is as we state; and I found the same in England, Ireland, and Scotland. Even in Edinburgh nature makes no exception. In the poor-house near the west church I saw four idiots; none had a large head,

but one had an uncommonly small head. A silly boy with a very small head, is met in the streets of Edinburgh, to the sport of other children. On the other hand, I found several hydrocephalic individuals, who are not idiots. One of them, the most remarkable, lives in Musselburgh. The head of this person, who is 23 years of age, is 39 inches in circumference; but the manifestations of the mind are not suppressed.

Secondly, We maintain, that men of great or universal talents never have small brains; but we do not assert, that large heads are always accompanied with great genius. The explanation of these different propositions is understood, because the size of the brain is a necessary, but not the only condition, to the manifestations of the mind. The internal constitution is as important as its size.

Lastly, We maintain, that in the same individual one part of the brain, being much larger than the others, shows its superior influence on the manifestations of the respective power, in the same way as, in the same person, one muscle, being much larger than the others, shows greater strength of voluntary motion.

These different assertions can be decided by experience alone.

SECTION III.

The question arises, whether it is possible to distinguish the size of the brain and its parts by the exterior of the head. We affirm that it is so, as far as it is necessary to our purposes.

The Edinburgh Reviewer imagines, that the head must

be opened to examine the size of the brain and its parts. If, however, that were the case, only a small number of observations could be made; but as in living persons the size of the brain can be distinguished, observations of this kind may be easily multiplied. It is, however, understood, that the dimensions of the brain are smaller than those of the head; but as there is no empty space between brain and skull, great external differences of size and form in the head, correspond to analogous internal differences in the brain. It is to be observed, that we draw no inference from small insignificant differences of dimension. This explains also, why the teguments and the two tables of the skull, not being exactly parallel, do not prevent our observations in young and adult persons: our inquiries, however, are uncertain in old age; the brain then often diminishes in size, while the external form and size of the head remain the same as they were before. The objection, that the two tables are not parallel, is often repeated, but can be made only by those who have never seen the external marks which we consider as indications of larger cerebral parts.

The conscientious Reviewer states, p. 252, 'The difference of the different regions of the brain, whether it be confined to one dimension, or extend to all, is very inconsiderable, seldom, we believe, amounting to half an inch, and never, we are confident, exceeding one inch over an extent of six inches, and often it is so small as just to be preceptible and no more.'

From this statement I draw the inference, that this learned critic has not compared many heads. Any contractor

who furnishes hats to the army could have given him better information. I can assert, that I have skulls in my collection, some of which, in certain dimensions, are the double of others. It is true, there are cases where the difference is scarcely perceptible, but these heads are not the subject of decisive observations.

The conscientious Reviewer was not satisfied with displaying such unusual knowledge, but continued, p. 242, 'It is not true, that there are ever such eminences on the surface of the brain, accompanied with projections of the cranium, as Gall and Spurzheim have affirmed;' and p. 253, 'We venture to affirm, that such prominences on the head as Gall and Spurzheim have described, indicating certain eminences of the brain within, and uniformly accompanying some peculiarity of intellect or inclinations in the individual, never have been observed; and that all they have been so good as to write on this subject, is a mere fiction. Were it worth our while, we could even undertake to show, without much difficulty, that this piece of invention is inconsistent with itself, in various circumstances, and that it presumes a degree of blindness and ignorance in those to whom it is addressed, which it was really very cruel in Drs Gall and Spurzheim to suppose.'

I reply only, that in Edinburgh as well as in other places, in my public lectures, I have shown such prominences of which we speak, on real skulls which I have in my collection. And with regard to the acuteness of the Reviewer in such observations, he will not accuse me of ever placing much reliance on him.

SECTION IV.

Experience alone can decide concerning the accuracy or inaccuracy of our observations and inductions. In my work on Physiognomy I have declared, that 'we never admit exceptions; that, when an exception occurs, it proves that the truth has not yet been discovered, p. 258;—that I never advance any thing that cannot be observed by every other person; that I do not listen to any objection founded upon reasoning alone; and that one fact, well observed, is to me more decisive than a thousand metaphysical opinions,' p. 270.

The Quarterly Review, however, thought it suitable to tell its readers, 'Of course, one instance is very properly considered just as satisfactory an evidence that the conclusion is conformable to fact, as a hundred would be,' No. 25. p. 169. 'Even admitting this system of Drs Gall and Spurzheim to be even so plausible as an hypothesis, it cannot possibly derive any sort of evidence from experience. For the same reason, it is equally impossible to contradict it from experience,' p. 171. 'Even allowing, that the arguments of Drs Gall and Spurzheim, instead of being *sheer nonsense*, had been ever so ingenious and acute, still they could not throw the slightest probability upon the doctrine which they wish to establish, because that doctrine is *matter of fact*, and matter of fact never can be proved by reasoning *a priori*. Whether every protuberance upon the head be, or be not the sign of some particular character of the mind, is clearly a question *of fact;* let it therefore be proved to be a fact, as all other facts are proved: in such a

case, the explanation which Drs Gall and Spurzheim propose, would at least have a fair claim to be heard,' p. 177. This is another clear specimen that Reviewers can criticise books without reading them! From p. 262 to 271, in my book, our proceeding is quite differently described. I will copy only one sentence, p. 264. 'It is known that, in general, physical truths improve in proportion as observations are repeated. We continue, therefore, to multiply our observations, and as, in respect to several organs, the number of these observations is immense, we consider the respective organs as established. With regard to them, we must insist on our opinion, so long as from experience we are not convinced of the contrary. Several organs, however, are still only probable, and others merely conjectural, requiring a greater number of observations, in order to be determined with the same degree of certainty, as those which are supported by the most satisfactory proofs.'

The conscientious examiner of Edinburgh, with respect to our proceeding, made 'some effort, and briefly observed, that not one of our assertions is true, and that not one step of our reasoning is correct,' p. 252. 'Can it be possible,' asks the philosopher, 'that the great Drs Gall and Spurzheim have not observed, in the course of their multifarious inquiries into nature, that phenomena may coincide, without being related to each other as cause and effect? Were it established, that all great mathematicians had black eyes, and all poets blue ones, would any sensible man, from this alone, think of ascribing the mathematical talent, in the one case, or the poetical genius in the other, to the color of the iris?' p. 247.

Had this learned Reviewer also studied Chap. I. of Part III. of my book, he would have seen, that we are aware of the difference between coincidence and the relation of cause and effect to each other, and never lose sight of it; that we prove our assertions in the same way as any physical truth. If, however, an observer could shew, that only mathematicians have black eyes, and only poets blue ones; that every one who has black eyes and no one but those, have mathematical talents; or that every one with blue eyes, and only those, are born poets: if he could repeat his observations in various countries; if he could compare the same talents through a series of animals, without finding an exception; if he could support his observations by other means which I have detailed in my book, he might establish a physiognomical sign, and challenge his opponents to shew the contrary. So we do. If, for instance, we speak of a sign of self-esteem, let us see that a man, the most prominent feature of whose character is composed of self-conceit, does not exhibit the sign on his head, and we give up all our observations with respect to this peculiar organ. In the same manner, and by no other means, each organ is to be refuted by one single exception well ascertained.

It cannot be useless to call the attention of the reader to that method which the literary gospel of Edinburgh, No. 48. Art. x. p. 448, recommends, as follows: 'Sir Everard Home's Essay not only possesses a proper method of investigation, but sets an example of it, and is entirely free from the nonsense which is so commonly and so copiously put forth in writings upon similar subjects.' Which is then the proper method of investigating the functions of the brain?

This the reader does not acquire from the critical Review, but he may learn it from the original paper, inserted in the Philosophical Transactions for the year 1814, Part II. Sir Everard Home tells us, 'The various attempts which have been made to procure accurate information respecting the functions that belong to individual portions of the human brain, having been attended with very little success, it has occurred to me, that were anatomical surgeons to collect in one view all the appearances they had met with in cases of injury to that organ, and the effects that such injuries produced upon its functions, a body of evidence might be formed that would materially advance this highly important investigation.' He then informs us, that he has brought together certain observations, 'stating them as so many experiments upon the brain, with the conclusions which tend to elucidate this particular injury.'

Every one will be anxious to know these observations. We read, 'that in the torpid state, commonly attendant upon any violent shake being given to the brain, the senses are so much impaired, that little information can be gained respecting the effects produced upon the internal organs; that a *coup de soleil* is sometimes accompanied by delirium, loss of speech, and the power of swallowing; that blood extravasated in the lateral and third ventricles was attended by repeated fits of vomiting and coma; that coagulable lymph spread over the union of the optic nerves, the pineal gland, and tuberculum annulare, was followed by permanent contraction of the muscles between the occiput and vertebræ of the neck, dilatation of the pupils, and a great degree of deafness; that the formation of pus under the dura mater

covering the right hemisphere, was accompanied by delirium, succeeded by coma; that a tumor in the substance of the posterior lobe of the brain was attended with derangement of the functions of the stomach and bowels, and with double vision; and that a deep wound into the right anterior lobe of the brain, attended with inflammation and suppuration, produced no sensation whatever, the senses remaining entire, and the person not knowing that the head was injured. In a case, also, in which the tuberculum annulare had become so hard as with difficulty to be cut with a knife, a considerable quantity of earthy particles having been intermixed with the medullary substance of the crura and other parts of the cerebellum, and the cerebrum, and upper part of the cerebellum being unusually soft, the effects were, that the boy had been an idiot from birth, never walked, spoke and understood what was said, often went three days without food, and so on.'

Sir Everard Home speaks in a manner as if no one before him had made similar observations. His kind Reviewer, however, shews by his numerous quotations, that Sir Everard is mistaken. Indeed, every one who is but half acquainted with the history of the healthy and diseased state of the brain, knows, that many authors have related similar facts. Nay, we learn from them also, that similar injuries of the brain have often been observed without any perceptible derangement of the mind, or any apparent disease of automatic life.

Hence this mode of proceeding is quite unfit for discovering the functions of the brain, and any hope from such a source is in vain. I support my opinion by the

fruitless attempt of a great number of authors, and by the successfulness of Sir Everard Home himself. It is true, he speaks of a body of evidence which might be formed, and of conclusions which tend to elucidate this particular inquiry, but he has not drawn even one inference. In the various pathological affections of the brain, he has observed headache, giddiness, faintness, loss of memory, want of sleep, delirium, mania, depression of spirits, melancholy, apoplexy, idiotism, hissing noise in the ears, deafness, blindness, loss of speech, irregular pulse, stupor, and mouth drawn to one side, numbness of the arms and legs, spasms in the lower extremities, stumbling in walking, pain between the shoulders, nausea, retching, slow action of purgative medicines, vomiting, convulsions, &c. Is Sir Everard Home, perha inclined to draw the inference, that the brain is the organ of these symptoms, or of the states which are opposite to them? This is, I think, sufficient to shew an intelligent reader, that in this way we never shall be able to determine the peculiar functions of the cerebral parts; that the Edinburgh Review, for praising such a paper, deserves no more credit with respect to the physiology than to the anatomy of the brain, and that these critics, as they believe in the existence of cases which are in contradiction to nature and reasoning, have still a great deal to learn before they can become competent judges.

SECTION V.

As to the individual organs of the manifestations of the mind, the literary gospel states only, 'To enter on a particular refutation of them, would be to insult the understand-

ings of our readers. Indeed, we will flatter the authors so far as to say, that their observations are of a nature to set criticism entirely at defiance. They are a collection of mere absurdities, without truth, connexion, or consistency; an incoherent rhapsody, which nothing could have induced any man to have presented to the public, under a pretence of instructing them, but absolute insanity, gross ignorance, and the most matchless assurance.'

Such arms, however, will not repel stubborn facts. Our antagonists, it seems, find it more easy to blame than to study, or to deny than to observe. They have not even considered the meaning of the expressions by which we designate the various powers of the mind. The Quarterly Review, for instance, states that the name *Inhabitiveness*, which I give to the instinct of animals, to live in water or on dry land, in higher or lower regions, and so on; to that instinct, which determines a young duck, as soon as it is hatched, to run towards the water, and the ptarmaghan to dwell at the tops of the mountains, &c. means 'a love of dwelling in elevated situations.' He explains *Secretiveness* by the love of stealing. The natural history of the two species of rats, the black and the brown, he found very ridiculous; and he thought it sufficient to exclaim, 'Credat Judæus Appella!' to change the cerebral organization of these two species of rats. I, however, must continue to say, that the difference of the brains of both species is easily distinguished. My auditors will recollect to have seen it. Thus, I repeat, to incontestable facts alone I shall pay further attention.

The only reasonable difficulty started against the possibility of distinguishing the organs at the lower part of the

forehead, and behind the orbits, originates from the frontal sinus, and from the circumstance, that the brain, situate behind the orbits, and between both hemispheres, does not reach the surface of the skull. As, however, I have stated this difficulty, and given our explanation, the Reviewer ought to have copied our answer, instead of saying, 'How could these gentlemen think so poorly of the eyesight of their readers, as to imagine, that, by the aid of their beautiful engravings, they could fail to discover, that some of the prominences in the skull which they describe, are said to be caused by elevations and portions of the brain, which are not even in contact with the skull of these parts?' p. 253.

I always show to my auditors the difference between the external bony crest, often erroneously called frontal sinus, and the elevation, which we consider as a greater development of the organ of locality. They will also recollect my demonstrating, that children, and young and adult persons, have no holes between the two tables of the skull at the forehead, and that the real frontal sinus occur only in old persons, or after chronic insanity, in general, when the brain is diminished in size. I will copy only one passage from my book, in opposition to that of the Edinburgh Review. 'The cerebral parts, situated behind the orbits, require some exercise on the part of the physiognomist, in order to be exactly determined. Their development is discoverable from the position and configuration of the eyes, and from the circumference of the orbits. It is, therefore, necessary to examine, whether the eye-ball is prominent or hidden in the orbit, or whether it is placed inward or outward. According to the position of the eye-ball we may

judge, whether the part of the brain which is situate against a corresponding part of the orbit, is more or less developed.

'It may be questioned, whether all organs reach the surface, so as to enable us to determine the organs of all faculties of the mind by the size and shape of the head? There are, indeed, many convolutions in the middle line of the brain between the two hemispheres; and there are also some others at the basis of the brain, and between the anterior and middle lobes, which, therefore, do not reach the surface of the skull; but it seems to me that a great part at least of every organ lies at the surface, and that if one part of any organ be well developed, the whole participates of this development. The whole cerebellum does not touch the skull, yet it is possible to determine the size of the cerebellum, according to that part of it which reaches the surface. Accordingly, the cerebral parts, which are, as above noticed, situate in the middle line between the two hemispheres, seem to be proportionate to the superincumbent organs; at least I have always observed a proportion in the vertical direction, between these cerebral parts. In this way, it appears to be possible to determine all the organs, though the whole of their fibres do not terminate at the surface,' p. 237, 238.

There remains still an idea to be corrected. In pointing out the functions of the cerebral parts, and in ascertaining, that the size of the organs has some influence on the innate dispositions of the mind, we establish, in a certain degree, a physiognomical doctrine. This has been most erroneously represented by the conscientious Reviewer, in

saying, p. 250, 'The practical part of their doctrines, as it may be called, the physiognomy, craniology, or cranioscopy, the part which teaches us how to find out, by the shape of the head, whether a man loves his children or kills them; whether he steals or is very benevolent!' We, however, continually maintain, that we never can speak of the actions of man; and after having mentioned the title, Physiognomical System, I begin the introduction of my book, 'This system is commonly considered as one, according to which it is possible to discover the particular actions of individuals: it is treated as an art of prognostication. Such, however, is not the aim of our inquiries; we never treat of determinate actions; we consider only the faculties man is endowed with, the organic parts by means of which these faculties are manifested, and the general indications which they present.'

Thus, the more the reader will compare our works, and the reports given by our antagonists, and their and our opinions with nature, the more he will be enabled to decide of whom it may be said, 'Were they even to succeed in shaking off the suspicion of *mala fides*, which we apprehend is inseparably attached to their character, we should not hesitate to say, that we do not know any writers, who, with a conceit so truly ludicrous, and so impudent a contempt for the opinions and labors of others, are so utterly destitute of every qualification necessary for the conduct of a philosophical investigation.' *Edinburgh Review*, *No.* 49. *p.* 228.

CHAPTER III.

PHILOSOPHY.

This chapter may be very short, since in this department our British antagonists confine themselves to general considerations. The logical study of the author in the Quarterly Review, No. 25. p. 165, is the most simple: he admits in the mind only one understanding, and in that one he seems defective. 'There is,' says he, 'no more solid reason for dividing understanding into faculties, than for dividing heat or light into faculties.' This comparison, however, of understanding with heat and light, is not very apt for simplicity, since neither has been proved to be a single substance. Besides, as one single understanding does not explain the phenomena of the mind, and as all other logicians found it necessary to adopt several powers, I leave him to make the best use of his one faculty, and proceed to other propositions.

The Edinburgh Review, as to the faculties which we adopt in the human mind, says, p. 243, 'The ratiocination of Drs Gall and Spurzheim is of the most difficult species to combat. Perhaps we might content ourselves with saying, that the whole doctrine of the thirty-three faculties to which the argument relates, is downright nonsense, and so put an end to the discussion at once; but we shall take the liberty of substituting for the names of the thirty-three faculties, two very simple and intelligible terms, viz. *intellect* and *inclination*.'

The reasoning, or rather dogmatic decision of a Reviewer, certainly will not repel stubborn facts. I, however, should like to know, why the conscientious Philosopher adopts intellect *and* inclination. May I suppose that he does so, because one or the other alone does not explain the phenomena of the mind? Indeed, there may be strong inclination without intellect. But is inclination always the same? Is, for instance, the inclination of the hen towards the young duck, hatched by her, the same with the inclination of the young duck towards the water? Is the inclination to calumny or respect, to concealment or candor, one and the same? In the same way, is intellect only one? In a boy who can repeat by heart whole pages after having read them once or twice, but cannot compare or distinguish two separate ideas, is the intellect the same as in another who judges with precision of various ideas, but cannot recollect by heart one page? Thus, as we can have one inclination, or one intellect, and not another, philosophers have divided the powers of the mind into different sorts. Now we maintain, that those powers which are adopted by logicians as primitive or special faculties, do not explain the phenomena of the mind in the state of health and disease. Hence we admit a greater number, and as many as are necessary for the explanation of the manifestations of the mind. Particular and great innate talents, such as for mathematics, or music, or mechanics, and so on, while the other faculties are extremely defective, viz. partial geniuses, who are in every other respect almost idiots, induce us to consider such powers as special. If then we find, by constant observation, that the

manifestations of such a power are never separate from the development of a particular part of the brain, we adopt all that is common to the manifestations belonging to one cerebral part as the result of one special power, in the same way as it is acknowledged that all the manifestations of vision belong to one sense. Thus, in the division of the mental operations, we are guided merely by observation and induction. Pride, for instance, cannot be explained by external circumstances alone, nor by intellect or inclination in general; if now its appearance is always connected with a peculiar part of the brain, independently of the other powers of the mind, and of the other cerebral parts, we maintain that it belongs to a special faculty, different from the others. We then observe the different manifestations of this sort, and try to reduce them to one common consideration. Now, whatever speculative reasoning our adversaries may oppose, we insist on our observations, and will yield to facts alone.

Our philosophy of the mind differs from all preceding opinions of the schools. Hitherto the special faculties of the mind were overlooked, and philosophers were satisfied with general or common considerations of the powers, or with the modes of their being affected. Instinct, for instance, in animals is a mere general view, viz. every internal impulse to act. But the impulse to build, or to sing, or to migrate, or to amass provisions, or to place sentinels, &c. cannot be the same impulse, any more than hearing, seeing, smelling, or tasting, are the same sensation. Hence, the philosophers were satisfied with the general view of instinct, and paid no attention to the special instincts.

An example of a common consideration is perception,

that is, perception is common to various powers; but the perception of the size, form, color, or place of an object are quite different sorts of perception. In the same way, memory is always a reproduction of the impressions which we have perceived, but there is not one memory for every previous perception. One sort of memory may be very energetic, and another quite defective.

We admit two sources of activity in the mind, an internal and external. To the former belong the instincts of animals, and the propensities and sentiments of man; to the latter, the intellectual operations, as far as we acquire knowledge of the external objects, their qualities and relations. Some powers make man act, others modify, assist and direct the actions; still there are others destined to bring all the other faculties into harmony, and to constitute unity.

One of our ideas, viz. the introduction of consciousness, sometimes active and sometimes passive, in the five senses, puzzled the Edinburgh Reviewer (p. 241.) a good deal. The difference, however, seems to have been observed at all times, since in all languages there are two sorts of signs to express it. In the English we say, I see (passive) and I look at (active); I hear (passive) and I listen (active); I feel (passive) and I touch (active), &c. In other words, consciousness is sometimes involuntary, sometimes voluntary.

These and other considerations are too complex for the simple philosophy of the Reviewers. As our opinions are not attacked in the particulars, there is no occasion for my giving here a more detailed explanation. Those who are

desirous of knowing our philosophical propositions, will find them in my work on Physiognomy. I have only to add, that if the conscientious Reviewer has found in himself only intellect and inclination, I leave it to others to judge, whether they have found his intellect limited in judgment, and his inclination extensive in malevolence.

CONCLUSION.

Considering the whole of the preceding statements, I may say, that I have done with those who arrogate the right of thinking and deciding for the rest of mankind; with those 'thorough partizans, who are thorough despisers of sincerity;' (*Edin. Review*, No. 53. p. 14.); who will not allow the least credit to any one that has not their approbation; who anonymously calumniate and detract; who, in doing so, claim the merit of conscientiousness; who disguise, mistate, and misinterpret; who invent ridiculous monstrosities; who, in using the most vulgar language, speak of personal dignity and politeness; with beings who change assertions as it seems convenient; who do not understand the passages which they quote: who, from different chapters, extract sentences, illustrating different propositions, and represent these their own fictions, as nonsensical and absurd conceptions of the author; with such writers on the brain, who have nothing in view but minute mechanical differences of size and form, and shades of color; who, however, cannot see brown substance in the pons Varolii; who, as if there were not, from ancient times, absurd names enough, invent in the brain, cul-de-sacs, pits, grooves, moun-

tains, wings, lobules, and so on; who never consider the parts in connexion and relation, nay, create artificial separations; who are attentive only to the mechanical appearances, and never think of the functions of the parts; who believe, that a man can walk, and have voluntary motion of his legs, without spinal cord, can philosophize without brain; who can assert, that physiological inquiries of the brain are of no use to the medical profession; who consider one brain and its parts as the standard of all other brains; who admit, that the brains of men have their full growth at seven years of age, and do not undergo any change afterwards; and with such Historians, who affirm from erudite research, and as the result of many experiments, made under a variety of circumstances, that there is no foundation whatever for the supposition, that the convolutions consist of two layers; who maintain, that numerous unequivocal instances are on record, and are even occurring every day, in which large portions of the brain, nay, almost the whole, if not actually the whole of this organ, have been completely destroyed by the progress of hydrocephalus; who hold this to be a fact just as certain as that there are many persons now alive whose legs have been removed by the knife of the surgeon; and who at another time prove, that we are not the first who maintain, that the brain exists in hydrocephalic heads, and that Reil could separate the convolutions in the middle line, after we had shown to him that structure four years before; who, as author on the brain, did not quote any anatomist to whom the decussation of the pyramids and the communication of the medulla oblongata with the crura cerebri were known; who ascribes the medulla

oblongata to the spinal cord, the mass of the pons to the cerebellum, and terminates the brain at the upper edge of the pons; who denies the possibility of demonstrating the two sets of fibres, (diverging and converging); who does not mention the two layers of the convolutions; and who afterwards, as pamphleteer, asserts, that long ago these things were known, that especially we have defrauded Reil, who published four years after we had shown him our anatomical discoveries, after we had demonstrated them in different countries, in the Universities of Germany, Denmark, Holland, and in Paris, and after the publication of numerous extracts by our pupils; who tells his readers, that his pamphlet owes its origin only to his strong anxiety for the progress of medical knowledge, and deep concern for the reputation of a medical school which was indebted to anatomy for its first celebrity throughout Europe, but who makes morbid dissections, even in very rare cases, in the manner I have witnessed and described above; who in that very pamphlet accuses all anatomists, and almost all medical professors and teachers of Edinburgh, and every one of my auditors, as unfit to distinguish brown and white substance; who, in his 'painful' compilation, forgets the Monros, who deserve to be mentioned as well as Malpighi and Mayer; a neglect the less excusable, that Monro was one of the chief founders of the celebrity of the medical school of Edinburgh. Certainly, with such critical Reviewers, such would-be Philosophers, such mechanical Dissectors, and such Historians, I have done for ever; and I may say, with Job, (xiii. 5.) 'Oh, that you would altogether hold your peace, and it should be your wisdom!'

PHRENOLOGY.

