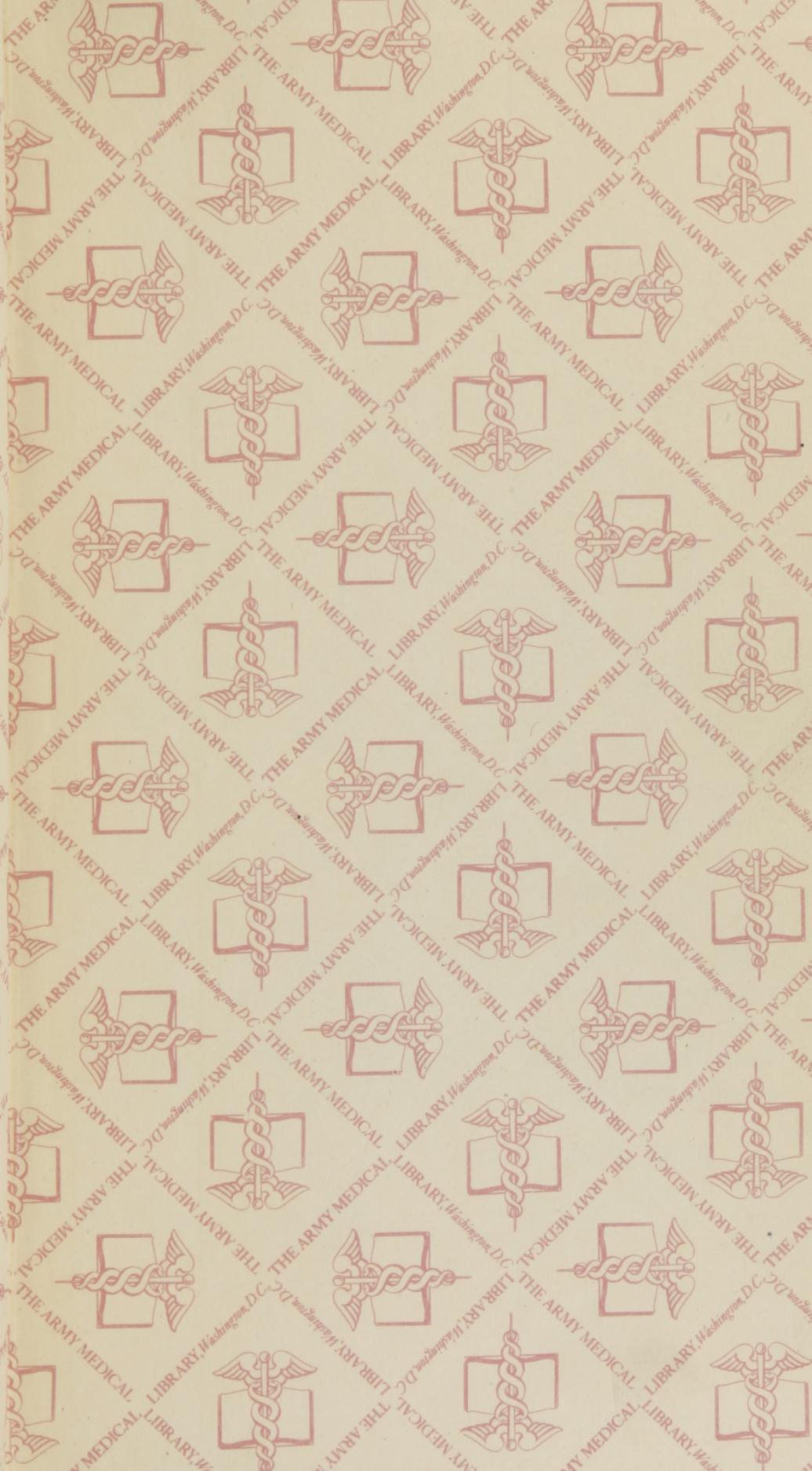


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1839







NOTICE BY THE PUBLISHER.

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SEWALL'S EXAMINATION OF PHRENOLOGY,

IN TWO LECTURES.—WITH PLATES.

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THIS work, which is now offered to the public, has been republished in Europe, and extensively circulated and read in our own country. The first lecture shows what the doctrines of phrenology are ; the second, how far they are consistent with anatomical structure and with reason. The whole argument is condensed into a small compass, and is exhibited in a form adapted to the general reader, as well as to professional men. With what degree of favor the first edition has been received, will appear from the following extracts, taken from critical reviews and journals, and several unpublished letters, which we have obtained permission to annex. Such opinions of the work, coming from such sources, cannot fail to secure for the present edition, the perusal of all who wish to become acquainted with the merits of the discussion.

D. S. KING.

BOSTON, APRIL, 1839.



## NOTICES OF THE WORK.

*From the Hon. John Quincy Adams.*

WASHINGTON, 5 April, 1839.