ARTICLE

OF THE

FOREIGN QUARTERLY REVIEW,

BY

RICH. CHENEVIX, Esq. F.R.S. &c.

WITH NOTES BY

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AND

'Opinionum commenta delet dies naturæ judicia confirmat.'—*Cicero.*

PREFACE.

THE proprietors of the Foreign Quarterly Review have now granted the permission to publish separately the first article of their No. III, on Gall and Spurzheim, or Phrenology. This permission was particularly desirable, since the article is highly calculated to remove prejudice against, and to excite inquiry into, the truth of a system which finally must prove eminently important and interesting to mankind. I avail myself of this opportunity to correct, by additional notes, some prevailing errors, and to explain several points of phrenology, which are misunderstood, because they have been misrepresented. I like discussions fairly conducted, and as long as truth alone is the object of inquiry; but I am disgusted with scientific pursuits being degraded by a party-spirit and

selfish passions. The impartial reader, therefore, is requested not to revere any petulant critic as a decisive oracle, and not to rely on the opinions of friends or foes, but only on the authority of nature and her immutable laws; to examine and judge for himself, and to remember Lock's saying (Human Understanding, edit. 2d, line 4, chap. 15, sect. 6,) 'There cannot be a more dangerous thing than the opinion of others, nor more likely to mislead one, since there is much more falsehood and error among men than truth and knowledge.'

J. G. SPURZHEIM.

London: 8, Gower Street.

ARTICLE

OF THE

FOREIGN QUARTERLY REVIEW.

ART. I.—1. *Anatomie et Physiologie du Système Nerveux en général, et du Cerveau en particulier, &c.* Par F. J. Gall et G. Spurzheim. 4 vols. 4to. avec Atlas in folio. Paris. 1810—1819.

2. *Observations sur la Folie, ou sur les Dérangemens des Fonctions Morales et Intellectuelles de l'Homme.* Par G. Spurzheim, M. D. 8vo. Paris. 1817.

3. *Observations sur la Phrénologie, ou la Connoisance de l'Homme Moral et Intellectual, fondée sur les Fonctions du Système Nerveux.* Par G. Spurzheim, M. D. 8vo. Paris. 1818.

4. *Essai Philosophique sur la Nature Morale et Intellectuelle de l'Homme.* Par G. Spurzheim, M. D. 8vo. Paris. 1820.

5. *Essai sur les Principes Elementaires d'Education.* Par G. Spurzheim, M. D. 8vo. Paris. 1822.

6. *Sur les Fonctions du Cerveau et sur celles de chacune de ses parties.* Par F. J. Gall. 6 vols. 8vo. Paris. 1822—1825.

TWENTY-FIVE years have nearly elapsed since the question which we are now going to examine was first laid before the British public. Since that period, it has occasionally been brought into notice, or fallen into neglect, as the continental publications have made their way to this island,

or as the teachers of the system have thought fit to address themselves directly to Englishmen. The manner in which it was then received was not such as to authorize a belief that it ever could be treated but with contempt. Within a few years, however, it has attracted so large a share of attention, it has been contemplated with so much earnestness, with so much gravity — that we deem it a duty to allot some pages to its serious consideration.

To the serious consideration of phrenology! What, then, is the *Foreign Quarterly*, in the very outset of its career, to show itself a feeler of heads, a cranioscopist, a teller of fortunes from cerebral bumps and excrescences? No such thing; but the pages of this Review ever shall be open to any appeal that science makes to it, to any literary subject that comes within its sphere. Formerly, indeed, our co-mates and brothers in criticism made rather merry with the lucubrations of Drs. Gall and Spurzheim; but the thing is now beyond a jest; and as it has so long been left to writhe under the lash of ridicule in vain, it may be well to try it by some other test, and to apply to it some of the philosophic calmness by which phrenology itself professes to be guided.

But, before we proceed one step in this inquiry, we must disclaim all intention to decide upon the truth or fallacy of the pretended science. We do not mean either to discuss or to judge it on our own account, but to let the parties speak for themselves; to give room to phrenologists to state whatever they can in support of their doctrine; and to anti-phrenologists, to refute as much as they can of it; to put our readers in possession of the materials which may enable them to form an opinion, and then leave them to judge for themselves. If, too, we are serious

upon the subject, it is because the subject itself is a very serious one. That which threatens the subversion of every moral theory which has been devised since the days of the seven sages of Greece, deserves to be treated with some gravity. In the country of Bacon, all philosophic claims should be canvassed with equity; in the country of Shakspeare, to mention with levity anything relating to the human heart is derogatory.

The complaints of phrenologists, that their doctrines have been mis-stated, and their opinions purposely misrepresented, have led us to admit the present article, in order to rescue the land of juries from the imputation of condemning any man unheard, still more upon wilful perversions of his own words and meaning. Here then we shall proceed a little differently from the usual method of reviews, and utterly abstain from personal interference. We shall introduce the parties themselves to the bar, and let them severally plead their own cause. The sceptral WE of criticism we shall abdicate, and not once shall we use that plural pronoun in this article, but as appertaining to phrenologists, or to anti-phrenologists, in whose favor the choice spirits of the *Foreign Quarterly* abjure their magic, and become listeners like the public. The only part we take in the trial is to devote some of our pages as an arena in which we allow the combatants to wrestle as they please, but into which we ourselves shall never once descend. The fact is, that the present state of the question ought to be laid before the public candidly; for if the writings of one party have not always been exactly as might be wished, the clamors of the other have done them little credit. The method we adopt appears to us fair, and the use of the first person may a little dramatize the

dull discussion. The pleadings shall be opened, on the part of the phrenologists, by a statement of the case, faithfully collected from the writings of Dr. Gall himself.

'In the ninth year of my age,' says our author, 'my parents sent me to one of my uncles, who was a clergyman in the Black Forest, and who, in order to inspire me with emulation, gave me a companion in my studies. I was, however, frequently reproached for not learning my lesson as well as he did, particularly as more was expected from me than from him. From my uncle, we were both put to school at Baden, near Rastadt, and there, whenever our task was to learn by heart, I was always surpassed by boys who, in their other exercises, were much my inferiors. As every one of those who were remarkable for this talent, had large and prominent eyes, we gave them the nickname of *ox-eyed*. Three years after this we went to school at Bruchsal, and there again the ox-eyed scholars mortified me as before. Two years later I went to Strasburgh, and still found that, however moderate their abilities in other respects, the pupils with prominent eyes all learnt by heart with great ease.

'Although,' continues our author, 'I was utterly destitute of previous knowledge, I could not help concluding, that prominent eyes were the mark of a good memory; and the connexion between this external sign and the mental faculty occurred to me. It was not, however, till some time afterwards, that, led on from observation to observation, from reflection to reflection, I began to conceive that, since memory has its external sign, the other faculties might very well have theirs. From that moment every person remarkable for any talent, or for any quality, became the subject of new attention, and all my thoughts directed to a minute study of the form of their heads. Little by little, I ventured to flatter myself that I could perceive one constant shape in the head of every great painter, of every great musician, of every great mechanic, severally denoting a decided predisposition in the individual to one or other of those arts. In the mean time I had begun the study of medicine, where I heard much about the functions of the muscles, of the viscera, &c.; but not a word about the func-

tions of the brain. My former observations then recurred to me, and led me to suspect what I afterwards proved, that the form of the skull is entirely due to the form of the viscus which is contained in it. From that instant I conceived the hope of being able one day to determine the moral and the intellectual faculties of man, by means of his cerebral organization, and of establishing a physiology of the brain. I therefore resolved to continue my researches, until I should attain my object, or find it impossible. The task would have been less difficult had I abandoned myself entirely to nature. But I had already learned too much of the errors and prejudices then taught upon those subjects, not to be biassed by them; and I was still further entangled by the doctrines of metaphysicians, who teach that all our ideas come from our senses; that all men are born alike, that education and accident alone make them differ. If this be true, said I, no faculty can have an external sign; and to study the brain, its parts, and its functions, is absolute madness. Still I remembered my former observations: I knew that the circumstances in which my brothers and sisters, my school-fellows, my playmates, had, from their infancy, been placed, were all alike. I saw that education was bestowed in vain on some persons, — that others had talents without it. I observed a proportionate variety in the dispositions of animals. Some dogs are born hunters, while others of the same litter cannot be taught; some are peaceful, some ill-tempered. In birds there is a similar diversity. The whole animal kingdom spoke then in favor of my strong surmises, and I resolved to prosecute my plan. It was not till thirty years had been spent in uninterrupted study, in observing men of every description, and in many countries, men remarkable for some talent or some defect, for some vice or some virtue; in studying inferior animals, domestic or wild, the inhabitants of air or of earth, that I ventured to embody my observations, and publish them in one comprehensive work.'

Such is the account which Dr. Gall gives of the origin and progress of his discoveries. It has been stated, not indeed in his own words or order, but the scraps and morsels of which it is composed were fairly picked out of his own

works. Now, say the phrenologists, if the doctrine of the relation between cerebral development and mental manifestation, — if, as Dr. Spurzheim has more appositely named it, phrenology, be false — then men cannot sufficiently reprobate the idle nonsense of the little urchin who dared to turn from his rudiments to gaze at the eyes of his condisciples, and call them by a name which the father of poetry applied only to the queen of the gods, the venerable Juno, βωπις ποτνια Ηρη, ox-eyed; or, as he probably had it in his Hoch-Deutsch dialect, *ochsenaugen*. If it be true, then we (phrenologists) declare that so extraordinary an instance of early sagacity, of premature combination, such an innate spirit of observation and induction, never yet has come to our knowledge. We have seen prodigies of music, of painting, of calculation, of every simple talent, in very unripe infancy: we know that wonders of very early learning have existed; but there is not upon record, a person who, at the age of nine, caught the first glimpse of a system which he afterwards made the study of his life; of a system which, as Dr. Spurzheim says, must, if true, 'absolutely and entirely change the philosophy of the human mind,' and make the study of mankind a new study. All that we have read of youth, of childhood, fades before this example; and we know no alternative but for men to admire how the doctor has escaped phlebotomy and venesection; or else to say at once that he ranks high, and very high, among the extraordinary geniuses that have lived to honor the human species.

And this is not the only incident which creates a like dilemma. Young Gall, like many other boys, was very fond of looking for birds' nests; but a point in which he differed from the usual truants 'who rob the poor bird of its

young,' was that his motive was a love of natural history. His observation of the situations in which each species built, easily led him to discover the place of abode; and he spread his nets successfully, because he had studied the habits of the bird that he wished to ensnare. But what he could not do was to return to the spot in the woods or wilds, over brake, over brier, through devious paths, where his prey was caught; in other words, he was not an adept at finding his way. This deficiency induced him to take with him one of his companions, named Scheidler, who possessed this faculty in a very high degree; for, while Gall, after marking his road with boughs and branches, by making incisions on the trees, by employing many means of technical memory, never could unravel the track, his companion, without any effort, without even any apparent attention, never failed to take the shortest road to every nest and snare. From this arose a brief but interesting colloquy, most characteristic of mankind at large, whose great rule for judging others is self:—'How is it,' says Gall, 'that you contrive to find your way thus?' 'How is it,' answered Scheidler, 'that you contrive not to find yours?'

Dr. Gall did not immediately perceive anything peculiar in the head of this youth; but, in order to lay it up among the treasures of his observation more faithfully than memory could do, he took an indestructible and rigid transcript of its form, by moulding it in plaster. To this cast he could, at all times, refer; he could study and re-study it; he could compare it with the living and the dead. He was well convinced that a faculty for recognizing places, and the ways which lead to them, did exist; and what remained to be done was, to determine the shape of head which was

concomitant to this faculty. He, therefore, inquired among his acquaintances for persons distinguished for their local memory, and at length found two. Schenberger, a celebrated landscape-painter, told him that, in his travels, he merely took a sketch of the scenery which he wished to paint, and that afterwards, when he made a more circumstantial drawing of it, every tree, every bush, almost every large stone, came back into his mind. Another was Meyer, the author of Dia-na-sore, whose greatest delight was to wander from place to place, and who, not having the means himself of indulging this propensity, always attached himself to some rich man, in order to travel with him. He, too, had an extraordinary power of recognizing local relations. The heads of these two persons, then, Gall moulded, and compared them with that of Scheidler. He turned and twisted them in every direction, and for a long time found only differences, whereas what he sought was a resemblance. At length, however, he was struck with a coincidence in the region situated on each side of the root of the nose, and slanting upwards above the eyebrows. From that moment he considered it as probable that the organ of local perceptions was situated in this spot; and, according to his assertion, all his subsequent observations, which have been incredibly numerous, have fully confirmed his opinion.

Dr. Gall, as before mentioned, had many brothers and sisters, all of whom received the same education, and were, in all things, exposed to the same influences; yet their faculties and dispositions were totally dissimilar. One of his brothers showed a very early disposition for devotion; his toys were the ornaments of the Catholic altar, which he made and engraved himself; his pastime was prayer and high mass. His father had intended him for trade, but this

profession he peremptorily refused, because, as he said, it would expose him to tell lies. At the age of twenty-three, this young man ran away from his paternal home, and turned hermit. His father, however, recalled him, allowed him to pursue his studies, and five years afterwards he received holy orders, in which he spent a life of mortification and piety. Subsequently to this very juvenile observation, Dr. Gall remarked, that some of his con-disciples had, as he calls it, a receptiveness for religious instruction; while others were totally averse to it. Among the persons who had embraced the clerical profession, he saw some who were studious, pious, and scrupulous; others, who were idle, indolent, and who wished for nothing more than to live at ease, and at the expense of others. He conceived that these tendencies were innate; and, in order to embrace a wide range of experiment, he frequented churches, monasteries, visited religious seminaries, and observed both men and women in the world. One of the first things which struck him was, that the most devout were bald on the summit of the head; 'yet,' said he, 'women are more devout than men, and women are seldom bald. Baldness, therefore, has no connexion with devotion.' He then perceived on these bald heads that the summit was much elevated, sloping as it were from the forehead to the centre; and this shape he found common to both sexes. He then concluded, that an elevation in that region of the brain was the organization which gives a disposition to devotion and religious feelings.

He had not long been in possession of this induction, when a remarkable fact offered itself to his view, imparting a singular conviction to his mind of the accuracy of his conclusion. He remarked that all the pictures of saints, of martyrs, of persons recorded for their religious zeal and suf-

ferings, of our Saviour himself, were high in this region; and that, even in the most remote antiquity, artists had given this peculiar form to all that has been handed down to us of heads of high priests, of sacrificers, and of whatever persons they held to be most pious, sacred, and venerable.

Such were the first steps of this, the youngest child that ever caught a glimpse of facts, and drew inferences, which he afterwards called philosophy — which he taught as such, and which has found followers. Who could have supposed, that from the perceptions of a mere brat of nine years old, a system could have ensued, which, in the hands of Dr. Spurzheim, would, in the year 1826, have filled not only the large lecture-room of the London Institution, but all the stair-cases, corridors, and passages leading to it, with hearers? and, great, indeed, must be the folly or the wisdom of the age.

Another observation of this young man was, that, among his school-fellows, the most adept at learning by heart were not those who retained facts the best; in the same manner as local and verbal memory did not always accompany each other in the same mind. Thus, then, was he led to surmise, that memory was of more kinds than one; that it was not a simple faculty: and to a conclusion which some bearded philosophers had drawn before him, that there is a memory for words, another for places, and another for things; exactly coinciding — but entirely without his knowledge — with the *memoria verbalis*, the *memoria localis*, the *memoria realis*, of his predecessors. He continued to make observations on the world at large respecting this faculty, as he had done respecting the others, and by the same means; and he at length succeeded in assigning the situation of its corresponding organ in the head.

But the most extraordinary instance of folly and presumption, if the system be false, or of sagacity, if it be true, is, that Dr. Gall was not satisfied with observing the talents of his fellow-students; he carried his prying spirit into their moral tendencies, and examined their characters. One of his companions had a head so strangely shaped, that he could not help remarking it. It was particularly broad above the temples, and the boy was renowned for his cunning and his tricks. Another boy, whose countenance bespoke extreme candor — *ars est celare artem* — had a head of the same shape, and Gall immediately mistrusted him. In both cases his conjectures were confirmed, and his observations in later life gave them an additional force. When practising as physician, one of his patients died of consumption; Gall was struck at the breadth of his head in this region; and shortly afterwards a long scene of artifice and swindling came to light. Another person, so notorious as to have been posted as a knave by the police of Vienna, and whose head was of the same shape, confessed to Dr. Gall that he knew no pleasure equal to deceit.

As Dr. Gall acquired experience in his art, his tact became more sure, and he accumulated observations; but his method of proceeding was alike throughout. It would indeed have been difficult to devise any better method than that which suggested itself at his first observation; and, be his doctrine true or false, that justice is due to him.

One or two more examples of his mode of discovering faculties and organs must be given. To study what is now called combativeness, he collected persons of the lower classes in his house, treated them with wine, excited their talkativeness respecting each other, and uniformly found that one shape of the head belonged to the contentious,

another to the gentle. He followed the same plan with regard to the propensity to thieving, and with the same success. On one occasion, he was requested to examine the head of a lady who was remarkable for the strength and durability of her friendships, and to take a cast of it; and thus was led to the discovery of the organ of attachment. At Vienna, he knew a man, who, from his eternal doubts and irresolution, was nicknamed Cacadubio; the remarkable form of his head, compared with others, revealed this faculty, together with its local habitation. A servant of one of his friends gave the first idea of an organ of benevolence, at a time when he little thought that what is called a good heart is seated in the brain. Some of the organs became first evident to him in the heads of brutes. Thus the difference between the heads of graminivorous and carnivorous animals pointed out what he then called the carnivorous instinct — murder; and which now is termed by the modified name of destructiveness. The innate love of offspring, so necessary to every breathing thing, he found by the difference which exists between the skulls of males and females in general; although he did not know exactly what faculty the occipital protuberance denoted, until he perceived it most strongly in female monkeys, whose attachment to their young is so extraordinary.

Thus it was that Dr. Gall proceeded in comparing the manifestations of the mind with the development and form of the brain, until he had ascertained the situation and functions of twenty-seven organs; all of which he looks upon to be as clearly demonstrated, as observations multiplied in various bearings, repeated upon an incredible number of individuals, and continued during a long life, can demonstrate anything.

Now, if all these observations are correct, we cannot sufficiently commend the Baconian spirit with which they were conducted. It is not very probable that, when Dr. Gall was a young student of medicine in a German university he had acquired much intimacy with the writings of the great English chancellor; yet he certainly adhered to his mode of amassing knowledge as closely as if Lord Bacon had rocked him in his cradle. Not a single fact was assumed without repeated observation and verification; not a truth was admitted without proof; no *a priori* conceptions were greeted as demonstrations. Still less is it credible that when Gall was hunting after bird's-nests, led by the local memory of his companion Scheidler; less again, that, when, having seen nine winters in the Schwartzwald, he measured the projecting eyes of his school-mates, he had heard of the lord of Verulam; yet in no single instance was he found tripping in his researches. By an innate impulse, he followed, unconsciously, the precepts of Bacon, and of nature, — because Bacon, Gall, and nature were the same, — as unerringly as if the *Novum Organum* had been his primer. Thus say the phrenologists. (Note 1.)

The system of Dr. Gall, then, they continue, was, as appears in his writings, the result of observation; and to determine its validity nothing was necessary but to verify whether those observations were accurate or not. That a facility for learning by heart is accompanied by prominent eyes is, if true, an independent fact, standing by itself, leaning on no other fact: it is an oak of the forest, not a parasite fungus. Inquiry might stop there, and say, 'I know that you can learn by heart with ease, because I see that your eyes are prominent;' and the assertion would

not be either more or less true, be the function assigned to what cause, to what member, to what organization, it may. If, however, the physiology of the function can be ascertained — if its connexion with a certain part of the body can be traced — if it can receive the support of anatomy — inasmuch as anatomy can explain any animal function, it must be confessed that assurance becomes doubly sure.

The visible and tangible signs of the twenty-seven faculties, announced by Dr. Gall, were found upon the external surface of the head; but to attribute them to the muscular integuments would be absurd: still more irrational would it be to suppose that the bony covering, the dura or the pia mater, the tunica arachnoides, had any share in the operations of the mind. In the brain only could the seat of the moral powers be placed; and to it the attention of the author was immediately directed.

It is now time to introduce to the reader's acquaintance the second person whose name stands at the head of this article, and whose anatomical labors bear so conspicuous a part in the promotion of phrenology. Little had been done to connect this science with anatomy; and the dissection of the brain by some appropriate method was yet a desideratum, when Dr. Spurzheim, of whom more ample notice shall presently be taken, became the pupil, and afterwards the associate, of Dr. Gall.

The mode of examining this viscus then in practice among anatomists, and not yet entirely abandoned, was, after removing the membranes which enclose it, to cut through it in different directions, to scrape away a large portion of its substance to show the falx cerebri, the corpus callosum, the fissura silvii, the tuberculæ quadrigeminæ, the fornix, and the septum lucidum, together with

many other parts, of which the *names* are well known and barbarous, but of which compassion on the reader's jaws and mind forbids the enumeration. To Drs. Gall and Spurzheim this entire method appeared faulty, and they were induced to invent some other mode. Not that they expected anatomy to be more indiscreet in revealing the secrets of nature on this than on any other occasion, or to tell why and how the brain thought and felt, any more than why the liver secreted bile. They knew that the structure of an organ seldom denotes its functions; but they knew also that anatomy and physiology cannot be in contradiction. The most obvious method was to examine, in the dead body, whether the volume of the brain, in the region where an organ was supposed to be situated, bore a settled proportion to the manifestation which the living subject had given of the corresponding power of mind. This question was investigated by experiment; and it was ascertained, by the inspection of a very great number of subjects that the volume and the faculty were in constant unison.

This was an immense step; but '*nil actum reputans dum quid superesset agendum*,' Drs. Gall and Spurzheim were still anxious to obtain more satisfactory knowledge of the structure of the brain. The figures and drawings which transverse cuts of the cerebellum offer, the arbor vitæ, however picturesque, did not content them. A fortunate accident occurred at length, and one more mystery of nature was explained.

A woman who had been afflicted from her youth with hydrocephalus, died of an inflammation of the bowels at the age of fifty-four. Her head was found to contain four pounds of water; and this liquor had so insinuated itself

into every little cavity, — had so divided every little vessel from the substance in which it was imbedded, that their texture became immediately visible. Drs. Gall and Spurzheim then endeavored to find a method which they might substitute at pleasure for that which diseased nature had employed in the case of this woman, and of many other hydrocephali. It was not, indeed, till they reached Paris that, stimulated by some objections made, as shall presently be related, by the French Institute, they fully assured themselves of the most effectual methods of performing this important operation. There they discovered that if the brain be macerated in nitric acid, diluted with alcohol, or in alcohol alone, if it be boiled for twelve or fifteen minutes in oil; if a small jet of water be projected upon any part of it from a syringe; or if it be blown upon through a blow-pipe, a separation is effected which answers every purpose. By introducing the hand, too, between the convolutions, a division may be operated; and by any of these means the structure of the brain becomes as evident as when it has been macerated for years in the morbid serosity of hydrocephalus.

Previously to these anatomists, the brain was considered as a pulpy mass, in which the whole nervous system had its origin. If by chance any attempt was made to assign a function to any particular part, to explain its use or nature, the success was as small as the epithets by which those parts were named were uncouth. Neither was this extraordinary. Let us suppose that any muscle of the body, the soleus maximus for instance, had always been cut through transversely, it would always have presented a transverse section of its mass; but no such idea as we now have of its fibrous texture could have been formed.

But the mere inspection of a muscle at once denotes a fibrous texture, which in the brain is not so evident; and the phrenological anatomists have the merit of a very important discovery, in showing that the white substance of the brain is not less truly fibrous than the soleus maximus. And here would be the place to introduce some anatomical details in support of our doctrine, but in pity to our general readers we shall refrain. We can, however, assure them, that every fact evinced by dissection is in our favor, and we defy our antagonists to the proof. Drs. Gall and Spurzheim have most triumphantly answered every objection on this head, and dread not to encounter any more which can be adduced. Let it be remembered merely that two great facts have been incontrovertibly established: — 1st, the possibility of unrolling the convolutions of the brain; 2d, the fibrous texture of the white substance. (Note 2.)

Before Dr. Gall had received all the lights which the collateral sciences could throw upon his doctrine, and supported principally by the plain fact, abundantly ascertained, that a certain form of the head constantly accompanied a particular mental power, he began to communicate his knowledge to others. He was at that time established as a physician at Vienna, a city not very remarkable for the brilliancy of its scientific lights. His auditors were not numerous, but they were select; among them were Professors Froriep, Walther, Martens, who published accounts of what they had heard; and lastly, the best of all, Dr. Spurzheim, who, already advanced in the study of physic, became his pupil in 1800, and in 1804 his associate. Dr. Gall at first spoke only of the elevations and depressions on the cranium, as denoting the presence or the absence of

determinate dispositions and talents; neither could he then speak of much more. This imperfect state of his doctrine entailed upon it a disadvantage which it has hardly yet surmounted; and exposed it to very absurd criticism and ridicule, under the names of craniology, cranioscopy, (recollect, gentle reader, that phrenologists, not the *Foreign Quarterly*, speak,) bumps, protuberances, &c. When, however, he became strengthened by the positive conclusions of anatomy, and by the cheering analogies of physiology, he grew more confident in his system; and that confidence imparted to it a form and pressure more worthy of so vast a subject. His conversations at length assumed the appearance of lectures; but he had not continued them long, when the Austrian government took the alarm, conceiving that to explain the functions of the brain, and to improve its anatomy, must be dangerous to society. An order was issued, prohibiting all private lectures, unless by special permission. The doctor was reduced to silence, but as the government was less solicitous about the morality of strangers than of its own subjects, leave was granted to corrupt them by teaching them the pernicious doctrine, and one or two Englishmen thus learnt what the Austrians know not yet, that the brain is of some use. It is not surprising, that they who have the largest portion of this organ should be the most curious to know to what end it is given.

In the year 1805, our masters, warmed with the zeal of proselytism, turning their backs upon the lofty steeple of St. Stephen's Kirche, to find their world elsewhere, sallied forth to attack the reigning cerebral and metaphysical doctrines of their fellow-creatures. They travelled together, pursuing their researches in common, to more than thirty

towns of Germany, Holland, and Switzerland, and never stopped till they reached Paris. This itinerancy has been made the subject of reproach to them in this country; but we are all too apt to judge of others by ourselves. The habits of the nations which they wished to convert required such a mode of proceeding. Their own native land, divided into many petty states, has innumerable little points, but no one large focus of light. From the one to the other of these thought travels as slowly as the slumbering note twanged through the twisted horn and snaps-swallowing throat of a Westphalian post-boy. In Holland it advances about as rapidly as an Amsterdam Cupid, flying on the wings of Love, in a Dutch trekschuit. In France there is one great metropolis of wit, as flashy as it is frivolous; and in this, words, with the ideas annexed to them, if any there be, whiffle about from the Faubourg St. Germain to the Faubourg St. Honore, and back again across the Pont de Louis XVI., in the cutting of a caper; but this emporium stands in the dreary middle of a vast wild, and preaching any where but in Paris to the French nation would literally be preaching in the desert. In Britain, on the contrary, a new idea mounts a mail-coach, drawn by four blood-horses, with plated harness, as light as the chariot of Queen Mab, and sweeps along with Macadamized speed and Magna Charta security, from Land's End to John o'Groat's house, in as short a time as Puck would take to 'put a girdle round about the earth.' Everywhere the fame of our professors had preceded them — everywhere new discoveries awaited them; and they had not gone one half of their round among the German universities, before they had met with more applause and more opposition than they had experienced in all their former lives.

A feature of these memorable travels was the visit of Dr. Gall to the prison of Berlin, and the fortress of Spandau. On the 17th of April, 1805, in the presence of the chiefs of the establishment; of the inquisitors of the criminal department; of various counsellors; and of many other witnesses, he was conducted to the prison at Berlin, where upwards of two hundred culprits, of whom he had never heard till that moment, to whose crimes and dispositions he was a total stranger, were submitted to his inspection. Dr. Gall lays much weight upon this visit, as a very great practical test of the truth of his system; and the result is official, being witnessed by persons in the employment of the Prussian government, and proposed for that purpose.

Dr. Gall immediately pointed out, as a general feature in one of the wards, an extraordinary development in the region of the head where the organ of theft is situated, and in fact every prisoner there was a thief. Some children also detained for theft, were then shown to him; and in them, too, the same organ was very prominent. In two of them particularly it was excessively large; and the prison-registers confirmed his opinion that these two were most incorrigible. In another room, where the women were kept apart, he distinguished one drest exactly like the others, occupied like them, and differing in no one thing but in the form of her head. 'For what reason is this woman here,' asked Gall, 'for her head announces no propensity to theft?' The answer was, 'She is the inspectress of this room.' One prisoner had the organs of benevolence and of religion as strongly developed as those of theft and cunning; and his boast was, that he never had committed an act of violence, and that it was repugnant to his feelings to rob a church. In a man named Fritze, detained for the

murder of his wife, though his crime was not proved, the organs of cunning and firmness were fully developed; and it was by these that he had eluded conviction. In Maschke, he found the organ of the mechanical arts, together with a head very well organized in many respects; and his crime was coining. In Troppe he saw the same organ. This man was a shoe-maker, who, without instruction, made clocks and watches, to gain a livelihood in his confinement. On a nearer inspection, the organ of imitation was found to be large. 'If this man had ever been near a theatre,' said Gall, 'he would in all probability have turned actor.' Troppe, astonished at the accuracy of this sentence, confessed that he had joined a company of strolling players for six months. His crime, too, was having personated a police-officer, to extort money. The organs of circumspection, prudence, foresight, were sadly deficient in Heisig, who, in a drunken fit, had stabbed his best friend. In some prisoners he found the organ of language, in others of color, in others of mathematics; and his opinion in no single instance failed to be confirmed by the known talents and dispositions of the individual.

On the 20th of April the visit was made at Spandau, in presence of the privy-counsellor Hufeland, one of the most philosophic physicians of his age; and of several other official persons of similar respectability. Four hundred and seventy heads were submitted to inspection. In every robber the organ of theft was highly developed, accompanied by various other organs in the different individuals. In one Dr. Gall perceived the organ of mathematics strongly pronounced; together with others denoting skill in the mechanical arts. This man, Kunisch, had in fact committed several robberies, in which his dexterity had much as-

sisted him, and his address was such, that he was intrusted with the care of the spinning-machines in the house of correction. Gall asked him whether he had any knowledge of calculation? 'Do you think I could put together a piece of work like this, if I could not calculate the effects?' An old woman, in whose head theft, theosophy, and love of offspring were the prominent organs, confessed the justice of her punishment, and returned thanks to God for having placed her in that establishment; for since her confinement, her children, whom she herself could not have educated, had been sent to an orphan-house. Albert, distinguished for his haughtiness to his fellow-prisoners, was an example of a strong development of the organ of self-esteem. Regina Dœring, an infanticide, was presented to him among a band of robbers, but he immediately called to Dr. Spurzheim to remark how in one organ her head resembled that of a servant of his at Vienna, a very excellent person in all other respects, but who delighted in killing animals. In Kunow, he found the organ of music predominant; and it appeared that all the misfortunes of this person proceeded from his having ruined himself by this his ruling passion. Raps had the organs of theft, of murder, and of benevolence, highly developed. His crime was having robbed an old woman, round whose neck he had fastened a rope with intent to strangle her, but having completed his robbery, an emotion of pity prompted him to return and loosen the rope, by which act the life of the old woman was saved. Such is an extract of the narrative of these celebrated visits to the prisons of Berlin and Spandau, which, in their day, attracted much notice throughout Germany.

But the great trial still awaited our travellers at the bar of the French Institute; and there they presented themselves, to receive official support or condemnation, in the face of expectant Europe.

The Institute was then in all its glory. In proportion as Buonaparte had cannonaded, it had grown enlightened. As the hero was the referendary of military justice, so was it the areopagus of scientific truth. The chief of the anatomical department was M. Cuvier; and he was the first member of this learned body to whom Drs. Gall and Spurzheim addressed themselves.

M. Cuvier is a man of known talents and acquirements; and his mind is applicable to many branches of science. But what equally distinguishes him with the versatility of his understanding, is the suppleness of his opinions. He received the German doctors with much politeness. He requested them to dissect a brain privately for him and a few of his learned friends; and he attended a course of lectures given purposely for him and a party of his selection. He listened with much attention, and appeared well-disposed toward the doctrine; and the writer of this article heard him express his approbation of its general features, in a circle which was not particularly private.

About this time, the Institute had committed an act of extraordinary courage, in venturing to ask permission of Buonaparte to award a prize medal to Sir H. Davy, for his admirable galvanic experiments, and was still in amaze at its own heroism. Consent was obtained; but the soreness of national defeat rankled deeply within. When the First Consul was apprised that the greatest of his comparative anatomists had attended a course of lectures by Dr. Gall, he broke out as furiously as he had done against Lord Whit-

worth; and at his levee he rated the wise men of his land for allowing themselves to be taught chemistry by an Englishman, and anatomy by a German; *sat verbum.* The wary citizen altered his language. A commission was named by the Institute to report upon the labors of Drs. Gall and Spurzheim; M. Cuvier drew up the report. In this he used his efforts, not to proclaim the truth, but to diminish the merits of the learned Germans. Whenever he could find the most distant similarity between the slightest point of their mode of operating, and anything ever done before, he dwelt upon it with peculiar pleasure; and lightly touched upon what was really new. He even affected to excuse the Institute for having taken the subject into consideration at all, saying that the anatomical researches were entirely distinct from the physiology of the brain, and the doctrine of mental manifestations. Of this part of the subject Buonaparte, and not without cause, had declared his reprobation; and M. Cuvier was too great a lover of liberty not to submit his opinion to that of his Consul. His assertion, too, that the anatomy of the brain had nothing to say to its mental influence, he knew to be in direct opposition to fact; but even the meagre credit which he did dare to allow to the new mode of dissection, he wished to dilute with as much bitterness as he could. So unjust and unsatisfactory, so lame and mutilated did the whole report appear, that the authors of the new method published an answer, in which they accused the commissaries of not having repeated their experiments. Such was the reception which the science, that we (phrenologists) now see spreading over the globe, met with from the Academy of the Great Nation.

In November, 1807, Dr. Gall, assisted by Dr. Spurzheim, delivered his first course of public lectures at Paris; and these the writer of this article heard with intense interest. His assertions were supported by a numerous collection of skulls, heads, casts; by a multiplicity of anatomical, by a multiplicity of physiological facts. Great, indeed, was the ardor excited among the Parisians by the presence of the men, who, as they supposed, could tell their fortunes by their heads, as well as Mademoiselle le Normand could do with a pack of cards; and chiromancy was abandoned for cranioscopy. Every one wanted to get a peep at the necromancers; every one was anxious to give them a dinner or a supper; and the writer of this article actually saw a list on which an eager candidate was delighted to inscribe himself for a breakfast, distant only three months and a half; at which breakfast he sat a wondering guest. But this was nearly all the harvest which phrenology reaped in Paris; and the season was not as long as the roll of festivals which curiosity had cooked. Though Dr. Gall has been a constant resident there, and has delivered lectures whenever an opportunity occurred, the public is not phrenological: though Dr. Spurzheim has done all in his power to diffuse the science there, it has remained recluse. Some periodical publications in England have much overrated the attention paid to it among our neighbors; but in truth the French have thought little upon it, neither will they think upon it, until their minds are more seriously bent upon a study which hitherto they have much neglected, — the study of the human being in other parts besides nerves and muscles. As a proof of this, we will mention that, in 1824, the government of that nation, as wise as that of Austria had been, prohibited the delivery of all lectures without its

special permission; and Dr. Spurzheim was obliged to confine himself to private conversations at his own house. This proceeding, which no rulers of a truly enlightened people would have dared to attempt, was the death-blow to all phrenological inquiry in France, and an apt reply to the lucubrations of the New Edinburgh Review, which had prompously stated that the French were greater proficients in phrenology than the British. It must have been sufficient to disgust Dr. Spurzheim with every project of continuing his instructions there; and is most probably the reason why, within the last two years, he has taken this country so entirely under his tuition, and made it most essentially his phrenological domain.

It is probable, however, that, long before this time, a mind like Dr. Spurzheim's must have seen that the soil really appropriated to the seeds of his doctrine was profound, reflecting England, where every power of thought is kept so much within its own province, and is so well employed there, and where so important a branch of philosophy would be received with all due reverence. As soon as the communications were open, he came to this island, and repaired to London. The moment was not propitious. The nation was still smarting with the scars of war. Many things, too, had indisposed it to the lore of Germany; it was jealous and touchy upon the subject of quackery. Mesmer, Mainaduke, Perkins, the morbid sentimentalism of Miss Anne Plumptre's translations, had made it so; and Dr. Spurzheim had to struggle against all these obstacles.

The campaign was opened by a dissection of the brain, at the Medico-Chirurgical Society's in Lincoln's-Inn Fields; and the novelty, as well as the truth of the demonstration, that this viscus is composed of fibres, created no

small surprise among the learned audience. The choice of such a mode to enter upon the subject was eminently judicious, as it placed it at once upon a respectable footing, by making an appeal to science. The effect in its favor, however, was not so general as might have been expected. When a course of lectures was delivered, not more than forty auditors were present; neither did a second course attract a more numerous circle.

From London, Dr. Spurzheim proceeded to Bath, Bristol, Cork, and Dublin, where also he delivered lectures. He then proceeded to Scotland. If, during his excursion, the harvest of proselytes was not yet very great, the additions to his observations were extensive and interesting; and it is much to be wished that he may one day publish his remarks upon the different races which he clearly distinguished, spread like horizontal strata over the land through which he travelled. In the Scottish capital another fate attended him, and a decisive moment was approaching. There, as in London, he opened his campaign by the dissection of the nervous mass; but the circumstances of the demonstration were highly piquant.

The writings of Drs. Gall and Spurzheim, conjointly and separately, had attracted the attention of our periodical critics, and an article had appeared in the *Edinburgh Review* for June, 1815, in which these authors were most heartily reviled. Hardly an opprobrious epithet in the language was omitted on their moral, as on their intellectual characters, and they were roundly called fools and knaves. The conclusion is as follows: — 'The writings of Drs. Gall and Spurzheim have not added one fact to the stock of our knowledge respecting either the structure or the functions of man; but consist of such a mixture of gross errors, ex

travagant absurdities, downright mis-statements, and unmeaning quotations from Scripture, as can leave no doubt, we apprehend, in the minds of honest and intelligent men, as to the real ignorance, the real hypocrisy, and the real empiricism of the authors.' Should phrenology prove false, the sagacity of this article will be most brilliant, even though, from beginning to end, it attempts no means of refutation but assertion. Should the doctrine prove true, then that production will be held by all men, as it now is by phrenologists, as the most flippant, pert, vulgar, ignorant, and presumptuous, that ever appeared in that able collection; and very wise, or very weak indeed, must be the physiologist to whom the works there criticized can teach nothing.

The intention of Dr. Spurzheim always was to visit the Scottish Athens, but this article confirmed it. He procured one letter of introduction for that city, and but one; that was to the reputed author of the vituperating essay. He visited him, and obtained permission to dissect a brain in his presence. The author himself was a lecturer on anatomy, and the dissection took place in his lecture-room. Some eyes were a little more, or a little less, clear-sighted than others; for they saw, or thought they saw, fibres. A second day was named. The room was as full as it could be, particularly as an intermediate bench was reserved for Dr. Spurzheim to carry round the subject of inquiry to every spectator. There, with the *Edinburgh Review* in one hand, and a brain in the other, he opposed fact to assertion. The writer of the article still believed the *Edinburgh Review*, but the public believed the anatomist; and that day won over near five hundred witnesses to the fibrous structure of the white substance of the brain, while it drew

off a large portion of admiring pupils from the antagonist lecturer.

Thus aided by success, Dr. Spurzheim opened a course of lectures on the anatomy and the functions of the brain, and its connexion with mind. He used to say to the Scotch, 'You are slow, but you are sure; I must remain some time with you, and then I'll leave the fruit of my labors to ripen in your hands. This is the spot from which, as from a centre, the doctrines of phrenology shall spread over Britain.'

These predictions proved true. Converts flocked in on all sides; the incredulous came and were convinced. After a residence of seven months, Dr. Spurzheim returned to London; but the seeds of phrenological folly or wisdom were sown, and so rapidly did they germinate, that it would almost seem there was not a good plant among them.

After an absence of three years from Paris, Dr. Spurzheim returned there, and did not visit England again until 1825. Meanwhile, the voices of phrenologists, the clamors of the enemies of the science were loud. The doctrine of phrenology had set the Old and the New Town, from the Calton Hill to the Castle, in a brain fever, a cerebral fermentation, which continued to send up bubbles, froth, and ardent spirit in phrenological confusion, until the year 1820, when, on February 22, the ebullition subsided, by the formation of a society, at the head of which stands the name of Mr. G. Combe. This gentleman had begun by being a sceptic; but, by degrees he was convinced, and is now an ardent sectary. He was, we (phrenologists) believe, the proposer, and is the president of the earliest phrenological society formed in this world; and his zeal and his writings,

his perseverance and his abilities, have placed him very high among British phrenologists.

In the beginning, this society was without heads or brains; and a phrenological society without heads or brains, is still poorer than a mineralogical society without quartz or corundum, or a geological society without gneiss or granite. The penury was quickly supplied by ample donations. Not only skulls and masks, but the other necessary appendages just named, poured in from every side, insomuch that never did a learned body exist which had such a profusion of them for its own and others' use. Their collection increased most rapidly, and was liberally left open to public inspection. Their meetings were periodical; and in 1823 they published a volume of phrenological transactions, which, if the science be not false, will long be esteemed. They gave an example, too, of candor at least, which was soon followed, and similar societies were formed in many other cities. Edinburgh had to wipe away a large offence committed against phrenology, and thus did she make amends.

It would be long to enumerate all the successes and triumphs which this new science now obtained in the shape of societies, collections of busts, lectures fully attended in different parts of the British empire. London, Exeter, Manchester, Glasgow, Liverpool, Cork, Hull, Dublin, Paisley, Dundee, vied with each other, according to their means, to learn and diffuse the science; and in an instant, as soon as the doctrine was fairly stated, more phrenologists sprung up among us than during twenty years in the country where Drs. Gall and Spurzheim had been residing all that time.

In the British colonies, too, phrenology has not been

neglected; and Dr. Murray Paterson, in the East India Company's service, delivered lectures at Calcutta, where a phrenological society was about to be formed.

But the freest of nations must always be that in which whatever relates to the study of man will excite the greatest interest. Without such knowledge, indeed, liberty cannot exist. Such is a cause of the warm reception which phrenology has met with among its partizans in England, and of the no less warm opposition of its adversaries. The reverse, too, has procured it a tepid attention in France; for, whatever be the forms of liberty there its spirit is yet to be born. It is, then, easy to conjecture what may be the mind of the United States of America toward this doctrine. Dr. Caldwell, medical professor in Pennsylvania University, has edited 'Elements of Phrenology,' and delivered lectures in Baltimore, Washington, &c.; and in one of the American Universities, a professor of phrenology is as regularly announced as of moral philosophy, or of anatomy, of chemistry, or of history. Neither have all the European States been heedless of it; and the city of Copenhagan boasts of Drs. Otto and Hoppe.

It must not, however, be supposed, continue the phrenologists, that all this was effected in Britain without opposition or ill-will. The clamor against phrenology was loud and mobbish. The laughing journals scoffed, the weeping ones lamented; some would have put it down by authority, some by ecclesiastical anathema. It would be too long and doleful to tell all the means to which some — few, indeed — resorted, to crush it without a hearing. But it is a principle in British law, because it is a feeling in British justice, that a man taken in the very act of murder shall not be dragged off to the first lantern-post, and there hanged without judge or jury. The same sentiment pervades all

our decisions; and while some roared out that Drs. Gall and Spurzheim should be tied up in a sack with their evil deeds and drowned as witches, others demanded, as did a dying Irish judge — Lord Kilwarden — for his assassins, that they should be tried by the laws of God and of their country. A hearing has been obtained; the trial is now proceeding; and all that we (phrenologists) pretend to do is to address the jury, not for favor or for rigor, not for mercy or for fury — but for justice.

The doctrine, as it is now taught and received in the countries just mentioned, does not exactly coincide with the original ideas of Dr. Gall, neither is his view of some of the details, at this moment, in all respects the same as that which Dr. Spurzheim has taken. Immense as have been the toils and labors of the creator of phrenology, it was decreed that his fate should still be human; and that his life should not close without his learning, that, vast as was his horizon, it was not yet the limits of the earth.

The mind of Dr. Spurzheim, in our opinion, (phrenologists), seems to have been cast in a still more metaphysical mould than that of Dr. Gall, who, though he has shown very uncommon acuteness in his abstract inquiries upon mind, has yet left some points so feeble as to endanger the whole system. As an example — and it is the most striking of all — Dr. Gall attributed to the same organs, — pride, the love of authority, self-esteem in man, and the predilection which some animals show for elevated regions, as the wild goat, the eagle, &c. Now this even his best disposed partizans found rather hard to grant; for it is not easy to admit that moral and physical height are one and the same thing. This piece of doctrine cooled his friends, heated his enemies, and stood in strong opposition to the

adoption and diffusion of his system. Dr. Spurzheim felt the necessity of examining it more closely. The part of the brain where this organ is placed by Gall, is prominent sometimes in the upper, sometimes in the under portion; consequently it is not one organ; for the very essence of an organ is to be one and entire. Hence, then, Dr. Spurzheim inferred two organs; and experience has confirmed his conjecture. To one of these he attributes self-esteem, to the other the love of habitation; and thus has rescued the system from the ridicule thrown upon it by confounding two such opposite sentiments as those which prompt a man to esteem himself, and a chamois to climb a mountain; while, at the same time, he has shown the connexion which might have led to the error, as long as the separation was not made.

Another of Dr. Spurzheim's modifications was a similar analysis of the faculty of music. The well-known fact that there are many excellent harmonists who are but indifferent timeists, and *vice versa*, induced him to conclude that an organ of music must be composed of an organ of tone and an organ of time; and he directed his researches towards the discovery. Experience and observation have authorized him to resolve the former simple organ into the two separate ones just mentioned; and his opinion has been adopted by all the phrenologists of this island.

In like manner it occurred to Dr. Spurzheim that poetry could not depend upon a simple faculty, but that it must have its origin in more powers than one. Besides, there are persons endowed with a large development of the organ to which poetic inspiration is attributed, and who are not poets. A feeling for the grand and beautiful, which gives exaltation and rapture to the mind, Dr. Spurzheim

considers to belong to this portion of the brain, and he terms it the organ of ideality, as one of its chief functions is to picture an ideal world of beauty and sublimity; to impart enthusiasm; and, in the fine arts, to accomplish very much of what has usually been attributed to imagination.

Dr. Spurzheim had met with persons in whom the organ of theosophy was large, and yet religious feelings feeble. He observed that some of these were antiquarians, others courtiers; in short, that the object of their respect was not always a Supreme Being. He suspected, then, that the fundamental feeling was not religion, but a mere propensity to respect and venerate. He termed it the organ of veneration, without specifying, in any manner, the thing which it venerates. When joined with the love of property, it may venerate wealth; with ambition, power; with vanity it makes a courtier; with eventuality an historian — an antiquarian. Among the organs enumerated by Dr. Gall, there is one in connexion with visions, though none in combination with which, veneration would select almighty power and supernatural agency for its object. Dr. Spurzheim, knowing how little man can exist without the knowledge and worship of a Supreme Being, turned his attention to the research of an organ and faculty which might guide him to that end; and in fact discovered one, which he named at first supernaturality, and afterwards marvellousness. This faculty directs veneration towards the worship of one or more supernatural beings, the choice and number of which are more select and noble, in proportion as the higher faculties are more developed and exercised.

Another proof of what we (phrenologists) consider as the superior analytical talent of Dr. Spurzheim, is the discovery he has made of separate organs, each destined to take cognizance of some special physical quality in objects. Dr. Gall had found an organ for the perception of color; another for number; another for place: but these discoveries did not lead him to the general conclusion, that all the other properties of bodies, as well as their color, number, and place, would be bestowed in vain for man, if man had not the faculties by which he could perceive them. The analogies of the science indicated that their situation must be in the vicinity of the other organs destined to similar ends; and they have all been found in the ciliary ridge. They are — size; momentum, in which is included a very long catalogue of properties, once thought distinct from each other, but now known to be in fact but one; and order. The latter Dr. Spurzheim discovered in England, and order certainly is a characteristic of the nation.

The additions which Dr. Spurzheim has made to the number of the simple fundamental faculties of human beings, not before admitted by Dr. Gall, are, including marvellousness, eight. But it is not the number, it is the spirit of these modifications which phrenologists principally admire. If some persons accuse Dr. Spurzheim of having abandoned the Baconian severity of his predecessor, and of indulging himself in *a priori* hypotheses, those very conjectures prove the extent of his analytical sagacity. To do him justice in this respect, it is indispensable to distinguish between inductions and facts. No fact, the existence of no faculty or organ, was admitted by him upon conjectural evidence. Before he adopted any new power of mind, in conjunction with any yet unnoticed cerebral

development, he waited as rigorously as Gall could do, for the result of repeated observation; but to investigate such and such a region of thought, and of the brain — to turn his inquiries in this or that direction — he was, indeed, guided by his previous reflections and inductions. The truth of these time has proved, to his no small honor — if, indeed, they and all the rest be true; and he has the glory, not very common, of anticipating by meditation, the prudent march of experiment. Whatever talent Dr. Gall may have shown in his earlier observations — however acute, and clear, and philosophic he may have been in his investigations, physiological and moral, he does not seem, at any period of his labors to have been carried forward by preconceived notions respecting the primitive faculties, but to have proceeded from step to step as each successive conviction casually led him. This is not meant as a reproach to Dr. Gall; for the march of his mind was, perhaps, more steady and secure on that account; but the sagacity of Dr. Spurzheim, who, by general reason, foresaw the law of nature before he had proof of it, and afterwards proved it, is of a very high order. When metaphysicians reproached Dr. Gall with his mode of proceeding, and with not first determining what the primitive powers were, and then seeking out their organs in the brain, his constant answer was, 'Do you metaphysicians tell me what the primitive faculties are, and I'll find out the corresponding organs.' But this they neither did nor could do; and Gall continued, as some would say, empirically, to compare mental manifestations with cerebral development, until he determined their mutual dependence.