Dr. THOMAS SEWALL, *Washington.*

Dear Sir:—I have read with great satisfaction your two Lectures upon the Science of Phrenology, which I have never been able to prevail upon myself to think of as a *serious* speculation. I have classed it with alchymy, with judicial astrology, with *augury*,—and, as Cicero says, that he wonders how two Roman augurs could ever look each other in the face without laughing, I have felt something of the same surprise, that two learned phrenologists can meet without the like temptation.

But as it has been said of Bishop Berkley's anti-material system, that he has demonstrated beyond all possibility of refutation, what no man in his senses can believe, so without your assistance, I should never have been able to encounter the system of thirty-three or thirty-five faculties of the immortal soul, all clustered on the blind side of the head. I thank you for furnishing me with argument to meet the doctors, who pack up the five senses in thirty-five parcels of the brain. I am glad that your lectures have been so successful, and hope they will be yet more so in recalling the sober sense of the *material* philosophers of our age, to the dignity of an *imperishable* mind.

I remain, dear sir, very respectfully, your friend,

J. Q. ADAMS.

*From the Hon. Daniel Webster.*

WASHINGTON, March 8, 1839.

MY DEAR SIR:—I read your "*Examination of Phrenology*" when first published. Of the accuracy of the physical and anatomical facts which you state, I am no competent judge; but if your premises be well founded, the argument is conclusive. It is stated clearly and forcibly. I am pleased that a new edition is to be published. I have seen, as doubtless you have, several favorable notices of the work in the English reviews and magazines, authorities of great weight.

With very true regard, yours,

DANIEL WEBSTER.

DR. SEWALL.

*From the Hon. John McLean, Judge of the Supreme Court of the United States.*

RICHLAND, 25 June, 1837.

MY DEAR SIR :—By the last mail I received your interesting Lectures on Phrenology, and have derived from their perusal much instruction and pleasure; and I am not a little gratified, that the opinion I had formed, you have sustained by argument the most conclusive, and by the clearest anatomical demonstration.

I do not profess fully to understand the science of Phrenology,—if it may be called a science,—but having attended, some years ago, a course of lectures upon the subject, and having since heard lectures, and read some of the current publications of the day, I take great pleasure in saying, that I have neither heard nor read any thing which so entirely corresponds with my own views, as your “Examination.” You have taken the most effectual method to expose the absurdity of the system, and so completely have you succeeded, that I do not think the disciples of Gall and Spurzheim will attempt seriously to answer you. Certain I am, that your arguments cannot be refuted, nor the effect of your demonstrations avoided.

I am in a great measure unacquainted with the anatomy of the parts involved in the question; but I have always supposed (to use a law term) that there was a tenancy in common in the brain, and that the theory of its being divided into thirty-four or more compartments, which being more or less prominent externally, indicate the qualities of the mind, was fanciful, if not ridiculous. But we need not wonder at the numerous supporters of phrenology. Quackery is too much the order of the day, and there is nothing so absurd, either in philosophy, politics or medicine, as not to have its advocates.

I hope that your excellent work may be extensively circulated and read.

With great respect, I am, very truly and sincerely, yours,

JOHN McLEAN.

DR. THOMAS SEWALL.

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*From the Hon. John Sergeant, of Philadelphia.*

HARRISBURG, June 18th, 1837.

DEAR SIR :—I am very much obliged to you for the “two Lectures” on Phrenology, received yesterday. They are, in my judgment, quite conclusive of the question, and I am glad to be furnished with an anatomical demonstration of the futility of an asserted system, which never appeared to me worthy of any confidence, though (till you were good enough to send me your book) the grounds of my opinion were too general to be entirely satisfactory. It gives me pleasure, of course, to have it so triumphantly sustained.

Yours, very truly,

JOHN SERGEANT.

DR. SEWALL.

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*From the Hon. Henry L. Pinckney.*

CHARLESTON, July 15th, 1837.

MY DEAR SIR :—I have had the pleasure to receive a copy of your Lectures on Phrenology, and am now able to say that I have perused it with much pleasure and

nstruction, and that I sincerely thank you for having convinced me, by your clear and able exposition, of the fallacy and absurdity of the whole system. I only wonder that your essays were not published long before. The world is so full of humbugs, that every new-fangled imposition should be exposed at once; and as you had given what I consider a death-blow to the nonsense of phrenology, you should have put forth your refutation the moment you had prepared it. I hope that your lectures will be extensively circulated, and noticed, as they should be, by the press.

I am, dear sir, yours, very truly and respectfully,

H. L. PINCKNEY.

Dr. THOMAS SEWALL.

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*From the Rev. Stephen Chapin, D. D., President of the Columbian College, D. C.*

COLLEGE HILL, D. C., March 29th, 1839.

TO DR. THOMAS SEWALL.

Dear Sir:—I am pleased to learn that another edition of your “Examination of Phrenology” is called for.

As I have regarded phrenology as a subtle form of materialism, and an auxiliary of infidelity, whatever its advocates may think or say, I look upon your lectures as having an important moral bearing; and therefore rejoice in the full conviction that your investigation has exploded the whole system.