Another part of the system which was not without its inconveniences, was its nomenclature. The first observa-

tions and conclusions of Dr. Gall could be made only in extreme cases; for, when a faculty and its organ are weak and small, they could not attract an inexperienced eye, as that of Gall, like that of other men, necessarily was, before he had become familiar with them. When, indeed, he had acquired the habit of observing them, their slightest modifications became visible; but the name which had been derived from the exaggeration of the faculty became inapplicable. The first determination of one organ was made in thieves, of another in murderers; and the one was very naturally called the organ of theft — the other the organ of murder. But these faculties exist among mankind in diminished forms, and in various modifications; and to call them constantly by these names would evidently be an abuse of language. In the use of these terms, however, Dr. Gall perseveres: while Dr. Spurzheim has adopted more proportionate epithets, calling the one the organ of acquisitiveness, from its wish to acquire — a wish which, when extreme, and not controlled by the superior sentiments and faculties, does prompt to theft; but which, when under the guidance of the moral sense, and aided by such mental powers as can promote its honest gratification, becomes a motive of most conscientious exertion: the other he calls destructiveness, implying the very first wish of an infant to tear and break an insect or a toy. 'I saw,' says Valeria to Virgilia in Coriolanus, speaking to her of her son, 'his father's son, a very pretty boy,' — 'I saw him run after a gilded butterfly; and when he caught it, he let it go again, and after it again; and over and over he comes, and up again; catched it again: or whether his fall enraged him, or how 'twas, he did so set his teeth and tear it! Oh, I warrant how he mammocked it!' It includes,

too, the very last measure of crime — murder, and assumes every intermediate degree, according to its development and its combinations. To call all these by one word certainly is not correct, however difficult it might have been to do otherwise, as long as the range and functions of a faculty were not determined; but the nomenclature of Dr. Spurzheim proceeds upon more philosophical views, although even that has been found subject to some objections. Neology is always displeasing, at least until the ideas on which it is founded are fully established; and to embrace the entire scope of a faculty in one word is not easy, particularly as much yet remains to be settled with regard to the metaphysics of the faculties, though their general functions are fully determined. But without new words new ideas cannot be expressed; and without new ideas mankind rests stationary. Hallowed be the vices (the dulcia vitia) of language, which impart a truth unknown before!

To give the reader materials for judging the state of this German candidate for a place in philosophical society, and of knowing the two men to whom it owes its birth and progress, he is here presented with a diagram of the system such as Dr. Gall made, and still makes it; and of another comprising Dr. Spurzheim's latest modifications. As Dr. Gall has not himself translated his names into English, we give them in the original German, with an attempt of our own to explain them; —

No. 1. Zeugungstrieb — the instinct of generation.
No. 2. Jungenliebe, Kinderliebe — the love of offspring.
No. 3. Anhänglichkeit — friendship, attachment.
No. 4. Muth, Raufsinn — courage, self-defence.
No. 5. Würgsinn — murder, the wish to destroy.
No. 6. List, Schlauheit, Klugheit — cunning.

No. 7. Eigenthümsinn — the sentiment of property.
No. 8. Stolz, Hochmuth, Herschsucht — pride, self-esteem, haughtiness.
No. 9. Eitelkeit, Rhumsucht, Ehrgeitz — vanity, ambition.
No. 10. Behuthsamkeit, Vorsicht, Vorsichtigkeit — cautiousness, foresight, prudence.
No. 11. Sachgedächtniss, Erziehungs-fähigkeit——the memory of things, educability.
No. 12. Ortsinn, Raumsinn — local memory.
No. 13. Personensinn — the memory of persons.
No. 14. Wortgedächtniss — verbal memory.
No. 15. Sprachforschungssinn — memory for languages.
No. 16. Farbensinn — colors.
No. 17. Tonsinn — music.
No. 18. Zahlensinn — number.
No. 19. Kunstsinn — aptitude for the mechanical arts.
No. 20. Vergleichender Scharfsinn — comparative sagacity, aptitude for drawing comparisons.
No. 21. Metaphysischer Tiefsinn — metaphysical depth of thought, aptitude for drawing conclusions.
No. 22. Witz — wit.
No. 23. Dichtergeist — poetry.
No. 24. Gutmüthigkeit, Mitleiden — good-nature.
No. 25. Darstellungssinn — mimickry.
No. 26. Theosophie — theosophy, religion.
No. 27. Festigkeit — firmness of character.

Dr. Spurzheim's arrangement of the faculties is comprised in orders, genera, &c.: they are:—

ORDER I. *Feelings, or Affective Faculties.*

Genus I. Propensities:—No. 1. Amativeness. No. 2. Philoprogenitiveness. No. 3. Inhabitiveness. No. 4. Adhesiveness. No. 5. Combativeness. No. 6. Destructiveness. No. 7. Secretiveness. No. 8. Acquisitiveness. No. 9. Constructiveness.

Genus II. Sentiments:—No. 10. Self-esteem. No. 11. Approbativeness. No. 12. Cautiousness.

Genus III. Superior Sentiments:—No. 13. Benevolence. No. 14. Veneration. No. 15. Firmness. No. 16. Conscientiousness. No. 17. Hope. No. 18. Marvellousness. No. 19. Ideality. No. 20. Mirthfulness, or Gayness. No. 21. Imitation.

ORDER II. *Understanding, or Intellect. External Senses — Feeling, Taste, Smell, Hearing, Sight.*

Genus II. Perceptive Faculties; the Intellectual Faculties which perceive the existence of external Objects and their physical qualities:—No. 22. Individuality. No. 23. Configuration. No. 24. Size. No. 25. Weight and Resistance. No. 26. Color.

GENUS III. Intellectual Faculties which perceive the Relations of external Objects: — No. 27. Locality. No. 28. Calculation. No. 29. Order. No. 30. Eventuality. No. 31. Time. No. 32. Tune. No. 33. Language.
GENUS IV. Reflective Faculties: — No. 34. Comparison. No. 35. Causality.

It is thus modified that Dr. Spurzheim has disseminated the doctrines of phrenology since he has fixed his residence in this island. (Note 3.)

The attacks upon the science, however, have by no means become less virulent during this period; and its old enemy has again entered the lists. The LXXXVIIIth No. of the Edinburgh Review opens with an article which pretends to nothing less than to put down phrenology forever, but which the sectaries hold to be a still more pitiful production than any that had preceded it in the same Review.

In reading this precious article *once* over, with a pencil in our hands, (say the phrenologists) we were induced no less than one hundred and fifty-three times to mark some passage which struck us as reprehensible, under one or other of the following heads: — 1. Ignorance of every principle of phrenology, of the situation, size, functions, and value of the organs, and of the metaphysics of the phrenologists. 2. Ignorance of the general principles of human nature in its widest bearings. 3. Total inaptitude for philosophical pursuits and general science, and a mind the antipode of Baconian. 4. Unsound and confused notions upon every system of metaphysics. 5. Wilful misrepresentation of facts, doctrines, and opinions, *ad libitum*. 6. Phrenological facts are never opposed by anti-facts, but by an ipse-dixit; by assertions, jokes and quibbles. 7. Some as dull jokes and stupid pleasantries as ever were cracked upon the heads of our German doctors. Time and space do not allow a

special notice of this article at present, but until some benevolent critic shall undertake to give it due castigation, to point out all its bad faith, blunders and pretensions, one phrase must be noticed as a specimen of the philosophic mind of the author (page 296, line 20 to 27). 'If it were really true that, &c. it is, in the first place, inconceivable that the discovery should have remained to be made in the beginning of the 19th century; and in the second place, still more inconceivable, that, after it was made, there should be anybody who could pretend to doubt of its reality.' Admirable critic! profound philosopher! Adieu, then, all that has been brought to light since the year 1800, together with all that anybody doubts about! Nay, more, for if the critic fixes upon the opening of the present century as the æra at which he locks the gate of science, and throws the key into a fiery furnace, we will wall it round in 1700. Some other friend to the progress of truth will stifle it in 1600, and so on till the retrogradation of knowledge is complete. And then adieu Vesta, Juno, Pallas, and Ceres; potassium and sodium; hydrogen and oxygen; steam-engines and mule-jennies; the discoveries of Newton cannot be true, for *somebody* still doubts about them; and in fine, there is not either truth or knowledge upon earth, and none can henceforth ever be disclosed!

This article has drawn a reply from Mr. Combe, against whose work it was principally directed; and although this phrenologist has said more than is necessary to refute the flimsiness of the attack, he has by no means exposed all the weak points of his adversary, or held up the production to the contempt which it merits.

The efforts of the Edinbugh Reviewer, however, have been completely impotent to stop the spreading torrent of

truth. On the contrary, they have assisted it so much, that we (phrenologists) hope he may never cease to write against us. About the time when the LXXXVIIIth No. of the Edinbugh Review appeared, Dr. Spurzheim visited Cambridge, and was received in that seat of exact learning with honors seldom bestowed before. By the influence of some of the members of that eminent body, the most distinguished for their characters and talents, permission was granted to deliver a course of lectures on phrenology in the botanical lecture-room of the University; a favor never conferred on any who are not members of the establishment. The audience was most respectable, and increased as the course advanced; till, towards the close, it amounted to 130; among whom were 57, partly professors, partly tutors, and fellows of different colleges. The attentions paid to Dr. Spurzheim, personally, were most gratifying; and the impression made, not merely by his method of dissecting the brain, but by his phrenological doctrines, was as complete a refutation of the lame and impotent conclusions of the Edinburgh Reviewer as candor and science could desire. Now the university of Cambridge will generally be held as high authority as the man who writes that our faculties, viz. the love of approbation, acquisitiveness, cautiousness, &c., arise out of the constitution of human society, and not that human society is the result of human faculties (page 263, last lines); and who considers the ascending affections, as the love of children for parents, &c. to be as necessary and as natural instincts as the love of parents for their offspring (page 269.) (Note 4.)

From Cambridge Dr. Spurzheim proceeded to Bath and Bristol; and the managers of the literary institutions there have declared that since those establishments were opened,

no lecturer had attracted so numerous a class. The London Institution, too, had a weekly lecture, attended by several hundreds of auditors; and the new mode of dissecting the brain was exhibited with entire success at St. Bartholomews' Hospital. Thus Dr. Spurzheim may deride the pert petulance of the ignorant.

But if the Edinburgh Review has not been able to prevent the public attention from being directed to phrenology, and convinced by truth, still less has it been able to arrest the accumulation of facts; and the XVth number of the Phrenological Journal * (page 467), contains — what, in a certain slang dialect, would be called such a *plumper*, that nothing softer than the Reviewer's fact-proof cranium could resist it, — Mr. Deville's visit to the convict ship England, bound with 148 prisoners for New South Wales. This zealous practitioner, after examining the convicts, gave a memorandum of the inferred characters of each individual, and of the manner in which the propensities of each were likely to manifest themselves. The most desperate were accurately pointed out, and one man in particular, Robert Hughes, was noted as most dangerous, on account of his ferocity and dissimulation. A mutiny, at the head of which was this Hughes, was on the point of breaking out, and the conduct of every prisoner coincided most accurately with Mr. Deville's predictions. The records of the whole transaction are now officially in the Victualling

* A Trimestrial publication, as necessary to the lovers of this science as the Journal of the Royal Institution, Professor Jameson's or Dr. Brewster's Edinburgh Journals, &c. are to the friends of chemistry, natural philosophy, &c. This work at present is much superior to what it was in the beginning, and contains many very excellent dissertations on the metaphysics of phrenology, as well as a rich collection of undeniable facts.

Office, and the following is extracted from a letter of Mr. Thompson, surgeon to the ship, to whose care the convicts were committed:—

'I have to thank you for your introduction to Deville and phrenology.—Deville is right in every case but one, Thomas Jones; but this man can neither read nor write; and, being a sailor, he was induced to join the conspiracy to rise and seize the ship and carry her to South America, being informed by Hughes that he would then get his liberty. Observe how Deville has hit the real character of Hughes, and I will be grateful to Deville all my life, for his report enabled me to shut up in close custody the malcontents, and arrive here not a head minus, which, without the report, it is more than probable I could not have done. All the authorities here are become phrenologists.'

Now the man who does not admit that to be a science which errs but once in 148 cases, must have little experience of what human science is. The visit to the convict ship England is the fair appendix to Dr. Gall's visit to the prisons of Germany; and here, at least, the practical use of phrenology cannot be denied. It is known that Mr. Deville has been applied to by some persons in the employment of government to examine another convict ship ready to sail for New South Wales; that he has complied with the request, and that the report of the surgeon, by which his prognostics will be either refuted or confirmed, is daily expected. (Note 5.)

The science being thus brought down to its present condition, and the phrenologist having closed his pleadings, the adverse party must now be introduced; at the same time, for the sake of brevity, the answers shall be given. Many of the objections are anatomical, and would fatigue the reader; many of them must be omitted, but the most

prominent shall be preserved. The works of the authors, the *Edinburgh* and *Quarterly Reviews*, the Phrenological Transactions and Journals, the Report of the French Institute, and the answer to it, contain enough to satisfy the most curious.

To every objection that ever has been, or ever can be, brought against phrenology, one general answer might be given; and if we (phrenologists) were not very good sort of persons, we might dismiss our adversaries with one word: 'Come to our schools and collections, and observe along with us, whether mental manifestations are, or are not, in constant proportion to cerebral development; whether a given shape of head is not always accompanied by a certain talent and a certain character. If this be not so, we are in error. If it be true, all that you can say upon this, that, or the other, cannot make it untrue; and our facts, the facts which we compel you to admit, cannot be destroyed by hypotheses or pre-conceptions. But we will still listen to you, in order to show to the world of what nature your objections are; and because we are so strong in honesty, that your words pass by us as the idle wind.

You do not venture to assert, say the anti-phrenologists, that so soft a substance as the brain can give its form to the skull; or to maintain that it is not the bone which imprints its configuration on the pulpy aggregate. You know, reply the phrenologists, that the cranium is formed *after* the brain; that its bones, at first cartilaginous and soft, follow, as they become hardened, the structure of the cerebral mass, assume its shapes, and very accurately represent its hills and hollows. Observation confirms this fact, and you yourselves know many analogous to it. Are not the bones of adults often warped from their natural shape by the con-

stant action of the muscles; and do not the bones of hydrocephalic skulls expand and recede according to the quantity of water contained in the head?

You know, say the anti-phrenologists, that the internal and the external plates of the bones of the skull are not parallel; consequently the impressions made upon the one are not always perceptible upon the other. Hence, then, even admitting that the brain gives its form to the internal plate, you cannot judge of it externally; and all your inductions are false. — We do know that the plates are not always parallel, and that their deviation often amounts to one or two tenths of an inch. But the difference in heads amounts to one inch, sometimes to two inches; that is to say, to as many inches as the deviation from parallelism does to tenths of an inch. Now, when you prove that a tenth part is equal to the whole, we will admit your objection.

You, continue the opponents, produce the fibrous appearance in the white mass of the brain, by always scraping in the same direction with your dissecting-knife. — Had the dissecting-knife teeth, like a comb, there might be some plausibility in your remark; but, whatever be the process we employ, — maceration, ebullition, congelation, — the fibrous appearance is constantly the same. Now, a result obtained by so many different processes must be in nature, not in any particular method of proceeding.

But the great, the overwhelming objections under which, with Sir Everard Home* at our head, say, thirdly, the

* Sir Everard Home is accused by phrenologists, 1st, Of not understanding their doctrines; 2dly, Of wilfully misrepresenting the little he does know about them; 3dly, Of attempting to appropriate to himself some of the discoveries of Drs. Gall and Spurzheim, to which he has not and could not have the slightest pretensions.

anti-phrenologists, we shall bury you and your science forever, although you think that you can shake them to air like dew-drops from the lion's mane, are those derived from incidents which have happened to different parts of the brain; while the faculties attached to those parts have not been diminished or impaired. Innumerable cases are quoted of cerebral wounds without any injury to the mental powers, by surgeons in every age and country. In one of these a bullet was found upon the pineal gland, after many years innocuous residence there. A boy lost a piece of his brain as large as a pigeon's egg, but not a jot of his reason. Stones, halberds, pistol-balls, knives, stilettos, abscesses, cysts, steatomous tumors, excrescences, cavities, have been detected after death; while, in the living subject, no diminution of intellect had been perceived. Sometimes a fragment of the right, sometimes of the left hemisphere; at others a good lump of the cerebellum has been carried away, and no harm done; nay, the mental powers have been so tenacious in some individuals, that they have continued to keep their seat, even amid a general ossification of the cerebral mass, or its total solution in the waters of hydrocephalus. The authorities upon which these facts rest are formidable, for among them stand the names of Abernethy, Duvernay, Earle, J. Hunter, Ambrose Paré, Petit, Pringle, &c., with many others, *quos nunc describere longum est.*

If, say Drs. Gall and Spurzheim, and their associates, all these observations were as correct as their authors state them to be, not only phrenology would be subverted *ab imo fundo*, but it would be impossible to maintain that the brain performed any intellectual functions, or indeed any functions except that of terminating the columnar structure

of man with a round nob on which Quakers hang broad-brimmed hats. Were the mass, said to be fibrous, converted to bone, without a loss of any faculty — vital, animal, intellectual; were it really liquid, and addled, as it then might be, and no thought or action weakened, this surely is the inevitable consequence. But the vague indefinite manner in which all these examples are produced, save the head and its contents from the imputation of being useless appendages, and give phrenology a chance of a little longer life than its opponents wish. In order to ascertain whether an injury done to any material organ is followed by the disease of any function, the direct method is to observe whether the function attached to that organ is diseased or not. Thus let locomotion be supposed to depend upon the soleus maximus; to a certain this, we should observe whether, when this muscle is injured, the power of locomotion be impaired or not. The same process should be followed with the brain. If an ounce or two of the organ of cautiousness be carried away, as in one case it seemed to have been, we should not examine whether the faculty of music, of eventuality, had been diminished or increased, but whether the poor patient were more or less cautious than he was before. If we confine our inquiry to faculties which do not belong to the part affected of the brain, we shall obtain as satisfactory answers as we should if we were to conclude that, because smell and taste were not directly impaired when the abductor oculi, or the constrictor oris, is cut across, the patient suffered no injury but pain; or that, because he could still walk and hear, he could turn the globe of the eye outwards, or purse up his mouth as well as ever. But this, say the anti-phrenologists, is begging the ques-

tion, answer Drs. Gall and Spurzheim; it is merely assuming, for a moment, the fact which we wish to demonstrate, in order the more readily to come to a conclusion; for, if the diminution of the faculty does not accompany the injury done to the organ, we will cease to say that such is the cerebral seat of cautiousness, of music, &c.; and if, by the same mode, what we have asserted of each portion of the brain be disproved, we give up phrenology forever. What we do maintain is, that our predecessors and opponents did not possess the due means of observing the fact which they have stated; for, instead of looking for the faculties which we attach to the injured parts above quoted, they endeavor to find there, not merely powers which do not belong to those parts, but powers which we do not allow to exist in man as simple fundamental faculties — perception, memory, judgment, imagination, &c. These, indeed, as understood by the doctors of the old school, may very well survive a partial lesion of the brain. We say, too, that those cases have not been adduced against us with fairness, and we give an example of this. Dr. Ferriar quotes the case of the Duc de Guise, mentioned by Ambrose Paré: 'A lance entered *under* the right eye, and came out at the neck, between the ear and the vertebræ; a piece of the steel remained there.' So says Paré; and, in that direction the brain could hardly have been touched. But Dr. Ferriar says it entered *above* the eye. Besides Paré never says one word either about brain or faculty.

If the brain, say the phrenologists, be one organ, the organ of mind, then mind must be injured exactly in the same proportion as the brain is injured; that is to say, if one-tenth of the brain be destroyed, then one-tenth of each mental

power — perception, memory, judgment, &c., must be destroyed along with it. Now we request the old metaphysicians to prove this; while we most satisfactorily account for the loss of one of our acknowledged innate faculties, when all the rest remain entire, by admitting a plurality of organs. And as to the non-destruction of a faculty, even when its organ on one side of the head has totally disappeared, we explain it as we do the continuance of the power of vision in a man who of two eyes has lost one. Every organ, every member of the human body is double, and has long been acknowledged to be so. The fact has been doubted, only since it became necessary to oppose phrenology.

The plurality of the organs is in one sweeping condemnation totally denied by the anti-phrenologists, while the assertors of the doctrine pretend to support it by many arguments. 1st, The analogy between the brain and the other portions of the nervous system declare that the former, like the latter, must be composed of parts, each of which has its separate functions. 2dly, In taking a large view of the subject, and overlooking some partial anomalies, the brain is found to become more complicated in every class of animals, in proportion as that class stands higher in the scale of intellect. Thus, beginning with insects, fishes, proceeding upwards through birds to mammalia, through the most sagacious quadrupeds to man, this viscus is augmented by the addition of new parts. Some animals, indeed, have one portion greater, others another, according to their natures; but the number increases, as do the faculties, till in the most intellectual of all they become the most numerous. Even in the individuals of the human species, proportionate differences are observable; and whoever

studies the heads of Bacon and of an idiot, must become half a phrenologist. 3dly, The cerebral development takes place in all animals exactly in the regions where the faculties for which he is the most distinguished reside. 4thly, The different parts of the brain grow not simultaneously, but one after another; the growth of each part is invariably accompanied by the development of its concomitant faculty; and both organ and faculty are developed according to the demands of nature, at the various periods of our existence. Thus, in children, the perceptive faculties gain strength before the reflective faculties, because we must collect knowledge before we can reason upon it. 5thly, Intense application does not fatigue all the faculties, but only that which is in action, and we repose it by changing the object of our study. When the organ of number has been over-exercised by calculation, the organ of tune may yet be quite fresh, and we may be as well disposed to hear or to make music, as if no part of the brain were weary. Thus it is that gentle descents and risings in a road, as they bring different sets of muscles successively into action, are more advantageous than a dead level. Thus, too, change of posture rests the body. 6thly, When, by the over-excitation of an organ or faculty, monomania is induced, a cure is sometimes performed by exciting the action of another organ or faculty, and thus procuring rest to the inflamed organ. 7thly, A faculty is injured whenever its organ is diseased, and the use of a faculty has been restored by restoring health to the organ. Topical applications to a part of the head have brought back the healthful action of the mental power attached to it. 8thly, The states of sleeping, waking, dreaming, and somnambulism can be satisfactorily explained only in the hypothesis of a

plurality of organs. We regret that the space allotted to this article, already very long, prevents us from offering the phrenological theory of these interesting phenomena.

But the objections in which British readers are most likely to take a part, are those founded upon fatalism, materialism, and atheism. If, say the anti-phrenologists, you attach the powers of intellect, the feelings, the passions, to the shape and organization of the body, that shape and that organization are decrees of fate. Weak, finite beings, men are no longer masters of their thoughts and actions, but bow before the mass of matter that composes them, as the reed before the storm. If you assert that we think and feel by means of material organs, then matter is our soul, and all the properties of that immortal essence are corruption, death, annihilation. If these be the laws of nature which you expound, then there may be no God, there is need of no God, and your system is as dreary and desolating as the worst that ever attempted to plunge mankind in cheerless scepticism, to root out hope and reason from our creed.

To all this, and much more, phrenologists reply: Our doctrine does not in the least alter the questions of fatalism and materialism, but leaves them exactly where it found them. If you admit a Creator, you must admit him omnipotent; and, among the attributes of universal power, you must insert omniscience. That the Almighty reads the thoughts of our hearts before we form them, that he knows what every one of his creatures is before he has sent him into the world, is the inevitable consequence of omniscience. The spirit, the essence of all things, flow from his will; and, without it, nothing can be. Now, whether his pleasure be that good and evil, that the mingled nature of man should be inherent in human organization, or should exist inde-

pendently of it, the fact of their existence is constant; the means alone are different. Whether it be by the fibres of his brain, or by his essential nature, that the created being becomes the perpetrator of harm, harm is not more or less his act — his lot. Whatever is is right. Whatever is is by the will of God. If the will of God be fate, every doctrine which admits a God endowed with will, as ruler of the universe, is fatalism; and divines and moralists are fatalists as we are. If, too, the influence of the Creator over human thoughts and actions be fatalism, it is fatalism, whether exercised by spirit or by matter.

But it never was in our minds, continue Drs. Gall and Spurzheim, to say that this influence resided in matter, or that any mental faculty was substantial. We have, indeed, discovered innate powers in man, and found the organs by means of which these innate powers are manifested. But we did not, as you allege, ever confound the faculty with the organ. The faculty belongs to the soul, the organ to the body, and until the soul and body be confounded, the faculty and its organ must remain distinct. The muscles, with the bony tubes which stretch them out, and which, in their turn, they move at command, are no more the will to move the faculty which causes motion, than is the organ of benevolence, benevolence. The string which vibrates in the harp, the hand which draws it out of the straight line, and lets it go again, are not the note of music which we hear; neither is the organ of tone, tone. In this we have advanced no more than many philosophers have done before us, who have considered the body as the instrument of the soul; and mind to depend on organization. Solomon, St. Paul, the Fathers of the Church, Heathen Philosophers, Christian Moralists, all have attributed a material residence,

an instrument to the soul. Some who called soul the power by which the body grew and was maintained, irritability, life, supposed it to be diffused in every limb and artery, in every atom which composed us. Some divided the soul, and allotted to its parts different regions, analogous to its particular functions in those parts; placing some of it in the thorax, some in the abdomen, some in one part of the head, some in another. Pythagoras, Plato, fixed it in the brain; the Stoics and Aristotle, in the heart; Erasistratus in the menynges; Herophilus in the great ventricles of the brain; Servetto in the aqueduct of Silvius; Auranti in the third ventricle; Van Helmont in the stomach; Descartes in the pineal gland; Schellhammer at the origin of the spinal marrow; Drelincourt in the cerebellum; Lancisi in the corpus callosum, or in the great commissure; Willis in the corpora striata; Vieussens in the centrum ovale; Ackerman in what he calls the Sinneshügel, or tubercules of the senses; Psorri in a very subtle, fragrant juice, which, according to him, is found in the brain; and we should not be surprised to hear, one of these days, that some peripatetic had set it off full gallop on the sella turcica. All that is proved by this is, that we know nothing of the nature of the soul, or of its residence; while we see that every philosophy has attached it to some material organ. Yet none of these are accused of materialism; and why then should we, who have attempted no bolder change than merely to proclaim what are the innate faculties of man, and what the organs by means of which they act, be accused of saying that the soul is matter? We never said so. We no more say this, than do the anatomists, who teach that motion depends on the apparatus of nerves and muscles, say that motion is matter. In our whole doctrine there is not a

tenet which alters the position either of fatalism, or of materialism; yet futile minds accuse us of wishing to establish both these heresies.

But, we might say to you anti-phrenologists, suppose that our physiology of the brain does lead to those conclusions, what will you say if our theory be true? What we show you are facts; what you oppose to us are opinions. And what do you know about fatalism and materialism? Who has revealed to you what they are? You scale the heavens too soon when you dare to speak of them, for your best knowledge of them ever must be ignorance. You would interpret the laws of omnipotence according to your own weakness, and make infinity finite; yet you are blind to what your eyes can teach you. Come with us, and see whether what we say be true; and then you must confess that what you once believed is all imagination and hypothesis. You will own that you never understood, that it is not given to you ever to understand, what fatalism means, or what is materialism, any more than to know the nature of your own soul. These are questions not merely of human abstraction; they involve considerations still higher, and touch upon the essence of the Divinity. The most unfortunate objections for our antagonists that ever were started, are those of fatalism and materialism; and the day is near when all men shall say, 'How could such absurdity ever have been spoken?'

A question may now be put to phrenologists, which, in a popular point of view, is the most trying of all. What is the use of your science, supposing it to be true? It may be pretty, it may be ingenious, and it is amusing enough, in a circle of bald heads, to pry into hidden dispositions, and hold an infallible key to mens's minds. But *cui bono* all this; and have you attained no greater end from all your

studies? Certainly, answer these strange folks the phrenologists, we have attained much greater ends, the greatest, perhaps, that ever have been attempted in anthropology; and, if we have not already worn out your patience, we will recount to you what we promise shall be the result of our discoveries.

In the first place, then, TRUTH. We hold it to be in absolute contradiction with the nature of things, that a truth can exist, the knowledge of which is not uefusl to mankind. The earth contains no poison, the air no pestilence, which Providence has not at the same time endowed with some principle which mankind will, some day or other, turn to use. All is not, indeed, discovered at once; but let us look at the most deleterious substances known in nature or in art, and see the murderous arsenic, how useful it is in hardening types, and thus ministering to a free press; in forming specula for reflecting telescopes; in making glass; in dyeing; in printing cotton stuffs; nay, in pharmacy, as a tonic. How many lives might a pound of opium not destroy; how many pangs may it not allay? Neither does any substance exist which can do no harm. If a patient will submit to the trial, he will find himself as effectually killed by a sufficient quantity of boiled chicken, as of corrosive sublimate; and the '*question à l'eau*' could be made as unpleasing as any other species of torture, and would still be so were that water Tokay. What we give you is truth; truth, with its bad and with its good, like all other human truths; but in which the useful portion far exceeds, not only the noxious, but even that which malevolence can turn to evil, or folly make ridiculous.

Secondly, The knowledge of individual character is of no mean interest in the life we lead, as it must give securi-

ty to social intercourse, and make communication prompt and easy. Physiognomy has been thought of some advantage to this end; but how much more will not a science, which has fixed and certain principles, contribute to it. Physiognomy is but the expression which the countenance, and perhaps some other parts of the body, derive from the habitual state of the mind and heart, from the predominant feelings and passions; but it goes no deeper. Many powers which we discover have no tongue for the physiognomist; neither can he lay down a body of doctrine by which he can communicate his acquired knowledge. With him all is tact, mere tact, fugitive and changeable as the fancies of men and women, and more vague than meteorology. But we proceed by rule and compass, armed with all that can repel fantastic feelings; we judge by principles which can be explained. Let any man read the works of our doctors, and those of Lavater; and he will see that the two modes cannot bear comparison. Neither did physiognomy ever pretend to tell what were the original propensities of a man, much less to indicate the simple fundamental faculties of our nature. If, then, some credit was given to this most empirical mode of pronouncing, how much more does not our system deserve to be approved and trusted, since we can, by surer precepts, teach profounder truths? It may be said, that phrenology may create repulsive feelings among men, by revealing hidden defects; but will it not reveal hidden virtues also? And unless the false and gloomy system be admitted, that vice is more general than virtue, phrenology must publish more good than evil in the human species. Besides, when some defect is seen, is there not seen in the same head (unless it be one of those unfortunate cases, so rare in the

world,) the quality which corrects it? In a word, phrenology will paint men as they are, and that alone is important, but whether it brings to light more virtue or more vice, must depend, not upon it, but upon mankind. Nay, more; human virtue is likely to be increased by it, for men will be convicted of their faults upon phrenological evidence, from which no self-love, no flattery, can protect them. They will be instructed, too, of the means which Providence has given them to balance those faults; and, joined to destructiveness, for instance, they may find benevolence, or justice, or religion, to stop their murderous hand. In some heads, it is said, no good is found — no weight to counterpoise a vicious propensity. It may be so; but independently of every system, of every hypothesis, Thurtell was a murderer. — The will of God be done!

Nothing that ever was devised by man has put in his hands so powerful an instrument to know himself, as that which we (phrenologists) have given him; for, if he believes in us, he cannot deny the evidence of his own organization. The first key to unlock the hearts of others is that which opens our own; and to know whether we judge our neighbor fairly or not, we should measure the quantity of our own feelings which we mix up in the judgment. But from this acquaintance with ourselves and others may result the greatest benefit that could accrue to social intercourse, mutual indulgence. When we recollect that each has his own particular organization, as we have ours: that it is not easy to control the dispositions which nature has implanted thus in our minds; that we have defects as insupportable, perhaps, as any that we encounter, we shall be more disposed to bear with others' foibles, that

they may pardon ours; and mutual necessity will make us tolerant. There are, indeed, those who have reproached our system with inspiring indulgence even for vice; and say, that by it, it is unjust to punish the criminal, since he only obeys the impulse of organization. But we must here distinguish between feelings and actions: for the former no man can be taxed; for the latter all are accountable to society; and as to destiny, we have shown that to be among the impenetrable mysteries of Providence.

Another influence which phrenology, say its advocates, will have on individuals, is the mode of treating mania. The whole theory of insanity has hitherto been much too vague, and all its affections and appearances have been considered only as inflammatory and as chronic. Some practitioners, indeed, more happy than others, have struck out particular modes of treatment, which have been crowned with occasional success. But the knowledge of the innate faculties, and of their seat in the brain, must generalize the hygiène of mental derangement. In erotic mania, in the mania brought on by the excessive development or excitation of the organ and faculty of ambition, of acquisitiveness, of cautiousness, physicians will direct their practice immediately to the part affected and to its functions; and not, as is now too often the case, apply, as it were, a topic to the leg for a disease in the arm, and scrape away the tibia to extirpate a caries in the humerus.

A still higher function of phrenology, as it relates to mankind at large, not merely to the few unfortunates who labor under malady, is its empire over education. The vast error, that men are alike fitted for all professions, that all can turn their mental powers to the same account and profit, has done much injury to the education of individuals,

and consequently to the general progress of the world. But our science (continue Drs. Gall and Spurzheim) shows that all men are not alike fitted for all purposes; that, in one, a receptiveness for musical, in another for mathematical instruction predominates; that some are endowed with the power of prompt perception, and others with that of abstruse induction; in short, that every walk of social life has its destined votaries. Now, it is to be hoped, that when parents have the authority of phrenology for the talents and disposition of their children, they will cultivate those which nature has made the most salient in their cranium, and not torment them with studies for which they have no sufficient organ. Should one of their boys, in defiance of birch-rods and ferulas, neglect his vocabulary to carve his taw, or cut out wagon-wheels with his penknife, let them consult one of us, and we will tell them that all the betula of Windsor forest will not make a scholar of him; we will show that, not being one of the ox-eyed, he can but ill remember words; but that having a fulness in the frontal bone, just above the spheno-temporal suture, he may become an expert mechanic, an engineer, a mill-wright, or a Watt; that it is in vain to thrust in through the gluteus maximus what cannot penetrate the head; and that, flog him as they may, his *propria quæ maribus* will always be covered with chips and chisels. In the same manner we will teach them to oppose the bad propensities of youth, by withholding aliment from self-love, from obstinacy, from cruelty, and by cherishing benevolence, justice, piety; and correcting levity by gently stimulating the reflecting faculties. We can tell, too, why many a school-boy, who has carried away prizes and rewards, sinks into an ordinary adult; and why more than one dunce has burst out like a luminary in later

years; for we can show the organs which make a brilliant infant and a dull man, and those which are of little use at Eton, but most essential to a statesman or a philosopher. Neither shall we allow ourselves to be imposed upon by any urchin's cunning, or mistake ill-will and idleness for inability. The marks by which we judge are registered by nature, indelible, immutable, and clear to every eye.

But individual education is a very small portion of the good which we aspire to teach — (these people really are mad; their ambition is unbounded!) We will educate nations; and nothing can prevent us from fulfilling this mission, but the destruction of the human race. We will tell the men of every country their faults and their vices, their virtues and their talents, and hold them up, as clearly as size and form can be held up, to the notice of mankind. None shall escape us. Already, not only Europeans, — English, French, Germans, Italians, — the most enlightened, the most refined of men have we scrutinized, but Asiatics under every latitude, Africans thirsting on both sides of the equator, Americans as wild as Africans, as civilized as Europeans. We have told truths to all, and pointed out the means of improvement. At this moment, indeed, they may not listen to us, but the day will come when they will advance but by us. To us is given to decide the great question of original national propensities, as of individual propensities, and to show how they may be expanded or repressed. We shall instruct rulers how to govern, and subjects how to submit, and strike the just balance — as various as the races and the regions of the earth — between the sovereign and the people; and the first time that we inspire oppressed reason to demand her rights, and to demand no more — that we teach men how much liberty

they can bear, how much privation they must yet endure, we shall have our full reward. (Note 6.)

So much for the practical pretensions of our science. The reader must now hear our claims to speculative superiority. Dr. Spurzheim has said, and been most heartily abused for saying — and, if the science be false, most heartily deserves to be abused for saying, — that the whole philosophy of the mind must be entirely changed; that the study of man in this respect will become a new study, &c. In this dictum — most noble or most arrogant, according to events — we (phrenologists) concur, with the loudest cheers; and in this, do we say, lies the stupendous monument of our science. Since the earliest records of philosophy, sages have speculated on the heart, the mind, the passions, and the understanding. For more than three thousand years systems have flashed, and disappeared without leaving a trace. Some of these, indeed, were abundantly ingenious; but were defective in that which alone can make them lasting, truth. It would be curious to examine the hypotheses which have grown up, one after another, in the fertile soil of fancy, Arabian, Chinese, Persian, Egyptian, Greek, Roman, and modern European, and to see how specious and how futile all have been. Not one of them was founded on anything but conjecture; and, until Gall appeared, it was not supposed that mental philosophy, that psychology, ever could have any other basis. But Gall proceeded entirely upon fact; and those who accuse his system as imaginative, will probably call the 'Farie Queene' an historical poem, and 'Lear' an algebraical tragedy. He stalked from brain to brain, from organ to organ, and trampled conjecture under foot. 'The man of skulls' — aye, Mr. Edinburgh Reviewer, the *boy* of skulls — endowed in truth, with

not less imagination than his predecessors, had yet more love of fact than they had; and this single faculty has placed him above them all. It is, indeed, most wondrous, that the catalogue of the innate faculties of man should have escaped the grey-haired philosophers of every age and climate, and that its first fold should have been opened to a child of nine years old, who in maturity unrolled it all, except a leaf or two, which he left to his followers. Such a discovery, had it been made by a man after so long concealment, and so many attempts to accomplish it, would have been wonderful; but let it never be forgotten that it was the work, and not the accidental work, of an infant.

We (phrenologists) do not say that Dr. Gall has invented the faculties which he attributes to man, or that he even discovered them all. Many of them had a place in ethical science before they were announced by him. Philosophers, the most remote, from admitting the connexion between the brain and the mind, from adopting innate differences of character, have yet allowed many of the powers which we have recognized, to be simple and fundamental. Thus Mr. D. Stewart, who attributes so much to habit, does not deny an inborn bias to self-esteem, to friendship, nay to pugnacity, as in the case of sudden resentment; he admits, too, conscientiousness, under the much more philosophical name of the moral sense. Many more moralists have done the same, as Cudworth, Hutcheson, Reid, Brown, &c., but still they went on no foundation but conjecture. Neither had they the slightest notion of forming a body of doctrine like that which our masters teach. Others again have asserted, that all the disparity between man and man resulted from later circumstances, for nature had made the individuals of the species alike; and systems of education

have been most erroneously founded on this opinion. The British philosopher who, in our days, stands the most remote from our doctrine in his philosophy of mind is Mr. D. Stewart; whose theory, on this very account, must be the first to become obsolete; and whose works — to the great impoverishment of English literature, — will be remembered only for the beauty of their style, and the benevolence of their philosophy. He who has come the nearest to it is the late Dr. Tho. Brown; and, strange to say, many traces of opinions like ours are to be found in some papers published since 1819, in the Edinburgh Review, and still more in others inserted about the same time in the Quarterly Review, insomuch, that of one of these, (Art. XII. of vol. 25,) it has been said, 'The observations of the reviewer are so strictly phrenological, as almost to tempt me to believe that he is a phrenologist in disguise.' (See Phren. Journal, No. VIII., page 603, note.)

It has already been mentioned — to the great dismay of all sober-minded readers, — that we (phrenologists) had entirely rejected the hum-drum faculties of perception, memory, imagination; which mental philosophers have so long been discussing. It must now be added, that taste and judgment — this the reader will easily credit, — have been turned adrift along with the rest; that attention, association, are not simple fundamental powers; that passion is a resident, not in the heart, but in the brain; that pain and pleasure, joy and grief, are affections of the innate faculties, not faculties; that sympathy is the unison of one or more faculties in different persons, &c. It would be as long to detail the philosophical principles of phrenology, as to dissect all the brains of the Royal College of Physicians: it is indispensable, nevertheless, not to pass them by in utter silence.

No mode or action, no quality of mind, do we contend, can be considered as a simple fundamental faculty, if it has not an organ in the brain. Now perception, memory, imagination, with all the above enumerated, have no cerebral seat; nay, they can have no cerebral seat, because not one among them is ONE. Perception is of as many kinds as there are kinds of objects of which it can take cognizance. These kinds are determined by the intellectual faculties, which are found to exist in the brain and mind. Thus there is a perception of time, and a perception of place; a perception of color, of order, of number, of weight; and the day is forgotten when it was not known that a person who has a very lively perception of one of these, may be totally deprived of the perception of the others. It has always been allowed that a painter who estimates colors most accurately, may not estimate number, and there may be most profound algebraists without a feeling of melody. Seeing, then, that perception is thus necessarily divisible into many parts, one of the most extraordinary instances of the laziness of the human mind, which, when it falls into a rut, seems incapable for centuries of rising out of it, is, that perception should ever have been considered as a mental element. Some philosophers, indeed, have attempted to resolve the difficulty, by saying, that chance directs the first current of our perceptions, and that habit confirms it. But chance must then be busy with us at a very early moment; and habits must be contracted in our mother's womb. Every nurse at the Foundling Hospital knows this; and that differences of individual dispositions precede the possibility of habit. But even admitting habit, still the fact, that perception is as various as the kinds of things perceptible, stands as firmly as before; and perception is not, cannot be, a simple

fundamental faculty. The same reasoning is good with regard to memory. Memories which are most active, most retentive on some subjects, on others are relaxed. One man remembers facts, who forgets dates; another recollects faces and not names; some never lose from their minds the places where they have been, yet have no power to recall a tune; therefore, memory is not a simple fundamental faculty. In the same manner, had Milton taken it into his fancy to imagine fluxions, it is probable that he never would have put a dot upon his $\dot{x}$ or his $\dot{y}$; neither would Newton have produced Adam, Eve, or Satan. Handel never could have been a Rubens; or Michael Angelo a Mozart. Imagination, the creative power of mind, then, is not one; and of these three faculties, which were the great battle-horses of all metaphysicians down to Gall, not one has an independent existence as a simple fundamental power of mind.

What then, are perception, memory, and imagination, for surely they have an existence somewhere? Certainly intellectual faculty has its perception, its memory, and its imagination; and these have complete and full existence as modes and qualities of every simple fundamental power of intellect. They are modes of action, and the explanation which follows will make their functions palpable.

Let a series of numbers, 1, 2, 3, 4, 5, be presented to the eye, the organ of that external sense which takes cognizance of all that is visible, and the first thing it does is to see the series of numbers which is thus communicated to the mind, and *perceived* by it. For this operation no great effort of intellect is necessary, and it constitutes the first, the least complicated act of the faculty which receives the impression of number. Let these numbers be now withdrawn from the organ of sight; if any traces of

them remain, those traces are not pictured upon the retina, but upon the the mind; and some stronger effort is required to call them back after they have disappeared, than to perceive them when they stood before us. This is a second and higher operation of intellect than mere perception: — it is memory; and that memory is above perception in the mental scale is evident, for in idiots, in drivellers, in the lower animals, perception often remains vigorous when memory fades. Let the person who has seen these numbers be now requested to transpose them, to repeat them, not in the order 1, 2, 3, 4, 5, but in any other order; it is clear that, unless he remembers them, his attempt must be vain. But should he be able to recall them to his mind, he may, by a new effort, throw them into a different order, thus, 4, 2, 5, 1, 3, or into any other order: he may diminish or add to them: he may subtract, divide, or multiply them, and produce an infinity of new combinations. In these operations he is compelled to spin from his own mind. Perception, indeed, collected the materials, and memory furnishes them anew out of her store-house; but all the shapes into which he throws them are the devices of his own understanding. The act which performs all this is imagination; and the tension of mind is greater in imagination than in memory.

From this, then, it follows, that the first degree af activity in the organ of number was to perceive the series of numbers; a second and a higher degree of activity, was to remember them; a third and a still higher, was to produce new forms with them. In the same manner let a painter's pallet be shown to one man, he will perceive the colors; let it be shown to another, he will perceive and remember them; let it be put into the hands of a Titian,

and the result will be a San Pietro Martire. One man may hear the notes of the gamut, another may remember tones and tunes; Weber will compose the Hunter's Chorus in the Freischütz. The activity of the faculty of color, of tone, produces these differences; and so it is with every faculty of the mind. Phrenology, then, does not annihilate perception, memory, or imagination; it denies their existence as simple fundamental faculties, but it assigns them a place as attributes of every intellectual faculty. Every intellectual faculty perceives, every intellectual faculty remembers, every intellectual faculty imagines. No faculty can remember if it has not perceived; no faculty can imagine if it has not remembered: perception is, then, the basis of all the operations of every intellectual faculty. It may be objected to this system, that memory and imagination are not in constant proportions in different minds; that one man who has a powerful recollection of events, of tones, of colors, cannot combine or unite them in such a manner as to imagine new productions; while another, endowed with the most vivid power of re-production, has a relaxed and feeble recollection of his past perceptions; whereas, if the system just expounded were true, one degree of memory should always be accompanied by its corresponding portion of imagination.

In drawing conclusions upon these qualities of mind, the distinctions just made must henceforth be kept in view, viz., that there are as many kinds of memory, as many kinds of imagination, as there are perceptive faculties. Is it true that memory and imagination in these cases are so disproportionate in quantity as in quality? Does not this apparent error often arise from mistaking memory in one shape, for imagination in another? From confounding,

for instance, the memory of words with the imagination of events; or the imagination of tone with the memory of color? From not knowing that neither memory nor imagination is an element of the mind, but an attribute of many of its elements? Future observations must clear up this doubt; for all that have been made before the true nature of the attributes of mind was known, must be considered as equivocal.

Besides, supposing — continue the phrenologists — memory not to be always in the same proportion with imagination in the same faculty, viz., that one man has a strong memory and a weak imagination for numbers, while another has those attributes in reversed proportions in the same faculty; the fact, if ascertained, is easily accounted for by the re-action of every faculty upon its fellows. No power of mind can, for a single instant, act alone, much less determine an habitual state; and when the higher sentiments, as marvellousness, ideality, mirthfulness, or the reflective qualities, as comparison, causality, are very active, they may impart their stimulus to the memory of numbers, and raise it nearer to imagination than it would be if it were dully handed over to the propensities or the senses. Certain it is that, without memory, there is no imagination. Memory is the mine from which imagination takes the ores that fancy shapes and taste refines, to gild its airy castles. Had the good genius of the magic lamp not perceived, not remembered all the elements of which fairy artists fabricate their spells, Aladdin never could have built a palace for his bride.

Having despatched the good old-fashioned faculties of perception, memory and imagination, with as little ceremony as we should our grandmother's high-backed, patch-

work arm-chair, we (phrenologists) proceed to the demolition of some other antiquated powers, and assert that, if they trust us, mankind have neither judgment nor taste. Judgment is no faculty; but every faculty of intellect has its judgment. Hence it is correct and common to say such a man is a good judge of music, such another of painting, &c.; and this could not be so, had not the one the organs of time and tone, the other those of form and color duly developed; and were they not moreover endowed, not merely with the power of perceiving, remembering, and imagining, but with another power different from them: — these are modes of quantity. The one now under consideration is a mode of quality, and entirely independent of the others. Before we can judge, indeed, we must perceive; and, if we wish to judge an object once perceived, but no longer present, we must be able to call it back to our minds; but perception alone is sufficient to afford the judgment matter for its exercise.

Beside these special judgments, there is another judgment useful in the affairs of life, constantly talked of under the plain, round name of common-sense; and another, the highest of all, metaphysical judgment. But these and every species of judgment are explicable in the same manner as the special judgments, and are modes of quality belonging to the faculties which preside over the various departments of mind. Thus, as the power of judging melody resides in the organ of tune, so does the power of judging the value of metaphysical speculations reside in the organs of comparison and causality, the highest and grandest of all the human faculties. But the metaphysical faculties would be of as little avail in judging melody, as the organ of tune in judging abstract ideas. Each faculty, then, which pro-

cures knowledge, has not only its perception, its memory, and its imagination, which are modes of quantity, but its judgment, which is a mode of quality.

This mode of quality assumes different names, according to the objects upon which it is exercised. In the common concerns of life it is called judgment; in literature, in the fine arts, it is called taste; but judgment and taste are, in fact, one and the same thing, only directed to different ends. What, indeed, is taste, but the power of judging a poem, a picture, a statue, any production of the fine arts, any beauty, any deformity of nature? This mode, called judgment when it pronounces on objects whose principal merit is their fitness, and taste when it considers their beauty, belongs to every intellectual faculty, from that which perceives an individual, to that which compares all objects, and inquires into first causes.