I agree with you entirely in the opinion, that our young men, old ones too indeed, can find objects of infinitely greater moment to mankind than the study of this baseless hypothesis, for science it should not be called.

Yours, with sentiments of great respect,

S. CHAPIN.

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*From the Rev. Justin Edwards, D. D., President of the Theological Seminary at Andover, Mass., and Prof. Stewart, of the same Institution.*

ANDOVER, March 14th, 1839.

The undersigned have read the treatise of Dr. Sewall on Phrenology with attention and with much pleasure. Without undertaking to give any judgment upon those parts of it which are connected with details, depending upon anatomical skill, to which they lay no claim, they deem the treatise to be a connected and fair statement of the arguments on both sides of the question, and view it as deserving the careful attention of all who wish to become acquainted with the subject.

JUSTIN EDWARDS,  
MOSES STEWART.

*From the Rev. Ruel Keith, D. D., President of the Episcopal Theological Seminary, D. C.*

THEOLOGICAL SEMINARY, near ALEXANDRIA, March 19th, 1839.

DEAR SIR:—As I am one of those who believe the pretensions of phrenology not only to be false, but very prejudicial to the interests of morality and religion, inasmuch as they degrade man from the rank of a free and accountable being, to that of a mere physical and irresponsible machine, I have heard, with great pleasure, of the intended republication of your admirable work on the subject. These pretensions had often been shown to be groundless and absurd by arguments drawn from the philosophy of the mind, but the public is indebted to yourself for the first work, so far as I know, in which this has been done by an appeal to plain matter of fact, to the form and structure of the cranium and the brain. Phrenology, therefore, must now be regarded as not only refuted by the logic of the metaphysician, but as absolutely demolished by the dissections of the anatomist. And we may indulge the hope, that its mischievous influence, notwithstanding the zeal of its advocates and the gullibility of the public, has been effectually counteracted. It would be strange indeed, should it continue longer to be viewed by any of the intelligent and reflecting portion of mankind in any other light than as an exploded humbug. Your work has already done much good. Hoping it may yet do much more, and that you may thus receive the reward which you most deserve,

I remain your friend and servant,

RUEL KEITH.

TO DR. THOMAS SEWALL.

*From the pen of the late President Fisk, D. D., of the Wesleyan University, extracted from his letter to the editor of the Christian Advocate and Journal.*

“EXAMINATION OF PHRENOLOGY.”

MR. EDITOR:—I have just finished the perusal of a work, entitled “An Examination of Phrenology, in two Lectures, by Thomas Sewall, M. D., Professor of Anatomy and Physiology, Washington City.” This work is fresh from the press, and has not therefore been long enough before the public to be generally read. But I venture to avail myself of the feelings produced by this early perusal of it, to do what little I may to call to it the attention of the public.

Philosophy calls nothing *hers*, but *truth*; and for this she digs as for *hid treasures*. And if she thinks she has found a precious metal, none has a greater interest than she has to subject it to the crucible and the test. And he who will help her in this matter is her friend, however close the analysis, and however rigorous the investigation.

This is the work in which Dr. Sewall has engaged, and for which every lover of truth will thank him, whatever he may think of the results to which the doctor has come, in his lectures. And the more so, because the subject is treated with all that fairness and candor which its importance and the reputation of the advocates of this system demand; at the same time, that it is handled with that manly science and professional skill for which Dr. S. is already so favorably known to the American public. These lectures are also suited to popular reading; for they are divested as

much as may be of professional technicality, and are illustrated by plates, and by a plain deduction of anatomical and physiological facts, which can be understood and appreciated by all.

The question then is, will the public give this side of the question a careful and attentive hearing? I say *this side*, for the author's investigations have led him to conclusions unfavorable to the science of phrenology. He has shown, as he thinks, and such, on reading the work, is, I confess, my own opinion, that it is anatomically and physiologically absurd to rank practical phrenology among the sciences.

This treatise commends itself to public patronage by numerous considerations. First, the reputation of the author is a sufficient guarantee to the public, that it is no ordinary, common-place production. 2. The claims which this modern system makes upon public confidence, the great advantages with which it has been pressed upon the community, and the proportionally small influence that has been exerted to question its claims, demand, in the name of truth and consistency, that this manly, scientific and lucid investigation of its pretensions should be read as extensively as the works in its favor. The American public owe this to themselves and to truth. The Institute of France has lately decided, after a careful investigation, that there is not enough of definiteness and certainty in this system, to entitle it to the rank of a science. And shall we suffer it to pass among us as a science, without investigation? Shall we, after hearing but one side, enrol it by acclamation, upon the records of science, and the registry of philosophy; and thus leave it even possible, for future generations to laugh at our credulity, while they blot it from the tablet?

Finally: whoever wishes to have a general view of this important part of the human form divine, without troubling himself with any extended technical and professional study, will find in this little work enough to compensate him for his money and time, although he take no interest in the main question here discussed.