To keep this mode of action in its best condition, the equilibrium of all the faculties is indispensably necessary. The great sources of their derangement are the feelings, the propensities, and the sentiments, of Dr. Spurzheim's system. Our perceptions may be just, our reflective faculties may be sound and powerful, and thus far we may be organized for excellent judgment in all its branches. But, if our propensities be strong, our decisions will be influenced by them, and the most preponderant will give its bias to the mind. So is it with the sentiments; and the best of human feelings may err from too much, as from too small, a development. To judge well, to have good taste, the elements of the mind must all be present, but so balanced that not one shall outweigh another, so mixed that not one of them prevails, — as the best sauce, says the Cuisinier Imperial, is that into which every good ingredient may en-

ter, but where not one of them can be tasted separately. Let a man in whom combativeness is too large, be consulted on a trifling point of honor, he will counsel arms; let a poet of a similar organization write a tragedy, his verse will breathe pugnacity. Let this organ be deficient, both these men will be too tame; and, in either case, better organized heads will blame the judgment of the one and the taste of the other. If benevolence be too strong, it may produce ruin in common life, and mawkishness in literature; if it be too weak, it may give too much scope to the evil propensities in the one as in the other, and in both cases judgment and taste may be offended. It is now easy to understand how the same person may have excellent judgment and excellent taste in some points, and in others be totally deficient, as he may have local memory defective, and the memory of numbers very powerful.

But we (phrenologists) go still further; we annihilate association also as a primitive faculty, and call it merely the influence of the faculties upon each other. Sympathy, too, is the simultaneous action of the same one or more organs, similarly affected, in different persons. Pleasure, and pain, joy and sorrow, result from the gratification or the sufferings of any faculty. Passion is the over-excitement of a faculty; and when more than one is aroused, as is usually the case, the passion is more complicated. Habit results from the frequent exercise of any faculty, and is more the effect than the cause of strong mental power. Thus, for instance, if a man has not a strong faculty for music, he will be little impelled to practise the art, and will acquire no habit of execution. Should the natural impulse be strong, he will perform music often—music will become habitual to him. Then, indeed, the habit will re-act upon

his natural talent, and make him an expert performer; but it is not the less true that the habit was acquired only through the strength of the primitive impulse. Labor as you may to give a person, in whom the organs of comparison and causality are weak, a habit of metaphysical induction, and you will labor in vain.

Man acts and thinks by virtue of the primitive faculties which Providence has implanted in his nature; man can act *but* by these; he can give himself no new power or faculty; within his own limits he is as much confined as the crustaceous animal that lives within its shell, only his limits are larger. Such is the law of creation. But what distinguishes him is the number, the extent, the elevation of his faculties. Some species of brutes possess one mental power, others another, but none are conspicuously endowed with more than a few of these. In man, not only all that are scattered through the races of the earth are united, but other and higher faculties, peculiar to himself alone, are given him. On these philosophers have proudly bestowed the name of reason; but what is reason in their sense? Can it be anything but the use of those superior, those exclusive faculties, which God has given as the badge of the creature whom he formed in his own likeness? It may, indeed, be improved by practice, as may the faculty of number, form, or tune; but the faculties on which it depends are as much an original gift of Providence as the instinct which prompts the puppy-dog to seek its mother's teats, or the young kid to avoid the herbs that are poisonous. All reason is cultivated instinct. It was by instinct, planted by the hand of God, and tutored by human culture, that Newton discovered gravitation and its laws. It was by instinct that Bacon thought; that Addison was wit-

ty. By the instinct of ideality, Shakspeare 'exhausted worlds, and then imagined new;' by marvellousness he peopled them with elves, and spirits, and ghosts, and witches; by individuality, he enumerated all that Puck and Fairy relate (Midsummer Night's Dream, act ii., scene 1.); by melody and time, he threw the words which his instinct of language furnished, into the most melodious cadences; and the steam-engine, which now towers to the clouds, has its origin in instinct. Man is not less a bundle of instincts than were the fasces which were carried before the Roman Consuls a bundle of twigs.

These instincts then, (for so do we peremptorily denominate the innate faculties of man,) are the source of all that now exists in human society; and their primitive force, succeeded by education, marks all the differences between human beings. The most improved portions of mankind have successively been raised from station to station, by the unremitting action of cultivation. But, in every stage and condition, it is original force which elevates the individual above his age and country. It is this which gives him superiority and power over the minds of men. This is genius; and the greatest that ever lived is he in whom the greatest number of intellectual instincts has been the most completely developed, and the most duly balanced.

Such is a summary of the system by which we (phrenologists) pretend to explain all the phenomena of the human mind and character, and to overthrow all the metaphysical theories yet devised by philosophers. One of these neologists has communicated to us some observations of his own, which, though not in print, are here imparted to the reader. He says, that led by the nature of his studies to examine, at various periods, the metaphysical sys-

tems with which philosophy has swarmed for ages, he could not find in them satisfactory explanations of the facts which he daily witnessed in real life. For many of the faculties which metaphysicians enumerated, he could see no foundation; and others which they did not even mention, he fully admitted as fundamental. He ransacked first one theory, then another, then combined them from the time of Thales the Milesian, who taught all Greece to call the soul the principle of life, down 'to him that did but yesterday suspire;' and all he learned was, that he had learned, and could learn, nothing from them, because they knew nothing. This person, however, had been long engaged in meditating a work upon some points of the human character; and finding the doctrines of his predecessors so different from what his observations taught him, he remained at variance as well with the moderns as with the ancients. He had long since attended a course of lectures by Dr. Gall; but some things in the mental philosophy of this master were unsatisfactory; and though he admitted the truth of the general doctrine of the relation between brain and mind, he abandoned the study. Brought back again accidentally to reconsider it in the state to which Dr. Spurzheim has advanced it, the first thing he did was to examine its metaphysics, and these he found so conformable to the ideas which he himself had long held to be the most rational, that he gave it his full assent, not upon a comparison between cerebral and mental development, but upon its fitness to elucidate the phenomena of human character. If, says he, the table of the simple fundamental faculties, as given by Dr. Spurzheim, be weighed merely by the same metaphysical principles as all preceding systems; if all considerations between brain and mind, if craniology,

be utterly abstracted from it; if it be considered (like the systems of Hobbs, Mandeville, Paley, Stewart, Brown, &c. &c.) an *a priori* system, conjectural, hypothetical, imaginative, it will be found to explain a greater number of facts than ever have been explained since the days of Anaxagoras, the great ancestor of all moral philosophy, down to the Edinburgh Reviewer.

Let an example be given of this: — There is unfortunately one which has made much noise in the world, and which our adversaries have brought forward to overwhelm us, under the many weights of phrenological, moral, and religious perverseness. It is that of John Thurtell, executed for the murder of Weare. Our doctrine has been reproached with finding, in the head of this assassin, a large development of benevolence, and thus making him out to be a harmless, good-natured person, and not the atrocious, cool-blooded murderer who could brood for days and nights over iniquity.

Surely the persons who make such an objection as this must have been scared, by their dread of phrenology, out of all they ever knew of human nature, if they cannot perceive that the same man does at one moment an act of kindness, and at another an act of cruelty; that he is at one moment just, at another unjust. What was Augustus, persecuting and proscribing, and Augustus emperor? What was Nero a stripling, and Nero when he saw the city blazing? What is every man whom we have ever known? Is there not a true, but common, cant, about the mingled nature of the human species, about the good and evil of our hearts, which shows the inordinate absurdity of such a remark, that might dispense us from all further answer? (Note 7.) But let us examine facts, and see, not from his head, but from his biography, what Thurtell was.

Thurtell, being applied to in behalf of a friend in distress, drew out of his pocket his last remaining half-sovereign, and said, 'Give him the half of this: but no — he wants it more than I do: he is sick; give it him all.' He once innocently caused a quarrel between two friends, and shed tears of tenderness over their reconciliation. His kindness to Hunt excited as much gratitude as Hunt was capable of feeling. His affection toward all his family was extreme, and his attachment to his friends inviolable. His general character, when lieutenant on board the Adamant in the Leith roads, was that of a dashing, thoughtless, good-hearted officer. Yet, from his early youth, he was irascible, and what was called a murderous shot; a very dare-devil, a kind of prize-fighter, a notorious liar, a dupe of all his gambling associates; and he became a predetermined, cold-blooded murderer. These are facts; and let us now put different systems to the test, by attempting to explain them. Unity of mind, its indivisibility into various faculties, feelings, and propensities, can do it nearly as well as the indivisibility of the solar ray can explain the prismatic spectrum and the rainbow. This system then needs not much examination, and recourse must be had to some which admit a plurality of faculties. But which of these must be preferred? One that is hypothetical, or one that is founded on fact? All are subject to the same objection, of admitting contradictory sentiments in man; and if phrenology falls by this objection, all the rest must fall; and so indeed must facts. Whatever system does not admit a sentiment, or a combination of sentiments, to account for Thurtell's irascibility, his benevolence, his pugnacity, his attachment, his lying, his firmness, his tenderness, his cruelty, is defective. Let those who have leisure examine

whether phrenology does not effect this more completely than all others put together, and better than any that could be fabricated by their means. In truth, no metaphysics but those of phrenology could account for the apparent contradictions in that man's mind; none which reject, as fundamental principles of human nature, benevolence, combativeness, attachment, destructiveness, secretiveness, firmness, can explain the facts of his life and character. If his charitable, generous acts be not totally denied, how would unity of mind reconcile them with the murder he committed? But our (phrenologists) doctrine says, he had large benevolence, and this was sometimes very active; he had large combativeness, large destructiveness, and when circumstances roused these into action, they were the more imperious, because they were aided by a strong development of all the inferior propensities, while the superior faculties were too weakly developed to counteract or counsel them. The cerebral organization of Thurtell, compared with his life, testifies as strongly in favor of phrenology as facts can do; and if the world had been told by any other tongue but that of our science, that he, or any other murderer, had often done kind actions, the thing would have appeared quite simple, quite in conformity with daily observations. But the subterfuges which men take to evade conviction, when they are resolved that they will not be convinced, are wonderful.

One often hears of contradictions in character; and, often too it is said, that those contradictions are only apparent, because we have not the key of the character in which they seem to be. Now, the general key, which effaces all contradictions from every moral manifestation, is phrenology. Actions, as opposite as cruelty and benev-

olence, appear to us (phrenologists) as natural, as easily accounted for, as that a man should one day calculate by means of his organ of number, and the next day paint by means of his organ of color.

Although, tried by this test, the metaphysics of phrenology pretend to greater validity than all other systems, yet it is not thus that we — its votaries — maintain it, but by the relation of cerebral development to mental manifestations. It is upon facts confirming this relation that we proceed, and the number which we have collected exceeds all belief. The collection of Dr. Gall, that of Dr. Spurzheim, of Mr. Deville, whose zeal and activity in promoting the practical part of the science cannot be sufficiently commended; those of the Phrenological Societies of London, Edinburgh, and many other places, contain many thousands of facts which are incontrovertible. It is not in the power of any phrenologist to enregister all living examples, but we build our pretensions upon every age of the world, and call not only moderns, but ancients to our aid. As this is one of the most curious parts of our pretensions, it must be briefly noticed.

Every head which has been handed down to us from antiquity is in as exact conformity with our doctrine, as if we ourselves had moulded it for our own purposes. The bad Roman emperors, Caligula, Nero, Caracalla, have the regions where the inferior faculties reside very much developed; while the antagonist faculties are small. The Antonines have heads that would do honor to any man. Vitellius is a mass of sensuality, deprived of all elevation. The Roman gladiator most powerful in the basilary region, has a narrow and contracted forehead, where little reason could reside. In Homer, the development of

ideality is immense, and still greater perhaps in the rapturous Pindar. In Demosthenes there is a fine show of the superior faculties, but the organ of language is not the most prominent, neither were the natural command and flow of words the characteristics of his eloquence. His desire of gain, too, is largely developed. The head of Socrates is such as Drs. Gall and Spurzheim would model to demonstrate the organ of marvellousness, and a mind of visions; and so is a head, more modern, that of Torquato Tasso. The head of Zeno is that of a profound and moral thinker, as he was. That of Seneca has much bad, but more good; so balanced that a struggle between them will be necessary, but the latter will generally prevail. The head of Cicero, larger on one side than on the other, has more language than Demosthenes, with large reflecting faculties — vanity, the desire of gain and of fame, and cautiousness great, with little hope and little courage. In short, the examples of antique statues in our favor are innumerable. Now, either these heads are genuine casts, or they are not. If casts, their perfect coincidence with respective characters most phrenologically proclaims, what all men indeed have long since known, that nature has acted in all ages by immutable laws. If they are not casts, but ideal heads, then the ancients had observed the fact, that a certain form of head regularly accompanied such a power of mind; and their sculptors, without accounting for it, registered it in their works.

But the heads of Venus and Jupiter necessarily are ideal. Now, the head of the Venus de Medici — supposed, indeed, to be a modern addition to the original mutilated statue — is, like that of many a belle, too small to contain much mind, but sufficient, perhaps, for the goddess of

beauty. The front of Jove is exactly what we would give to the creator of the world — locality, space, immense; form, size, weight, color, order, number, phenomena, very large; with prodigious reflecting faculties. One single faculty, indeed, is small, and that was the least necessary of all to the maker of the world — wit. The occupation of shaking the earth, the sun, moon, and stars out of chaos, certainly was not one which could excite the creator to crack jokes; yet it seems he could rally his consort — whom, by-the-by, her ox-eyes must have made insufferably verbose — when she read him one of her long curtain-lectures. The ancients were at least as good seers, as good observers, as the moderns, though they but ill accounted for the phenomena which they perceived.

It is with hosts of alleged facts that we (phrenologists) have taken the field; and the way to beat us out of it is evident: it is to bring a very small number of counter-facts to overthrow our fabric. A very small number indeed would be sufficient; for the arch which is built of many stones falls when but two or three are removed. This is the method which anti-phrenologists should long since have tried, instead of abuse, — of allowing themselves to become irritated, or endeavoring to out-face us by ridicule or anathema. Not scorn nor irony, not force or tyranny, can smother truth in the nineteenth century; for even in the seventeenth, the prisons of the Inquisition, though they could silence Galileo, could not restore to the sun the supposed motion which this philosopher had destroyed. But we are men of good composition; and since so many persons are desirous of becoming our exterminators, and of sharing in the glory of expelling error, we will put into their hands the only weapons by which they can hope to suc-

ceed; and instruct them in the marches and the countermarches by which they may the most vigorously assail us. To this end we must begin by telling them that smiles, sneers, contempt, fall from us like drops of pelting rain from an armor of oiled silk, and the shafts of authority would lose their points upon our hardened corslets. We must be out-facted; — such a number of well-ascertained truths must be brought against us as, in all fair proportion to human certainty, may overbalance our observations; and these truths must rest upon such evidence as a jury of unbiassed experts would allow to be fair and admissible.

It is not every person who has studied, or who has leisure and disposition to study, the forms of heads and their coincidence with mind; and we do not think it presumptuous to request all such to hold their tongues. But let any man or woman of liberal education, endowed with average mental powers, purchase (for about five shillings) one of the casts on which the organs are marked, and let him thereon assiduously study the topography of the head, until he can lay his finger on the place of each organ, as surely as upon the islands of Sumatra or Borneo on the terrestrial sphere. Let him then divide the head by imaginary lines, as Dr. Spurzheim has done in his 'Phrenology in connexion with the study of Physiognomy,' into four regions; first, by a line drawn from the ear (the meatus auditorius externus) to the point where the frontal and the sagittal sutures unite, — into an anterior, the frontal, and a posterior, the occipital region; secondly, by another line crossing this, and drawn from the middle of the forehead to the point where the parietal and the occipital bones unite into an inferior or basilary, and a superior or sincipital region. Let him study the organs, and their import, which are situated in

each of these districts, and know in which of them the inferior propensities, the higher sentiments, the perceptive, the reflective faculties reside.* Let him, thus accoutred, sally forth to observation, and slily cast his eyes on all the heads he meets; not yet to examine their organs and faculties, but to reconnoitre the general shapes of heads, to ascertain whether there really is so much difference as we assert, and to obtain terms of comparison with regard to the development of the various regions. When his tact has been exercised upon these general points, he may give a glance at the particular organs; but let him not be in a hurry to verify their relation to the character of the individual. He must begin with the larger organs, — with those which occupy the most room on the head, and consequently modify its shape the most — as cautiousness, for instance; and when he has fully learned to appreciate the size of these, he may proceed to the smaller organs, ending with those of which no

* The following is an improved method of studying the cerebral organization in general. Let those portions of the animal feelings; — of the moral and religious sentiments; — and of the intellectual faculties, be compared with each other in the same person. To that effect, let a line be drawn from the anterior edge of constructiveness at the temples upwards to the temporal ridge, and continued along this ridge to the middle of the upper border of cautiousness, and then toward the mesial line of the head, between the organs of conscientiousness and love of approbation, and terminate between self-esteem and firmness. The portion of brain below and behind this line contains the organs of the animal feelings. If another line be drawn from the anterior edge of constructiveness in the direction of the upper borders of tune, causality and comparison, the cerebral portion between the two lines is the seat of the human sentiments, and the portion before the second line is the forehead, strictly speaking, and the residence of the intellectual faculties. Dr. Spurzheim.

less than five are situated in the ciliary ridge. When his eye is well exercised and his tact thoroughly formed, he may begin to apply his knowledge. He must lay his friends and intimates — the persons with whose characters and talents he is the best acquainted — under contribution, and scan their foreheads with his eye, or, better still, lay his hand, widely extended, on their sinciput, embracing all the organs of that region in one grasp, and afterwards pass it down upon the occiput and the basilary region. His friends, indeed, may not be very sincere upon all points of their characters, and many inaccuracies in the current ideas and current language of society will be embarrassing, but the observer must supply the deficiency; and, in the circle of his acquaintance, he will find many whose talents — as music, drawing, calculation, manual dexterity, &c. — or whose avarice, benevolence, cruelty, timidity, or courage, are too well defined to admit of denial. The examination of the heads of children, too, will do much to confirm or refute our doctrine; for parents avow many things of them which they would not say of themselves; and boys and girls tell tales of each other, which are often just keys to character. Visiting schools, then, if our antagonists have it in their power, and prisons, if that be not repugnant, will give them boundless means to refute us; and they will be much assisted by having access to the collections of phrenological societies now largely diffused over the kingdom — those of Dr. Spurzheim, and of Mr. Deville, in London, and to Mr. O'Neil's, in Edinburgh,*

* It is much to be desired that the persons who possess collections would add to them the heads of animals. Comparative phrenology is one of the most interesting and amusing branches of the science.

&c. As they advance in knowledge, and become experienced, opportunities will multiply around them. Public meetings will rejoice them; private assemblies will gladden their hearts: in ball-rooms they will look for brains — in churches for devotion; in Westminster-hall for justice; in the navy and the army for courage; and if they find them not, we avow ourselves defeated. And if we are defeated, may our enemies, when they stand exulting over our crushed and prostrate organs, inherit from us the only boon we have to bequeath to them — a delight unknown to all but phrenologists — the raptures which a bald head — once the field of our glories, now of theirs — inspires! and curse the pernicious age of the Grand Monarch who buried craniology in periwigs!

It is fair, however, to tell our adversaries, that this precious knowledge is not to be acquired in a day; neither do we know of any science that can. To estimate the mere size of an organ of a head, may not be very difficult, though even that requires some practice; but to appreciate the entire development of the brain, in all its parts, — their proportions, their relation to each other, their combinations, requires time and exercise. The tact must be formed, and a minute knowledge of the shapes, general and particular, which compose such and such a character, and give this or that talent, must be acquired. They among us who have had the good fortune to see Dr. Spurzheim exercise his art in a numerous assembly of subjects, to witness the promptness as well as the certainty of his judgments, would be inclined to attribute it to supernatural agency. The writer of this article lately saw him in a school of fifty-eight boys, not one of whom he had ever beheld till that moment, run his eye rapidly over

every head, touch some which appeared to possess eminently any defect or quality, and, in less than an hour, deliver his opinion upon the most remarkable subjects — for good or for bad, without committing a single mistake; for all his opinions coincided most accurately with the testimony of the masters, to whom the scholars were well known. The same trial was made, the same day, and with the same success, in a school of thirty-four girls, and gave miraculous evidence of the truth of our doctrine. A course of practical — if we may so call them of clinical lectures, as a compliment to phrenological study, has long been desired, to form practical students: and Dr. Spurzheim now delivers such courses in London, for the further instruction of those who already possess the rudiments of the science. In this he analyzes known heads; compares their cerebral development with their mental manifestations; discusses the reasons why, according to their organizations, they evinced such a talent, such a tendency; and explains the combinations — for in them reside the pith and marrow of the science — the final consequence of which is the general assemblage of qualities called character. Such a course as this he never thought of in France, for the attempt would have been vain.

By all these helps, it is to be hoped that observations will be multiplied, that the science will be diffused, and its truth ascertained; and the public opinion of England is of much more value than the decision of learned bodies in any other country. Some say that phrenology should be handed over to one class of men, some to another; and physicians have been named as the most fit persons to determine the question. But we cannot see what requisites they possess more than other men, unless they are at the

same time, what does not necessarily follow, good moral observers. The requisites for a practical phrenologist are, the power of appreciating size and form, accompanied by a talent for estimating moral phenomena. Now these medicine does not bestow; neither does the study of theology, of the *legum legumque*, or the study of anything but of themselves, bestow them; and all we request is, that phrenology may not be sentenced to annihilation by those who know nothing of the subject. This prayer, we trust, is not more extraordinary than those which mathematicians, astronomers, chemists, nay, which shoemakers, would proffer. (Note 8.)

We (phrenologists) are fully aware of the many motives which militate against us, and the adoption of our doctrines. Everything new is, and ought to be, received with caution; but how much more caution than usual must be used before men who have long been in the habit of supposing the brain to be useless can admit that a spherical excrescence like the head is that which makes them think and feel. And all this, too, comes from a German; a man, who was obliged to learn English, presumes to teach Englishmen why and how they are the greatest nation on the globe. This is too much; and we are too wise, say some, to believe the Doctor. We have an un-take-in-able sagacity which will not be his dupe: we are too much upon our guard even to listen to him. Others, again, are ashamed to own their conviction; and very sensible men are known to be phrenologists, yet who are afraid to declare themselves openly, as long as ridicule dares point his waggish finger at their approbativeness. One word to quiet the self-love of those who fear to commit their sagacity in this trial. Sagacity does not consist either in doubting or in

believing: as much, or as little of it may be shown in the one as in the other. Sagacity is proved by distinguishing truth from falsehood. Now, the first step to this is inquiry; and this step, unlike that which St. Denis made with his head in his hand — *c'est le premier pas qui coute* — is the easiest of all. This is the step which we (phrenologists) invite our foes to make, giving them up entirely to their own wisdom to make the last, assuring them that the true test of sagacity is truth.

Another calamity is, that phrenology has not been protected by the fashionables in science; and that its chief supporters have been among the lower ranks of the learned. We really do not understand what fashion is in science; neither do we conceive how truth is to be chosen as a *petite maitresse* chooses her gown, or a dandy his mustachoes. If persons of fashion will not believe in phrenology, so much the worse for them; phrenology can do without them. If fashion and respectability be the same thing, however, the University of Cambridge may count for something, and save the blushes of many who now fear to be called quizzes by avowing their conviction. (Note 9.)

The transition from the old to the new mental doctrines certainly requires some force of mind; and the change is great from one metaphysical catalogue to the other. It reminds us of a revolution which, in the memory of many living, took place in the chemical sciences, when the pneumatic doctrines were first published. The Aristotelians, the Cartesians, the Stahlians of ancient days, were the many-colored metaphysicians of former schools; fire, air, earth, water, were perception, memory, judgment, imagination; and phlogiston was the soul. Long had these elements continued to furnish out the material world, when

a simple appeal to weight and measure put them all to flight. Long had hypothetic principles explained every phenomenon of mind, when experiment and observation proved their non-existence. The Stahlians, who long had reigned unmolested, shuddered when they heard of oxygen; and would rather that the ocean had swallowed them up, than have seen one drop of water decomposed. Athanors waxed dim, caput-mortuums looked aghast, as phlogiston took its nether flight, and hydrogen lorded it over metallic resurrections. Even so do Lockeites and Reidites now grow pale, when any one of the thirty-five innate faculties is named, and when the element of general memory bows before the powers which have rent its empire into fourteen sad dependencies. It is not that the names of Stahl and Locke are not venerable in silence, but, fact *versus* man, man must be nonsuited.