W. FISK.

WESLEYAN UNIVERSITY, MIDDLETOWN, April 17, 1837.

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*From the Biblical Repertory and Princeton Review. April, 1838.*

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

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*From the Methodist Magazine and Quarterly Review for July, 1837.*

The Lectures of Dr. Sewall must be regarded by all parties as a most timely publication. The subject is, undoubtedly, one of high and commanding importance

in every aspect. It involves physical, mental and moral science; for if phrenology be true, in whole or in part, all the learning of the schools on these several topics is exploded, and "the world is turned upside down;" and on the other hand, if it be false, it is calculated, by its specious plausibility and pedantic pretensions, to inflict irremediable wounds both upon philosophy and religion. It is, therefore, strictly within the province of science and philanthropy to give to the whole subject a rigid investigation. This its enemies need, to arm them in the conflict with its zealous advocates, from which it is impossible to escape; and the honest friends of the science ought not to shrink from such an ordeal, if conducted with candor and liberality.

Professor Sewall, in these two lectures, has taken a course the most unexceptionable in all respects that can well be conceived. In the first lecture, he gives a succinct, but comprehensive history of phrenology, together with a brief exhibition of its nature, its claims, and the arguments by which it is vindicated by its authors and disciples. And in the second lecture he examines the science by the only true criterion, the anatomical structure and organization of the cranium and brain. The warmest admirer of phrenology will be constrained to admit that the author has not misrepresented the science in his first lecture, and such will read it without finding any want of candor or magnanimity in the exhibition of its principles or claims. Indeed, it is obviously his design to give the true character of phrenology, so that the reader may discover its multiplied and important bearings, and appreciate the propriety of a patient and sober examination. And indeed the author attaches censure to those who have caricatured and satirized the science and its votaries, and maintains that it is entitled to other treatment than that of ridicule.

But, in the second lecture, Professor Sewall has grappled with the "science" in a style of manly and logical reasoning which shows him to be a master of the subject. As an able and practical anatomist, he has dissected both phrenology itself, and the human head, of which it speaks with such oracular dogmatism; and as a physiologist and metaphysician, he has contented himself with environing the science with inextricable difficulties; and although this is accomplished by a few brief hints, yet the sect will find them to be absolutely unanswerable. Indeed, the plates which accompany the volume, even if unaccompanied by the argument, would be sufficient to overthrow the whole fabric of phrenology; for it is impossible to examine these drawings, and the summary explanations which accompany them, without perceiving the *physical impossibility* of determining, from any inspection or admeasurement of the skull, either the "volume of the brain," whether absolute or relative, or the size, much less the configuration of the organs into which "the science" has arbitrarily divided the structure of the brain.

By the publication of these lectures, Professor Sewall has greatly added to his well-earned professional reputation, and performed an essential service to the cause of science and religion. He deserves and will receive the thanks of the public for thus interposing the shield of science to protect the young and rising generation from the ingenious and mischievous influence of a species of philosophy which might else deceive by its learned empiricism, and beguile from the truth by the gaudy plumes it has borrowed from true philosophy, to conceal its errors and fol- lies under the name of discoveries and facts. Phrenologists can no longer clamor for candid and liberal opposition, for these lectures have furnished facts and arguments which will give employment to the whole clique for a century.

*From the American Medical Intelligencer. Edited by Professor Dunglison, of Philadelphia. May, 1837.*

**SEWALL'S LECTURES ON PHRENOLOGY.**—Two valuable lectures on a topic which, although much has been said on both sides, has by no means lost its interest with the profession or the public, whilst it is often used as a means of gulling the latter. No one who reads Dr. Sewall's book will, we think, be disposed to place much faith in the dicta of the itinerant craniologist. It is conceived in the true spirit, and conveyed in the language of science.

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*From the London Literary Gazette, of August 12, 1837.*

The title page informs us, that this volume (Dr. Sewall's Examination of Phrenology) was published by request, and we do not wonder at it, for it contains one of the ablest anatomical expositions of the gratuitous assumptions of phrenology which have appeared either in America or England.

Dr. Sewall takes up the question like a man intimately acquainted with the structure and physiology of the human frame, and he demonstrates, with the greatest clearness and precision, the leading absurdities of the hypothesis, maintained by the disciples of this German school. He does not meddle with their metaphysical or moral and religious doctrines, but contents himself with demolishing their theory, as founded on the size, shape, and consistency of the brain, and the form of the bony casing in which it is lodged. In his first lecture, he gives a good retrospective summary of its history, and we have only to apologize for having made selections from it instead of touching upon all the grounds he has laid down. \* \* \* We consider the reasoning of Dr. Sewall to be unanswerable. \* \* \* The lectures contain much sound advice, which we rejoice to circulate through our columns. They do credit to the Columbian College, within whose walls they were propounded."