The reasons, too, why error so long prevailed in both these sciences, are not without analogy to each other; and they who have examined both sides of both questions, and have finally been guided by experiment, find in them much subject of reflection upon the general march of the human mind. In the Stahlian doctrine, the increase of weight in metallic oxides was entirely overlooked, as was their loss of weight upon revivification; and philogiston was a body endowed with positive levity, one which took away from the absolute weight of the substance with which it was combined, yet augmented its specific gravity. No account either was taken of the volatile products of an operation of those which, when not allowed to escape, burst every vessel which would confine them. Not much more than half a century ago, the art of perforating air-tight bolt heads

was taught in chemical lectures; that is to say, the means of perpetuating ignorance; but the art of making impermeable lutes succeeded to it. All that was necessary to demonstrate the errors of Stahlism was, to weigh a metal and its oxide; to collect the aeriform products, and to examine them; to see that combustion could not take place without oxygen. These observations were made at length, and the science changed its whole hypothesis. All that was wanting to create phrenology, was, to know that all in metaphysics, was conjecture; that not a single fact existed to prove that perception, memory, imagination, were simple fundamental faculties, but many to prove that they were not; that the various systems which had succeeded each other explained nothing; and that all we knew about the brain was, how to slice it. What future progress and vicissitudes remain to each of these sciences we shall not determine, for they are beyond our speculations. Chemistry embraces the most subtle properties of nature; but is not the mind of man a universe, and are not its relations infinite? Far greater, in our opinions, are the dependencies of human feeling and reason, of passion and intellect, than those which elaborate matter, or guide the world through space.

The facts adduced in favor of our science rest principally on the authorities of its great founders, and it is but fair that the objections should be brought forward by men whose endowments bear some proportion to theirs; or else that they be supported by an adequate number of competent witnesses. Although the Edinburgh Reviewer could collect no information from the volumes of Dr. Gall, yet we (phrenologists) look upon them to be as extraordinary, in point of erudition, new facts, and new observations, as any that have honored the present age; and Dr. Spurzheim

has shown, in all his writings, a mind far above the common level of observing moralists and philosophers. These two men have devoted their lives to the study, and it would be unjust to overturn their doctrines by the hasty conclusions of a tyro. We do not, indeed, require so long and severe an apprenticeship in our opponents, as the masters of the science have undergone; but we exact a fair and honest competition. (Note 10.)

One claim we must make in favor of our science, and this distinguishes it from all the branches of physiology which have been cultivated to this day, — it has cost no blood: not a single act of cruelty has dishonored it; while Messrs. Majendie, Flourens and others, have been torturing animals to teach their pupils but little, and repeating their tortures, to learn that little over and over again, our masters have not mutilated a single insect while alive, or shortened the existence of a single being, to have its brain a few days sooner under their scalpel. Yet phrenologists might feel as much interest in scraping away a piece of cautiousness, and then observing how dauntless the animal would become; or of excavating an organ of locality, to make him lose his way, as any physiological butcher could do: or they might be as curious as Vesalius was to take a peep into the living organs of some human subject. But they have abstained from every act of cruelty, and shown that anatomy and physiology may receive some of its best additions without becoming inhuman.

'The bantling which but a few years since we ushered into the world,' say the phrenologists, 'is now become a giant; and as well might you attempt to smother him as to entangle a lion in the gossamer, or drown him in the morn-

ing dew.' 'Your giant,' say the anti-phrenologists, 'is a butterfly: to-day he roams on gilded wing, to-morrow he will show his hideousness and be forgotten.'

Dixit the phrenologist. Dixit the anti-phrenologist. And now the Foreign Quarterly resumes its wonted *we*, to repeat our assurances to our readers, that not one word of what precedes has been said by us, but by the advocates of the contending parties. *Fiat justitia.*

NOTES.

Note 1, page 12.

The phrenological faculties of Dr. Gall's infantile genius were, Individuality, Eventuality, and Causality, in an eminent degree.

It has been remarked, as singular, that Dr. Gall should have been the first founder of this new science, whilst he could not recollect persons after dinner, though they had been near him at table, and since he could not find his way again to places where he had been before, or, in phrenological terms: since he had form and locality very small. Those who make that remark, can neither know the proceeding of Dr. Gall, nor understand the true meaning of the two phrenological denominations. Dr. Gall compared the size of individual cerebral portions with certain talents, or characters, eminent in any way; and he was not deficient in the power of perceiving size and its differences. The want of locality did not prevent him from making discoveries, any more than the want of seeing certain colors hinders any one to cultivate geometry or mathematics in general. Dr. Gall's deficiency in form explains why he constantly attached himself to isolated elevations and depressions on the surface of the heads, rather than to their general configuration, and left this rectification of phrenology to my exertions: he nevertheless, has the great merit of having discovered first, certain relations between cerebral development, and mental manifestations.

The few historical statements of phrenology made in this article, the nomenclature introduced by Dr. Gall, and our works, sufficiently prove that Dr. Gall and myself cannot be meant, when it is asserted that the phrenologists first founded a theory, and then looked out for facts to support it. I am sorry to see that friends and foes, the former by unskilful management, and the latter by unfair statements, have retarded the progress of phrenology. In any accredited science, those who teach it are taxed for their misconception or mismanagement, whilst the reality and merit of any new science, of phrenology for instance, are judged of, even by the ignorance or unskilfulness of its disciples. Phrenology has its foundation in experience, whatever the opinions of its friends or foes may be. Whatever is maintained in opposition to nature must be rejected, and every one of its teachers, master or disciple, is, and can be, only answerable for his opinions.

Note 2, p. 17.

Some opponents of phrenology among the medical profession have a strong tendency to ascribe to others the merit of our anatomical discoveries. Dr. Gordon, in his examination of our claims as anatomists, in 1816, said (p. 99), that Reil is the original discoverer of our ideas; that we have borrowed them from his writings; and (p. 182), that Reil has been defrauded. Dr. Gordon thought it sufficient to make such statements, and to refer to Reil's archives of physiology for the years 1809 and 1812.—A professor of anatomy and physiology in his lectures before the College of Surgeons in London in the spring of 1829, thought it right to renew Dr. Gordon's opinion, and to give his assent to it. I must, therefore, repeat to the public the same answer which I gave to Dr. Gordon in 1817, in my Examination of the Objections made in Great Britain against the doctrines of Drs. Gall and Spurzheim.

'Why have we not acknowledged that we ow our anatomical information of the brain, to the writings of Reil? The reason is, simply, because it is not the case.' (I may add: it could not be, for his writings did not exist.) 'The proof of this assertion is equally simple, I have only to state the history of our investigation.'

'While at Vienna, we spoke of the great leading points of our anatomical demonstrations, *viz.* of the aggregation of various cerebral parts, and their connexion with the medulla oblongata; of the proportion of the grey and white substance; of the diverging fibres; and of unfolding the brain.

'In the year 1805, the 6th of March, we left Vienna for Berlin, where we repeated our anatomical demonstrations, in the presence of the medical professors and numerous auditors. Outlines of our anatomical and physiological propositions were published during that spring, by Professor Bischoff. From Berlin we went to Potsdam, then to Leipsig, where Dr. Knoblanch published an account of our doctrines of the brain. Then the usual demonstrations and lectures were delivered in Dresden, where Mr. Bloede published outlines of our anatomical and physiological views. From Dresden, we went to Hallé, where Professors Reil and Loder, and numerous gentlemen of the profession, honored us with their presence at the public lectures and demonstrations. With Loder we repeated several times the anatomical demonstrations; and once we dissected with Reil, a brain, quietly in his own room. He was so much pleased with our demonstrations, that he gave to Dr. Gall some drawings with which he was formerly occupied *de structurâ nervorum et cerebelli*. Thus I beg to observe, that in the summer of 1805, we demonstrated to Reil the same leading points in the anatomy of the brain which we still maintain. We then continued to lecture and to demonstrate the brain, that very same year, in Weimar, Jena, Goettingen, Brownschweig, Hamburgh, Kiel, and Copenhagen. In the year 1806, anatomical demonstrations were made in Bremen, Munster in Westphalia, Amsterdam, Leyden, Frankfort upon the Main, Heidelberg, Manheim, Stuttgard, and Fribourgh

in Brisgaw. In the year 1807 we went to Marbourgh, Würtzbourgh, Munie, Augsbourgh, Ulm, Zurich, Bern, Bale, and in the autumn of the same year, to Paris, where we dissected the brain, first in the presence of Cuvier, Fourcroy, Geoffroi de St. Hilaire, Dumeril, Dr. Demangeon and others, and successively before many learned societies. Meanwhile, numerous publications had appeared in Germany. Dr. Demangeon who had attended the lectures in Hamborough, published in Paris, 1806, his Physiologie Intellectuelle, and mentioned our anatomical views.

'In March, 1808, we delivered our memoir to the French Institute. The Commissioners declare at the beginning of their Report, that they have hesitated a moment whether they should examine our paper, because there is a rule 'de ne point émettre avis sur les ouvrages déjà soumis au grand tribunal du public par la voie de l'impression et l'on pourait croire que la doctrine anatomique de M. Gall a reçu, par l'enseignement oral que le professeur en a fait dans les principales villes de l'Europe, et par les nombreux extraits que ses disciples en ont repandus, une publicité à peu près équivalente à celle d'une impression authentique.' They however, add, that Gall had not given his sanction to any one of the publications, and that this circumstance was one of the motives which induced them to examine our memoir.

'The report is printed, even translated, and inserted in the Edinburgh Medical and Surgical Journal, for January 1809. We published our Memoir with observations on the report in 1809. After this, Reil published in his Archives, views essentially the same as ours, of the aggregation of cerebral parts, of diverging and converging fibres, and of the possibility of separating the convolutions in the middle line. He does not state that he was the first who has conceived such general ideas, nor does he mention us as the inventors. He does not, and could not say that we have learnt from him; he merely describes and represents them in engravings. As we had been in almost every town, and at all universities in Germany, our countrymen knew how to estimate the proceedings of Reil, and it is only the great publicity of our demonstrations that can excuse Reil for not mentioning them.

'It is true Reil has chosen other names; he calls our apparatus of formation, Hirnshenkel system, and our apparatus of union, Balken system, our diverging bundles are his Stabkrans. We speak simply of fibres, he of various convexities, obtuse and acute angles of the fibres, of laminæ, fossæ, and radii of the white substance; of wings, mountains, lobules, teeth; of a comb, and of similar mechanical denominations, which may appear interesting to a mechanical dissecter who is attentive to every little cul-de-sac, and declares the anatomy of the brain unnecessary to physiological and pathological views. (Dr. Gordon had said so.) We think that there would be no end of such mechanical details in comparative anatomy, if, for instance, in the gradation of animals every new additional part in the cerebellum is to be named, who will learn all the names? and of what use will such a study be? We therefore

point out the structure of each part, well aware, however, that each part is modified in the individuals of different species, nay in the different individuals of the same species.'

Professor Bischoff, in the preface of his Exposition of Dr. Gall's doctrine, reports Reil's own words, after we had dissected the brain to him in 1805. 'I have seen in the anatomical demonstrations of the brain, made by Gall, more than I thought man could discover in his whole life.' This short account is sufficient to prove, that there is no occasion whatever for us to apologize with respect to the publications of Reil. On the contrary, might we not rather complain of several recent authors who, in their publications, speak of our views without any mention of the source whence they were derived, or of the individuals who first struck them out, or reduced them to certainty by direct proofs. The influence our labors have had on the study of the nervous system, is incontestible. To be convinced of this, it is enough to examine the state of knowledge in regard to the anatomy, physiology, and pathology of the brain and spinal nerves, when we began to develope our ideas on these matters, whether it was by teaching orally, by dissecting publicly, or by means of our writings. M. de Blainville is one of the few, who, placing truth above selfishness, and looking for mere personal merit, declared, (in his report on Dr. Foville's researches on the anatomy of the brain, read to the Academy of Natural Sciences, the 23d of June, 1828,) that Gall and myself have given to the researches of the nervous system and brain, an impulse and direction altogether new; — that this new direction has diverted anatomists from the beaten track to which they had attached themselves before our labors; and that if we had done nothing but this, and were all the points of our anatomy to be successfully contested and completely refuted, there would still remain to us, the honor of having discovered a new impulse, and consequently to us must be referred as to its source, all that may be valuable in future labors on that subject.

As, however, *our* anatomical discoveries are often quoted under the name Gall alone, it becomes necessary to allot to each of us the portion he deserves. It is universally known, that Dr. Gall has the great merit of having first begun our phrenological inquiries. The medal published in Paris after his death, and dedicated, *au createur dela physiologie du cerveau* indicates, the merit due to him alone. He had pointed out many relations which exist between various talents and characters of man, and instinct of animals, and certain cerebral parts, before I was so happy as to become acquainted with him. But though he is the first founder of the physiological basis of phrenology, no one can deprive me of that honor and merit which I deserve in our common labors and in the progress of phrenology. (I settled my anatomical account with Dr. Gall, in an appendix to my French Essay philosophique, Paris, 1820, and in the preface of my English work on the anatomy of the brain, London, 1826. Dr. Gall has never contradicted my statements; and in

the last volume of his work, Sur les Fonctions du Cerveau, p. 490, he said, 'Qu'il me soit permis de relevèr, une tendance singuliere que manifestent beaucoup de personnes d'attribuer NOS découvertes à d'autres par example à Reil; et M. Spurzheim a deja dans plusieurs endroits, revendiqué NOTRE propriété.' The following is a summary of my relation with Gall. In the year 1800, I first attended a private course of lectures, which he had repeated from time to time, during four preceding years. He then spoke of the brain as the organ of the mind;—of the necessity of considering the brain as divided into different organs;—of the possibility of determining the special organs, by the development of individual parts of the brain, exhibited in the external configuration of the head. He admitted organs of particular memories, and of several feelings, but he had not yet commenced any anatomical investigation of the brain. Hitherto he had recourse to physiognomical means alone, to discover the physiology of the brain. But physiology without anatomy is imperfect: Dr. Gall felt this, particularly in observing a poor woman with hydrocephalus, who was weakly, but as active and intelligent as other women of her class. He concluded, as Tulpius had done long before, from a similar case, that the structure of the brain must be different from what it is commonly believed to be. The woman died at the age of fifty-four years. Four pounds of water were found in her head, but the brain was not destroyed nor dissolved.

As Dr. Gall's time was greatly occupied by his medical duties, he employed a medical student, Mr. Niclas, to dissect for him. The investigations, however, were conducted from works published on the brain, and with mere mechanical views, as mentioned in the preface, p. xvi. of our large work on the anatomie et physiologie du systeme nerveaux en général et du cerveau en particulier.

From the moment in which I got acquainted with Dr. Gall's physiological doctrine of the brain I have never lost sight of it. My medical school studies being at an end, in 1804 I joined Dr. Gall, and undertook the prosecution of the anatomical department, especially. Dr. Gall then knew the ecussation of the pyramids; he also spoke of their passage through the pons varoli, and eleven layers of logitudinal and transverse fibres in the pons, of the continuation of the optic nerves to the anterior pair of the corpula quadrigemina, of the diverging bundles at the outside of the erura cerebri in the dissection, in which Vieussens, Monro, Vicq d'Azyr, and Reil (Gren's Journal, 1795, I.) had followed them, the first in scraping, the others in slicing the brain. He also showed, like Vicq d'Azyr, the continuation of the anterior commissure through the corpora striata, and mentioned the unfolding of the brain in hydrocephalus. The idea, however, which he had conceived of the brain in that state, was incorrect, inasmuch as he considered the hemispheres as resulting from a membrane folded together, and fancied that the crura cerebri expanded there, and were then folded by juxtaposition of the convolutions. This erroneous idea

may be found recorded in all expositions which various individuals have published of Dr. Gall's lectures, and was not corrected previously to the presentation of our Memoir to the French Institute, in the year 1808. Till then the true structure of the convolutions and their connexion with the rest of the cerebral mass had never been described.

When I began to dissect the brain, I found the spirit in which the structure of this organ had been examined, too mechanical, and endeavored to discover a structure of the brain in harmony with its functions. I succeeded in observing the law of the continual and successive additions of the cerebral fibres;—their division into two principal portions which are in communication with the rest of the nervous system;—their divergent directions towards the convolutions;—the difference of the diverging and converging or uniting fibres;—the true connexion of the convolutions with the rest of the cerebral mass, and their structure, which permits every convolution to be unfolded, as happens in hydrocephalus internus, whilst the cerebral substance at the bottom of the convolutions, viz. the mass where the diverging and converging fibres cross each other, is pushed by the water, between the two layers of which every convolution is composed. In our public as well as private demonstrations of the brain, I always made the dissections, and Dr. Gall explained them to the auditors.

Since our conjoined publication, I have extended our notions of the communication of the nerves and cerebral parts with each other, and collected them in a separate section, in my English work on the anatomy of the brain. During the last three years, I have been occupied with showing the regularity of the cerebral portions, and with specifying the individual organs and *their boundaries*. This additional discovery was desirable for phrenology. It is also a means to prove that individual parts are wanting in various idiots, and in the brain of the Ourang Outang, which, however, has the greatest analogy with the human brain. I presented these ideas in a paper accompanied with drawings, to the Royal Society of London. The council of this learned body permitted them to be read, but did not think the paper worthy of being published in their transactions. My ideas, however, are new, no where demonstrated in books, and will be, I am sure, appreciated by phrenologists, as the completion of the phrenological anatomy of the brain. Dr. Gall died without knowing the regularity of the convolutions and boundaries of the cerebral organs.

Note 3, p. 40.

It is curious to hear some opponents object to phrenology because I admit a greater number of organs than Dr. Gall, and differ from him in various points. Is chemistry to be rejected, or is it less true, because the chemical knowledge of Sir H. Davy was more extensive than that of Lavoisier, or because this latter did

not discover whatever may be known in chemical science in future? Dr. Gall being the first founder of phrenology, remains immortal. The success of his labors, too, was immense. He discovered the situation of twenty-six phrenological organs, I say twenty-six instead of twenty-seven, because his organ of verbal memory and that of language are to be considered as one. But his talent and the sphere of its operations had their limits, and since our separation in 1813, Dr. Gall has neither made a new discovery in phrenology, nor a step towards its improvement.

The spirit in which he from the beginning conducted his researches into the moral and intellectual nature of man, is expressed in the publication of the first chapter of a large important but unfinished work, entitled Philosophisch medicinishe Untersuchungen ueber Natur und Kunst im gesundem und kranken Zustande des Menschen. Wien, 1791.

The first printed notice of his inquiries concerning the head, appeared in a familiar letter written by Dr. Gall to Baron Retzer, and inserted in the German periodical journal, Doutscher Mercur, in Dec. 1798. The objects of his private lectures in Vienna from 1796 to 1802, are published by Dr. Froriep and Dr. Walther. Further, the whole of the physiological doctrines, as exposed by Dr. Bischoff and Mr. Bloede in 1805, are Dr. Gall's exclusive property; but every new addition from that period up to 1813, belongs to us in common, because we pursued our inquiries together.

My special rectifications of phrenology, and new physiological discoveries, begin with our separation from each other in 1813. They concern particularly the discovery of eight new organs, and the analysis of the special powers of the mind, whilst Dr. Gall mostly confined himself to the comparison of talents, characters, and certain modes of acting, with individual cerebral portions. He admitted in every power of the mind the same modes of action; for instance, perception, memory, judgment, and imagination; whilst I classify the mental powers into orders, genera and species, and examine the common and special modes of acting of the different faculties. Further, Dr. Gall ascribed to the senses the notions which the mind acquires of existence, and of the physical qualities of the external objects, whilst I think those operations of the mind to be dependent on cerebral organs. I therefore speak of immediate and mediate functions of the external senses; in the former the mind takes cognizance by the assistance of the senses alone; in the latter it is assisted, besides the senses, by cerebral organs. In general, my philosophical views in phrenology differ widely from those of Dr. Gall.—The moral and religious considerations of phrenology, too, as they are taught in Great Britain, are conceptions of mine. Dr. Gall never endeavored to point out the standard of natural morality.—In the natural language I discovered several principles in addition to that found by Dr. Gall: that the movements of the head, body, and extremities, are modified

by the seat of the organs in action. Moreover, in the practical part of phrenology, and in examining the development of the special organs, I began to pay more attention to the breadth of the organs than Dr. Gall was accustomed to do, and directed phrenologists to attend to the individual regions of the head, in reference to the three lobes of the brain, and to the three regions of the animal propensities, the human sentiments and intellectual faculties, rather than to the protuberances and depressions to which Dr. Gall attached himself almost exclusively. In short, the comparison of Dr. Gall's works with my publications on phrenology, on its philosophical principles, on education, insanity, and other matters, will best show how much I have contributed to extend and improve phrenology, and to forward its study.

Note 4, p. 42.

No one, acquainted with the Edinburgh Review, will doubt that it was the greatest desire of the late editor and his party, to upset phrenology *per fas et nefas*. In Dr. Gordon's celebrated attack upon the new doctrines in the 49th number, even our anatomical discoveries were treated with unsparing expressions. In No. 88, of the Review, Mr. Jeffrey himself tried his wits and powers to deliver the public from all the phrenological absurdities. Though he had candor to avow that he is not learned in anatomy, he hoped, however, to deprive phrenology of its pretensions. His lucubrations, it is true, produced a temporary effect, but his ignorance in phrenology, and his sophistical proceeding, were sure to turn at last against the literary delinquent himself. In a note to the 89th number, Mr. Jeffrey stated that 'if we find at the end of a few more years that the science is still known by name among persons of sense, we may think it our duty to look once more into its pretensions, and give ourselves another chance of conversion.' I give Mr. Jeffrey up to his modified feeling of duty, and rely on the truth of phrenology.

But as far as the Edinburgh Review is concerned, in reference to our anatomical discoveries, and the basis of our phrenological principles, there is an immense change from No. 49 to 94. In the latter, there is an article on the nervous system, where special functions are ascribed to individual nerves; where it is admitted that 'in the nervous system alone, we can trace a gradual progress in the provision for the subordination of one (animal) to another, and of all to man; and are enabled to associate every faculty which gives superiority, with some addition to the nervous mass, even from the smallest indications of sensation and will, up to the highest degree of sensibility, judgment, and expression. The brain is observed progressively to be improved in its structure, and with reference to the spinal marrow and nerves, augmented in volume more and more, until we reach the human brain, each addition being marked by some addition to, or amplification of, the powers

of the animal — until in man we behold it possessing some parts of which animals are destitute, and wanting none which theirs possess.' (p. 443.) — Is this not eminently phrenological?

'Even within our own time (says the Edinburgh Reviewer, No. 94,) although many great anatomists had devoted themselves almost exclusively to describing the brain, this organ used to be demonstrated by the greater number of teachers, in a manner which, however invariable, was assuredly not particularly useful. It was so mechanically cut down upon, indeed, as to constitute a sort of exhibition connected with nothing. The teacher and the pupil were equally dissatisfied with the performance, and the former probably the most. The latter soon gave up the painful attempt to draw any kind of deductions from what he witnessed, and disposed of the difficulty as he best could, when he had to render an account of what he had seen. Up to this day our memory is pained by the recollection of the barbarous names, and regular sections of what was then the dullest part of anatomical study, which, although often repeated, left no trace but of its obscurity or its absurdity. Here an oval space of a white color, and there a line of grey or curve of red were displayed; here a cincritious, there a medullary mass; here a portion white without, and grey within, there a portion white within, and grey without; here a gland pituitary, there a gland like grains of sand; here a ventricle, there a cul-de-sac, with endless fibres, and lines, and globules, and simple marks, with appellations no less fanciful than devoid of meaning.' (p. 447.) Is this not quite the language which Dr. Gall and myself used in dissecting the brain to our classes? Why then are our names never mentioned in the article, since we have introduced a new and better method of dissecting the brain? At all events this article is a powerful pleading of the phrenological principles, and the Edinburgh Review is an evident proof that truth must prevail.

Note 5, p. 44.

Since the time when this article was published in the Foreign Quarterly, I have delivered many courses of phrenology to numerous and most respectable classes; for instance, in the beginning of 1828, three in Edinburgh; in the spring of the same year, two in Glasgow; and, in 1829, at Derby, Nottingham, Sheffield, Wakefield, Leeds, Manchester, Liverpool, and several other places. Mr. George Combe, too, lectured on Phrenology in Dublin, during last April, with the greatest success. The phrenological collections in London, Edinburgh, and at various other places, have largely increased. In short, phrenology is propagated with unabated zeal, and numerous converts are made in favor of it. The London Encyclopedia, under the article Craniology, referred to that of phrenology, on condition that the pretended science should not have 'evaporated before that time.' In the 33d part, however, when the turn of phrenology came, a favorable article appeared. The great

change which meanwhile took place in the Edinburgh Review itself, is already mentioned in Note 4.

Note 6, p. 62.