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*From the London Monthly Review, of September, 1837.*

Ridicule has done much to throw the theory (of phrenology) into disrepute, and argument not less. Of the latter sort of these hostile weapons, the present lectures furnish an effective specimen, for with a calmness and candor which cannot be surpassed, and a mastery of knowledge as well as of ratiocination, that is resistless, Dr. Sewall disposes of the subject, and shows that phrenology has withdrawn the attention of many sanguine and ingenious minds from far nobler and more profitable pursuits. \* \* \* In his second lecture, our author pursues his subject by endeavoring to show how far the science is reconcilable with the anatomical structure and organization of the brain, the cranium and other parts concerned; and here it is that his effort is particularly successful and cogent. \* \* \* \*

We have now, besides giving a sketch of the early history of phrenology, which to few of our readers can be more than the means of refreshing their memories, presented some passages from Dr. Sewall's examination of its claims, in which examination some new views have been suggested and pursued in a manner which we think will give a severe blow to the theory.

*From the Medico-Chirurgical Review and Journal, of April, 1837. Edited by James Johnson, Physician Extraordinary to the late King, and Henry James Johnson, Esq.*

Dr. Sewall is evidently a well-informed man, and as evidently a well-intentioned man. He examines phrenology with no malice prepense, with no spirit of dogmatism, with no wish to bully. If he disputes the conclusions with the phrenologists, he does so after arguing the question with them, and the grounds of his dissent, as well as the process of reasoning which leads to it, are openly exposed.

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*From the North American Review, of October, 1837.*

The descriptions (of phrenology), though necessarily brief, are clear and intelligible, and, so far as we can perceive, fair and impartial. No indication appears in this (the first) lecture, that the author has any other object in view than to teach phrenology to his class, as it would be taught by a confident believer in its doctrines. \* \* \* Some other considerations follow, and the lecture concludes with an eloquent appeal to the young men to whom it was addressed, to seek out and follow such objects of pursuit as shall lead to useful practical results, rather than to be captivated by fascinating speculations. \* \* \* To those, however, who feel a stronger interest in the question, and especially to those who would see how the matter-of-fact teachings of anatomy bear upon it, we would commend Dr. Sewall's lectures. He has discussed the subject with ability, and even those who are not convinced by his arguments (and it is not to be supposed that those who are already adherents of the doctrine will be) will acknowledge that he has treated the subject with fairness, and its advocates with courtesy.

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*From the American Journal of Medical Sciences, of August, 1837.*

This (Dr. Sewall's) is the most dispassionate examination of the phrenological doctrines, and the strongest array of argument against its validity, that we have met with. The first lecture comprises a sketch of the origin and progress of phrenology, with an exposition of its leading doctrines, and of the principles upon which it is founded. In the second lecture, the question is examined of how far the science is reconcilable with the anatomical structure and organization of the brain, the cranium, and other parts concerned. The subject is treated in a very plain and lucid manner, so as to be perfectly intelligible to general readers, and is, moreover, illustrated by some well-executed and interesting plates. The learning and high standing of the author entitle his views to a respectful and attentive consideration. \* \* \*

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DR. SEWALL'S "EXAMINATION OF PHRENOLOGY, IN TWO LECTURES," which was recently passed through the press in this country, and which has so much annoyed some of the Phrenologists, has, it appears, been republished in London. The following is from one of the reviews of that metropolis :

"Art. XIV. AN EXAMINATION OF PHRENOLOGY. BY THOMAS SEWALL, M. D. London : Hodson. 1833.—Although we may have said that the phrenological

system has the better of the Owenite in respect of talent, respectability on the part of its advocates, and its feasibility, we are far from giving in to its dogmas—absurdities, if you will. Without, however, entering upon a vexed question, we have now to say, that Mr. Sewall's Examination, of which, some months ago, we took particular notice, is a clincher. There is the reasoner, the practical expounder, and the calm, dignified, and self-possessed refuter, exemplified in every page."

*"Monthly Review, London, Nov. 1838, page 461."*



Fig. III.