Phrenology, in establishing the knowledge of man, must become the basis, not only of moral philosophy, education, and legislation, but also of the science styled political economy. It will teach those who constantly speak of the march of intellect, that intellect is only one part of of the human mind; that knowing to read and to write is not the first basis of common welfare; that masters alone cannot give talents, nor precepts produce morality. It will exercise a great influence on the welfare of nations, in indicating clearly the difference between natural and arbitrary nobility, and in forming the relations between individuals to each other in general, and between those who govern and those who are governed in particular. Further, it will dispose governments who take interest in the happiness of their subjects, to think of means of making them not only rich, but also healthy, virtuous, and wise: and should they not succeeed to produce such eminent results, a great merit will be due to them for preserving individual families and their nation at large from degeneracy. The laws of the hereditary descent in the physical, moral, and intellectual constitution of man, will offer the most important considerations to their study and reflection, and those laws can be understood by phrenology alone.

Note 7, p. 76.

Phrenology has been objected to, because criminals have been described as possessing at the same time certain organs of the animal feelings and of human sentiments large. But does this apparent contradiction in organization not coincide with a contradiction in character, not only among criminals but also in many other persons? First, if criminals possessed only the organs of the animal propensities large, and were deprived of those of the human sentiments, could they be declared guilty? Hence the legislator and judge, in inflicting pains and even capital punishment, suppose counter motives against criminal propensities. Now, those counter motives, as well as the brutal propensities, depend on cerebral organs, and the only reasonable thing which can be said on this point is, that criminals are guilty, and their criminality great, in proportion to their human sentiments and intellect with which they are endowed. The object of phrenology is only to show such states, which in reality are not rare. The ancients had Nemesis as a divinity of vengeance; and, since the Christian era, there have been criminals who performed religious ceremonies, and said prayers, in hopes that they might be successful in executing their heinous plans, and who, after fulfilling their evil deeds, gave thanks to some superior beings. Why should it be impossible to find in such indi-

viduals the organs of veneration and marvellousness large, as well as some of the animal propensities? Whilst lecturing for the second time at Manchester, in October, 1829, several gentlemen, among them one of the first magistrates, went with me through the prison. Amongst various criminals whom we examined, a female, condemned to fourteen years transportation, was presented to us. Her organ of acquisitiveness was large, but those of cautiousness and conscientiousness were small. At the same time I perceived the organs of veneration and marvellousness large, directed the attention of the gentlemen who were with me to this contradiction of dispositions, and manifested the wish to be informed about her devotional conduct. We then learned that her behavior in the chapel is exemplary, and that on the preceding Sunday she had been rewarded for it by the chaplain with a prayer-book. Many criminals are faithful, and act with a feeling of honor towards their companions, but 'deceitful and treacherous with the rest of mankind.' Dr. Gall knew a devotee who kept several mistresses, gave them prayer-books, and exhorted them to devotion. Do not conquerors and invaders sing Te Deum for having immolated thousands of innocent victims? Do we not observe, in daily life, that individuals are pious and charitable at one time, preach even sermons, and write moral and religious treatises, but who at another time indulge in sensuality and debauchery, and degrade themselves to the level of the brute creation? Mr. Greg, in his answer to Mr. Stone's pamphlet on Burke and Hare, pointedly says, 'Every observer of human nature, in its ever varying phases, must have been surprised and confounded by the inconsistent and anomalous qualities which present themselves in the same character, sometimes simultaneously, sometimes in the order of succession. We could point out many who, calm and placid on all other occasions, become fiery and ferocious the instant that gunpowder word phrenology is mentioned.'

Are not the reviewers partial one day and impartial another time? Bonaparte's carelessness of human life, in the mass is generally known, but the instances are not rare where in individual cases his humanity was very great. Mr. Bourienne, in his Memoirs of Napoleon, states, that in the voyage to Egypt, when a man fell overboard, the Commander-in-chief had no repose till he was saved. Napoleon invariably directed the ships to lay to, and ordered the individuals who had exerted themselves to be well rewarded. One night the crew were all alarmed by the cry of 'a man overboard,' which resounded from one end of the vessel to the other. Bonaparte ordered the ship to be laid to. It proved, however, in the end to be nothing more than a quarter of an ox, which had slipped from the provision-hook. Bonaparte wisely ordered that on this occasion the sailors should receive a more than ordinary reward.' 'It might have been a man, and these fine fellows had not shown less courage and zeal than if it had.' So spake he who was on his way to immolate thousands and tens of thousands, and at a moment when he was most anxious to escape the English fleet.

In numerous instances Bonaparte seemed to be fond of pardoning, be it from policy or from sensibility. But it required but a shadow of danger to his political existence to justify in his eyes any act, however bloody, however inhuman. He was sensible to individual sufferings when it did not interfere with his military or political projects; but in that case, it was his maxim to steel himself against all softer feelings. He used to say: 'Unless the heart is firm, no one ought to meddle with affairs of either war or politics.'

[The examples of contradictions in character and understanding are very common; even in the history of the Jews, and in individuals who were considered as inspired; nay, in popes, who pretended to be infallible. David was not mere wisdom and virtue; and the aberrations of Solomon were great and numerous, notwithstanding his extraordinary wisdom.

Pascal, and other divines, have considered it as one of many other superiorities of Christianity, to represent man as a mixture of good and evil. Did not the great apostle Paul himself complain of two laws, one in his members, and the other in his spirit, confessing that he saw and felt the better and did the worse? Phrenology alone furnishes the best natural explanation of this opposition in the animal and human feelings of the same individual. Further, phrenology alone explains why only a few are geniuses either in virtue or talent, whilst some others are characterized by mere brutal tendencies;—why some excel in certain dispositions but are middling in others, and almost defective in still others;—finally, why the great bulk of mankind are followers of their leaders, and apparently the work of ocasional circumstances, but middling in all their proceedings.

The apparent contradiction in powers and cerebral organization does not only exist in man, but also in animals. John Blackwall, Esq. in a paper read before the Literary and Philosophical Society of Manchester, March 23d, 1826, proves from direct observations that the swallow tribe, particularly the house-martin, notwithstanding their great parental affection which is powerfully exerted during the breeding season, at the moment of their migration abandon their eggs, or even consign their offspring to a painful and lingering death, in direct opposition to their feeling of parental love, which is so intense at other times. A female dog may be kind to her puppies and her master, but fierce with strangers. A cat may be very mild and playful with her mistress, but most cruel with a mouse. Phrenology, in showing the special powers in man and animals, clearly accounts for such apparent contradictions.

Finally, it is to be remarked, that in applying phrenology to individual criminals and their cerebral organizations, their dispositions, motives of action, and determinate actions should never be confounded with each other. Phrenology examines merely dispositions in relation to organization; but the actions require the consideration of motives and of external occasional causes. A lasting motive will always be found accompanied by cerebral development, and here, for instance, the desire of acquiring is the princi-

pal motive of a murder, the organ of acquisitiveness will be found large, and destructiveness acts as a mere means of satisfying the strong desire.

The determinate actions, on the other hand, always depend on external circumstances. Hare and Burke, for instance, had the animal propensities stronger and their respective organs larger than the human sentiments and their organs; hence their animal nature being excited, would overpower their human sentiments. Yet Burke was still obliged to take whiskey to suppress his better feelings; but the atrocious crimes themselves of those villains were entirely dependent on the local situation of their existence. In France or Germany they never could have been guilty of their atrocities, since the excitement of such a living and the opportunity of selling the murdered would have been wanted. In both countries several murders have been detected from the difficulty of concealing the murdered, whilst in Great Britain, the greatest facility is offered, not only to conceal victims, but even to be dearly paid for them. This alone should invite the legislator to provide for better means than are in use to enable the medical profession to study an indispensable branch of their art. At all events, contradiction of character is no objection to phrenology.

Note 8, p. 87.

Medical men are frequently called upon to decide about the reality of phrenology. This, however, is a great mistake, since it is positive that, before our time the medical profession was quite ignorant of the structure and functions of the brain, in its state of health and disease. Medical men, therefore, before they study phrenology, have no more right to judge of its reality than any other man or woman who never attended to it. He who can perceive differences in size and forms, and compare coincidences of cerebral development with mental dispositions, and who takes the trouble of examining nature,—he alone is entitled to form and give an opinion concerning the pretensions of phrenology. There have been many medical men, who, though ignorant of the new science and its foundation, wished to keep up the craft which surrounds their profession, and who with great self-complacency declared phrenology to be nonsense. Their motives seem to have been of two kinds: as long as the public opinion was against phrenology, those with predominant secretiveness and acquisitiveness thought it the most proper to go with the tide. In proportion as the public opinion turns in favor of phrenology, these opponents become silent. Others with predominant organs of self-esteem and firmness, and smaller conscientiousness, think it necessary to maintain till the end of their days that which they have once said, viz.; phrenology to be nonsense and quackery. Nature will take charge of them, and send younger brains, open to conviction, truth, and new discoveries. The march of intellect is quicker in our days than it

was in former times, yet it is still very slow. Before new doctrines are generally admitted new generations must rise. The discovery of Newton was not a system of opinions, but the generalization of facts, made known by experiments; it was brought forward in a most simple and unpretending form, and had every thing to recommend it; yet a host of enemies appeared to attack that which posterity was to confirm. Newton had published his doctrine thirty years, when the principles of Descartes were still taught at Cambridge. Gall and myself have taken, and I still take all possible means to propagate and teach our discoveries. Though their reality is admitted more and more, public teachers show the greatest reluctance to adopt and propagate them to their pupils. Since — years I repeatedly show a better method of dissecting the brain: all medical men agree that the old and usual method of dissecting this organ offers nothing to recommend, but many reasons to reject it; that every one, who does not make anatomy his particular study, soon forgets everything that he has learnt of the brain, as soon as he has passed his examination before the medical authorities; yet at this very day the teachers of all medical schools are obliged to go on with the anatomy of the brain in the old absurd way, in order, as they say, to prepare their students for examination. Thus the old schoolmen must die before a better method of dissecting the brain can be generally introduced. However, let me say that medical men who neglect the study of phrenology, and think it below their dignity and wisdom, have to choose between self-esteem and ignorance, or modesty and knowledge.

Note 9, p. 88.

'The votaries of phrenology are said to be third-rate men—persons without scientific or philosophical reputation. They are not entitled to *challenge* the regard of those who have higher studies to occupy their attention.' The assertion that no men of note have embraced phrenology, is not supported by fact. The great success with which I have hitherto lectured in London, Cambridge, Bath, Bristol, Edinburgh, Glasgow, Manchester, Liverpool, and many other places; the respectable classes which never decreased in number, but always increased as the course went on, so that my last lecture was every where the most numerously attended,—is for me a certain proof that phrenology excites the interest of enlightened minds, whenever it is fairly presented. I, however, am not willing to occupy the public with the personal merit of phrenologists; but it may be interesting to understand the talents which our opponents display, the profundity of their knowledge, the consistency of their judgment, the fairness of their proceedings, the sincerity of their motives, and their eminence in every respect. It may be noticed, as a general though singular remark, that many of those who belong to the pretended liberal party, and who speak a

great deal of the march of intellect, are the most inveterate enemies of phrenology, though this science will do more for the welfare of mankind than all other means of improvement together.—The probable cause of this class of opponents is, that their literary gospel, the Edinburgh Review, without knowing phrenology, had declared against it. Now, leaders of any kind do not wish to appear to be in the wrong. Predominant self-esteem, firmness, and love of approbation dispose the owner of such powers to look every where for the first place; and the same feelings, if not guided by conscientiousness, prevent him from changing his former decisions, or, at least, from avowing such a change of mind. I pardon the adversaries among the liberal party, because they do not know what they do; and turn myself in particular to the Critical Reviewers and anonymous writers of the public press, who repeatedly announced phrenology to be entirely upset. Mr. George Combe, in his answer to Mr. Stone's contrived observations on the heads of Burke and Hare, pointedly remarked, that 'the very fact of repeating the same declaration year after year, since 1815, when Dr. Gordon's celebrated attack on phrenology appeared in the 49th number of the Edinburgh Review, seems never to have struck the critics as demonstrating its falsity and absurdity. If phrenology was refuted by Dr. Gordon, why did they laud Dr. Roget for demolishing it?—If Dr. Roget succeeded, why did they praise Dr. Barclay so extravagantly for subverting what was already overturned?—If Dr. Barclay was a fatal enemy, why did they extol Mr. Jeffrey to the skies as the prince of all anti-phrenologists?—If Jeffrey left no shred of the science sticking to another, why did they sound a loud acclaim to Sir William Hamilton for his repeated victories over its scattered members? and if Sir William's brows were decorated with well-earned laurels on account of his magnanimous achievements, why do they now cling to Mr. Stone, as if no other champion had tilted with success against phrenology? The only inference that can reasonably be drawn is, that those who uttered those eulogiums, entertained a great, yet childish prejudice against phrenology;—that they dreaded its ultimate triumph, as implying a censure on their own conduct towards its founders—but that, even while they condemned it, they were conscious of being ignorant both of its nature and its evidence, and were beset by that inward misgiving, that secret uneasiness, which ever haunts those who oppose truth on the strength of prejudice alone. It was this state of feeling which caused them to hail with deep interest, every shadow of an argument, and every phantom of a fact by which they might justify to their own minds the doubtful conduct which they had pursued.'

The great critics of the Edinburgh and Quarterly Reviews, deserve a particular notice. They, of course, must think themselves of the first-rate men—persons of the greatest scientific and philosophical reputation, and therefore assume the mighty *we* of sovereignty. The conscientious feelings of the former Editor of the

Edinburgh Review must be mortified to see that his successor, in No. 94, has acknowledged the basis of phrenological principles, though he did not mention that name, whilst the Quarterly continues to assail phrenology, probably to cover his shuffling conduct: but the readers should mind their being deceived.

In No. 77, in alluding to Dr. Granville's remarks on the supposed skull of Charlemagne at Aix-la-Chapelle, the Quarterly Reviewer says, 'We have a higher opinion of Dr. Granville's sagacity, than to suppose him capable of being deluded by so gross a piece of quackery, as craniology — for that is the proper name. Let him leave that, by all means, to the young gentlemen of Edinburgh, who pretend to believe so strongly in the infallibility of their patron Spurzheim, as a good catholic does in that of the pope, each equally contrary to common sense and human reason. While on this subject, we will tell those northern bumphunters a little anecdote of their oracle which we know to be true.

'On visiting the studio of a celebrated sculptor in London, his attention was drawn to a bust with remarkable depth of skull, from the forehead to the occiput. 'What a noble head,' he exclaimed, 'is that, full seven inches; what superior powers of mind must he be endowed with who possesses such a head as is here represented!' 'Why, yes,' says the blunt artist, 'he certainly was a very extraordinary man; that is the bust of my early friend and first patron, John Horn Tooke.' 'Aye,' answers the craniologist, 'you see there is something after all in our science, notwithstanding the scoffs of many of your countrymen.' 'Certainly,' says the sculptor, 'but here is another bust, with a greater depth, and a still more capacious forehead.' 'Bless me,' exclaims the craniologist, taking out his rule, 'eight inches! Who can this be? This I am sure, must belong to some extraordinary and well known character.' 'Why, yes,' says the sculptor, 'he is pretty well known, it is the head of Lord Pomfret.'

Now my simple answer is, that this little anecdote, which the Reviewer knew to be true, has never occurred, and never could occur with me, since I never measure skulls or heads by inches, nor do I ever use language in correspondence with such a fallacious proceeding. The whole story, in reference to me, is an unfounded assertion, and 'he who uses such weapons, will find that they must necessarily recoil upon himself, and fatally pierce his own reputation, both for sense and veracity.'

The simple report of this contrived story, proves the Reviewer's peculiar veracity: let us now see a proof of his sense and perspicacity. In No. 81, of the Quarterly, art. Gooch on Insanity, p. 176, in a note we find — 'The following anatomical facts, selected from Wenzel's celebrated work, de penitiori structura cerebrihominis et brutorum, show that up to the 7th year of life, very great changes are going on in the structure of the brain, and demand, therefore, the utmost attention not to interrupt them by improper or over excitement: just that degree of exercise should be given to the brain

at this period, as is necessary to its health, and the best is oral instruction exemplified by objects which strike the senses. The dimensions of the brain proper, are as follows:

LENGTH.	Inches.	BREADTH.	Inches.
At the 3d mth. after conception -	$1\frac{3}{12}$	- - -	$1\frac{1}{12}$
At birth - - - - - -	$4\frac{1}{6}$	- - -	$3\frac{2}{3}$ to $4\frac{1}{2}$
At the 7th year - -	6 or 7	- - -	5 to 6
At the 80th year - -	6 or 7	- - -	5 to 6

'It appears therefore, says the Reviewer, tha the brain proper, increases rather more in length and breadth during the six months immediately preceding birth, than during the first seven years after birth, that those dimensions arrive at their maximum at the age of seven, and they suffer no change during the whole of after life. The weight of the whole brain arrives, most commonly, at its maximum at the age of three years, and remains without diminution the whole of after life.'

The latter conclusions are heresies in phrenology, and I beg the reader to mind that the great literary judges did not perceive the fallacious proceeding of Wenzel to compare different individuals in order to make out the size of the brain at birth, at seven years, and at eighty years. I have seen in children of seven, even of three years, larger brains and foreheads (the residence of intellect) than in some adults who opposed phrenology; but does this prove that the adults had already the same size of brain at their age of seven years, and that the brains of children seven years old do not increase in after life? Whoever will observe the same individual will arrive at results very different from Wenzel's statements and the Reviewer's conclusions. Critics, however, of so little sense of comparison and discrimination dare to decry a science of which they know nothing, and which they never wish to study.

In adverting to the language of our opponents, one might think that phrenology could not be true before they had given their sanction. But who will maintain that any doctrine is true because it is recommended by reviewers, believed by all who are wise, or considered as such, and even admitted and taught in public schools? On the other hand, shall any opinion be declared as false, because it is new and rejected by the established professors, by the wise of the age, and by all who have influence on society and its institutions? Was the scholastic philosophy the best, because it enjoyed the greatest reputation during many centuries? Or was Galileo in the wrong because his doctrine was opposed by the greatest authority of the time, by an authority considered even as infallible? Shall the poetical talent of Burns and Lord Byron be denied, because it was opposed by the great critics of Scotland? Is the merit of the late Dr. Thomas Brown as a philosopher less because his works were not praised by literary judges, or, as his biographer says, because 'in the reviews of the day, the name of Dr. Brown is

almost the only one of any celebrity that is never to be found?' The reader should remember that the human species is the same at all times, and that the same motives produce the same actions in ours, as well as in former days: in doctors of medicine and divinity as well as in reviewers. A new science is always opposed by those whose reputation suffers from its introduction. Phrenology having an influence on the improvement of all branches of anthropology, has been and is assailed by the professors of every branch, by speculative philosophers, medical men, lawyers and divines. Yet it spreads and gains ground, notwithstanding this powerful opposition. I glory in thinking that the constant and malignant exertions of the reviewers have been frustrated, even during my life time, by the intrinsic power of phrenology itself. My work on phrenology, being at its fourth edition, is not due to its being praised and recommended by leading reviewers.

Note 10, p. 91.

Whilst writing my notes to this article, I asked myself, several times, whether it be necessary to speak of an opponent who is a mere mouthpiece of an illiberal party, and who conducts the inquiry and discussion with uncommon effrontery, particularly since his erroneous proceeding, his fallacious argumentation, his evident misrepresentations and misquotations have been clearly shown by Mr. George Combe, in the Phrenological Journal, and by an acute writer, in a series of articles in the London Medical and Surgical Journal. Mr. Stone has been chastised in a manner which must deprive him forever of scientific reputation. I refer to those refutations every impartial reader who wishes to know the arguments on both sides, before he forms a decisive opinion. I shall make only a few remarks which, however, will be sufficient to indicate the spirit in which M. Stone published his lucubrations and committed his 'literary delinquencies.'

He begins his evidences with stating that Dr. Gall and myself claim the merit of being the discoverers of several propositions, the first of which is 'that the brain is a congeries of so many distinct parts, each of which is the organ of some innate special faculty.'

Now this statement is evidently a mere invention of Mr. Stone. Neither Gall nor myself have ever said that we claim to be the discoverers of the idea that the brain is a congeries of organs. This very proposition is developed with details in our joined works, as well as in those which every one of us published separately. Our works evidently contain more historical quotations than Mr. Stone's pamphlet. We were particularly anxious to collect the opinions of various ancient and modern writers, who believed in the plurality of mental powers and their special bodily conditions, since we are aware of the natural tendency of opponents, first to reject a new doctrine as long as they can; but if they can no longer resist its reality and force, then to ascribe its discovery to some pre-

decessor: — The reader, however, will feel the difference between admitting any general idea, and proving its details, hence between believing in the plurality of mental powers and bodily conditions, and specifying the powers, and demonstrating their organs in the brain. The latter is exclusively our merit.

The second proposition which, as Mr. Stone told his readers, we claim, is 'that the power of manifesting each faculty, is always proportionate to the size and activity of the organ or part of the brain with which it is supposed to be in immediate connexion.' The argumentation of Mr. Stone, in examining this proposition is particularly fallacious. I confine myself to repeat our real opinions. We admit that in the ordinary and healthy state in the same brain, the larger organs show greater tendencies and energy than smaller ones; but the reader is reminded not to believe in the Edinburgh Review, or any other opponent, who says that the phrenologists measure the dispositions of the mind in proportion to the size of the cerebral organs. All works on phrenology deny this to be possible. In all my works there is a separate chapter on the absolute size, and I always conclude that it is not possible, even in individuals of the same kind, to measure their faculties according to the absolute size.' But to show how shamefully the public has been deceived, let us hear only what the Edinburgh Reviewer, who boasted of a 'conscientious discharge of duty,' No. 49, p. 229, told his readers, p. 249:—'Gall and Spurzheim, in affirming that the vigor of intellect is always proportionate to the size of the head, seem to have been desirous how far their effrontery might be carried.' I may answer: not as far as that of the Reviewer goes. His conscientiousness is sui generis, and the clearness of his understanding too. We place the intellect in the forehead, and the critic confounds the forehead with the whole head!

Mr. Stone particularly insists on phrenology not being supported by facts. He finds only twenty-eight observations in the publications of the Edinburgh phrenologists. These in return, (Phrenol. Journal, No. 19, p. 468,) call Mr. Stone's assertion 'a flagrant absurdity.' It is really puerile to speak of only twenty-eight observations in support of phrenology, whilst the phrenological collections in Great Britain contain many hundreds of well-authenticated facts. Further, shall all the observations which Dr. Gall sedulously made for above fifty years; shall my exertions since thirty years, and all the labors of our disciples be outweighed by the authority and ipse dixit of Mr. Stone?

Mr. Stone's 'Evidences against Phrenology' had died and were forgotten when he published his 'Observations on the phrenological development of Hare and Burke, and other atrocious murderers.' The opponents of phrenology, with great eagerness laid hold on these pretended phrenological observations, and extolled them to the skies. When I first read Mr. Stone's pamphlet, I found his proceeding quite anti-phrenological, since he measures by decimals,

as if phrenology were a mathematical science; — admits in the size of the organs, length without breadth; — denies the boundaries of the organs to be known; — compares one individual with another, and proceeds in opposition to the phrenological principles, as taught and applied by true phrenologists; and I thought, with the Edinburgh Phrenol. Journal, No. 19, p. 559, that these inaccurate observations were 'obviously published for the purpose of opposition, and ought to be called anti-phrenological.' With respect to Mr. Stone's report of the cerebral development of Hare, Burke, and other atrocious murderers, I suspended my opinion till I could appeal to my only authority in phrenology, Nature. Till then, I could not think that Mr. Stone could publish a barefaced falsehood, in telling his readers that, in comparing the organs of the animal propensities with those of the human feelings in Hare and Burke, the organs of the moral and religious sentiments were not smaller, and those of the animal propensities not larger, absolutely and relatively, than in individuals of high moral and intellectual character. But since I am in possession of exact copies, from nature, of the heads of Hare and Burke, procured by an eminent artist, Mr. Joseph, I cannot help believing in Mr. Stone's *moral or intellectual* incapacity of instructing the public about phrenology. In my collection, among fifty busts and forty skulls (these partly real, partly copies in plaster) of criminals, there are not six with so low cerebral organization as Hare and Burke. — When, beside these evident misrepresentations, I also read Mr. Stone's words: 'the skull of this murderer (Pepe) which has been repeatedly inspected, exhibits a remarkable deficiency of the pretended organ of destructiveness,' whilst the same skull, during my visit in Edinburgh, in 1828, was put by Dr. Graham, into my hands, without telling me a word of its history, but with the request to give my opinion of the skull; I at once found the organs of combativeness and destructiveness very large; and when I find Mr. Stone's 'Evidences against Phrenology' to be evidently 'literary delinquencies,' I must be allowed to refuse all his authority in any decision about cerebral development, and any phrenological truth. His high-sounding propositions must dwindle into absolute insignificance; and I cannot conclude better, than in repeating Mr. George Combe's expressions: (See his answer to Mr. Stone's observations) that 'no opponent is more admirably qualified than Mr. Stone, to bring into contempt the cause of opposition; not a series of criticisms better adapted than the encomiums bestowed on Mr. Stone, to render the press ridiculous, in the eyes of reflecting and enlightened men.'