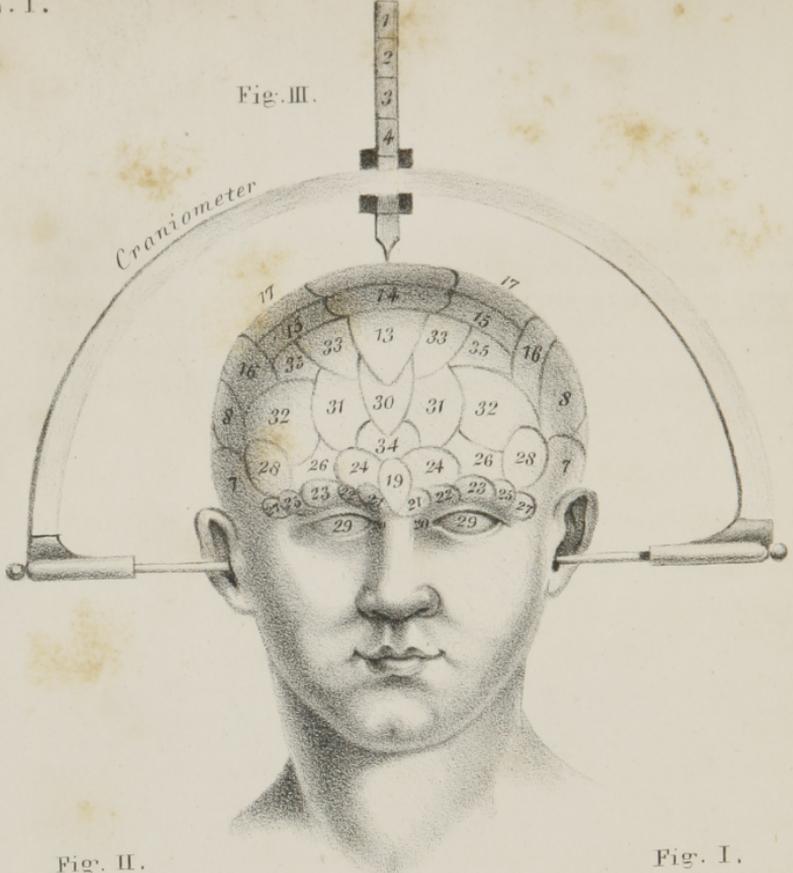


Fig. II.

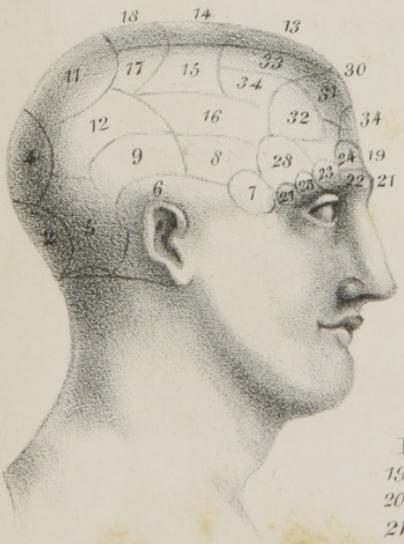
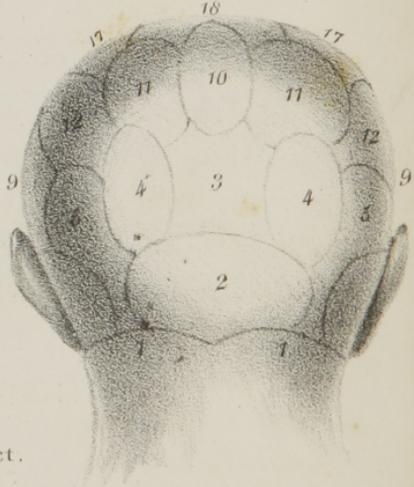


Fig. I.



T Moore's Lith. Easton

Fig. II. Sentiments.

- 10 Self Esteem
- 11 Love of Approbation
- 12 Cautiousness
- 13 Benevolence
- 14 Veneration
- 15 Hope
- 16 Ideality
- 17 Conscientiousness
- 18 Firmness

Fig. III Intellect.

- 19 Individuality
- 20 Form
- 21 Size
- 22 Weight
- 23 Colouring
- 24 Locality
- 25 Order
- 26 Time
- 27 Number
- 28 Tune
- 29 Language
- 30 Comparison
- 31 Causality
- 32 Wit
- 33 Imitation
- 34 Eventuality
- 35 Wonder

Fig. I. Propensities.

- 1 Amativeness
- 2 Philoprogenitiveness
- 3 Concentrativeness
- 4 Adhesiveness
- 5 Combativeness
- 6 Destructiveness
- 7 Constructiveness
- 8 Acquisitiveness
- 9 Secretiveness

AN

# EXAMINATION OF PHRENOLOGY

IN TWO LECTURES,

DELIVERED TO THE STUDENTS OF THE COLUMBIAN COLLEGE,  
DISTRICT OF COLUMBIA, FEBRUARY, 1837.

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BY THOMAS SEWALL, M. D.

PROFESSOR OF ANATOMY AND PHYSIOLOGY.

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SECOND EDITION REVISED AND ENLARGED.



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BOSTON:  
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DUTTON AND WENTWORTH'S PRINT.

## LECTURE I.

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GENTLEMEN :

THE object of the lectures which I am invited to deliver, will be an examination of Phrenology ; a science which, though of recent date, has spread with great rapidity, and is at this time exciting a general and strong interest in the scientific circles of Europe and this country.

The account which we have received of the origin and progress of this subject, is singular and interesting.

About half a century ago, Dr. Gall, an ingenious and eccentric physician of Germany, was led, as he says, by observation, to the fact, that the various mental manifestations of different individuals, were accompanied by a peculiar conformation of the cranium. His attention was at first drawn to this subject, by observing, while quite a youth, that each of his brothers and sisters, his school-fellows and companions in play, possessed some peculiarity

of talent or disposition, some aptitude or propensity, which distinguished them from others. One was modest, another haughty; this one frank, that deceitful; this peaceable, that disputatious and quarrelsome. In their childish sports, he found some amused themselves by cutting figures in wood, or drawing them on paper, in painting, or the cultivation of a garden; while others abandoned themselves to the noisy games, or traversed the woods in pursuit of flowers, birds' nests and butterflies. One was the carpenter of the house, and was always seen with tools in his hand; and the greatest pleasure of another, on the contrary, was to assist at the mass, and to ring the church bells.

They were equally diversified in their capacities for study. Some were distinguished for the beauty of their penmanship, some for their success in arithmetic, others for the talent of acquiring a knowledge of natural history, or of languages. The composition of one was remarkable for elegance, while the style of another was stiff and dry; a third connected his reasoning in the closest manner, and clothed his arguments in the most forcible language.

In the course of his observations, he found that some of his school-fellows were distinguished for accuracy and power of memory, and that those thus gifted had prominent eyes.

He soon came to the conclusion, that if memory for words was connected with an external sign, the

same might be the case with other intellectual powers ; and from this moment, he says, every individual, distinguished for any peculiarity, became the object of his attention and study. Great musicians, great poets, great painters, great mathematicians, were carefully examined by him, and their characters investigated.

And while he noticed this coincidence between the external form of the head and the character of the mind, he tells us that he referred the whole influence, whatever it was, to the brain, and not to the bony casement which surrounds it.

Thus furnished with so many proofs of the coincidence between the development of different parts of the brain, and the display of the moral and intellectual character of man, he was compelled to renounce the obscure and incomprehensible doctrines of the schools, and to apply himself to the study of the primitive faculties. To this end he visited hospitals and insane asylums, prisons, and the seats of justice ; was introduced to the courts of princes, to schools and colleges, and wherever he heard of an individual, distinguished in any way for remarkable endowments, or for deficiency, he observed and studied the developments of his head.

In 1796, Gall, for the first time, gave a course of lectures upon phrenology at Vienna, the place of his residence. These he continued annually, for five years ; when the Austrian government issued

an order in January, 1802, that they should cease ; his doctrines being considered as leading to materialism, and dangerous to the cause of morality and religion. The subject, however, continued to be studied with greater zeal than before ; the prohibition having strongly stimulated public curiosity ; and Gall, finding his success in propagating his new theory, and in raising up friends to its support, greater than was anticipated, in 1804 associated with him his favorite pupil, Spurzheim. From this time they were constantly together, and their labors were in common.

In March, 1805, Gall and Spurzheim left Vienna in company, and travelled through Germany, Prussia, and Switzerland, to France ; visiting most of the considerable towns and villages, and every where teaching their doctrines, and studying the organization of man. They tarried but a short time in any one place ; too short a time, says Gall, to form practical pupils. “ The principles were explained, the developments shown, and we were off.” Dr. Gall even gave the advice not to repeat the experiments, since it was difficult to do so with success.

It was at Berlin, and the fortress of Spandau, where they first put their doctrine to the test of experiment, by its application to congregated multitudes. Here, in the presence of the chiefs of the establishment and others, they were conducted to the prison at Berlin, where upwards of two hun-

dred culprits, of whom they had never heard till that moment, to whose crimes and dispositions they were total strangers, were submitted to their inspection. Dr. Gall, it is said, not only discovered, with surprising readiness, their natural propensities, but also indicated the offence for which each was imprisoned. A few days after they made a visit to Spandau, where four hundred and seventy heads were submitted to inspection, and with a similar result.

In November, 1807, Gall, assisted by his zealous associate, delivered his first course of lectures in Paris; illustrated by a numerous collection of skulls, heads, and casts, and by a multiplicity of physiological and pathological facts. Great was the ardor excited among the Parisians by their presence; teaching, as they did, a new doctrine, and by which it was supposed they could tell men's fortunes, and predict their future career, by an inspection of their heads.

In 1808, Gall and Spurzheim presented a joint memoir on the Anatomy and Physiology of the Brain to the French Institute, which at that time was in its full glory, and one of the first scientific societies in Europe. The chief of the anatomical department, and the first member of this learned body to whom Drs. Gall and Spurzheim addressed themselves, was M. Cuvier. He received the German Doctors with politeness, attended their

lectures, and witnessed their dissections of the brain.

A committee was appointed by the institute to report upon the memoir, consisting of Tenon, Portal, Sabbatier, Pinel and Cuvier ; all men of known candor and ability. M. Cuvier drew up an elaborate report, containing within a short compass, the whole substance of the memoir ; but while it was approved by the institute, it was not such as to satisfy Gall and Spurzheim, or to inspire confidence in their views of the anatomy and physiology of the brain. Some merit was awarded them for the improvements they had made in the manner of dissecting the brain, and for a few other innovations but many of the discoveries, which they claimed as original, were traced to anatomists who had preceded them, and their main positions were regarded as extremely hypothetical. Such was the reception which phrenology met with from the French Institute.

In 1809, Gall and Spurzheim commenced publishing their great work, entitled *The Anatomy and Physiology of the nervous system in general, and of the brain in particular, with observations upon the possibility of ascertaining several intellectual and moral dispositions of man, and animals, by the configuration of their heads.*—Four volumes, folio, with an atlas of one hundred plates, the completion of which occupied ten years.

In 1813, they separated, and from this time

each pursued his phrenological investigations by himself. Dr. Gall made Paris his home, and acquired great notoriety in his favorite science, considerable distinction as a writer and philosopher, and also realized a handsome fortune. He died in 1828, of a paralytic shock, in the seventy-second year of his age. He was followed to the place of interment by an immense concourse of friends and admirers, five of whom pronounced discourses at his grave. His death gave rise to a succession of eulogiums and attacks in the French newspapers.

Spurzheim, while he considered France his residence, travelled extensively through Germany, Switzerland, Prussia, England, Scotland, and Ireland, making observations, teaching phrenology, and collecting facts.

He returned to Paris to reside in 1817, where he regularly gave two courses of lectures upon phrenology annually; but complained that during his absence, the subject had in a great measure been laid aside and forgotten. In 1824, he married a lady of fine talents and accomplishments, who entered deeply into the spirit of his enterprise. This event seems to have given a fresh impulse to his investigations, and to have inspired him with increased zeal in extending the influence of phrenology.

Spurzheim, in 1832, visited the United States. His objects were to study the genius and character of our nation, and to establish and propagate the doctrines of phrenology. He landed in New York

on the fourth day of August, and proceeded almost immediately to Boston. Here he was received with all the respect and kindness for which the inhabitants of that ancient metropolis are so distinguished in their treatment of strangers. He was conducted to the various public and private institutions, was introduced to the literary and scientific personages of distinction, and every thing was done to render his stay agreeable, and to promote the objects of his visit. He was invited to deliver lectures, to examine heads, and to explain his doctrines. But he had scarcely entered upon his career, when he was struck down by a fever, of which he died on the tenth of November, in the fifty-sixth year of his age. His remains were interred at Mount Auburn, with every mark of respect, where a neat and beautiful monument has been erected to his memory, by the generous and high-minded citizens of Boston.

Long before the arrival of Spurzheim in this country, his works, as well as those of Gall, had been extensively circulated and read; and it is doubtful whether any country has given the subject of phrenology a more respectful consideration than the United States. Works have been written upon the subject, societies have been formed, lectures delivered, and zealous and able advocates have been raised up to spread and defend its doctrines. At this time there is scarcely a town, or village, in which its general principles are not more or less understood.

The works of Gall and Spurzheim are numerous, and evince great industry and perseverance, deep research and reflection, and, aside from phrenology, contain a great deal of general information. Most of their books have been republished in the United States.

Such is a brief sketch of the history of phrenology, as furnished by Dr. Gall and his friends. Whether he was the originator of the science, or derived his first intimations upon the subject from some previous writers, is a question which I shall not discuss. Certain it is, that ideas, in many respects similar to those of Gall, were entertained and promulgated long before his time.

Aristotle, the Grecian philosopher, who wrote more than three centuries before the Christian era, considered the brain as a multiplex organ, and assigned to each part its appropriate functions.

In the forepart of the cerebral structure, he places common sense; the middle portion he assigns to imagination, judgment and reflection; the back part he makes the great store-house, or seat of the memory.

This was the account of the divisions of the brain given by Aristotle; and however crude it may appear in its details, it was followed by many writers in the middle ages, with very little variation. But, while he regarded the brain as multiplex, he considered a small head as the standard of perfection, and contends that it is indicative of

a superior intellect. In this respect he is at variance with Dr. Gall and other phrenologists of the present day.

From various passages found in the works of Galen, it is evident that he was acquainted with the views of Aristotle upon this subject, and that he admitted the same doctrines, with some modifications.

As late as 1296, Bernard Gordon, an eminent French physician and teacher at Montpellier, closely follows Aristotle in his divisions of the brain, and appropriated to each part particular faculties.

In the thirteenth century, Albert the Great, Archbishop of Ratisbon, one of those who had labored long for the discovery of the philosopher's stone, actually formed a head, mapped out into regions in conformity with the divisions of the brain by Aristotle and others.

In 1491, Peter Montagnana published an engraving of the head, in which he represents the seat of the *sensus communis*, a *cellula imaginativa*, a *cellula estimativa seu cogitativa*, a *cellula memorativa*, and a *cellula rationalis*.

Michael Servetus, whose death took place at Geneva, in 1553, places the different mental faculties in different parts of the brain. He supposed that the two anterior cerebral cavities were for the images of external objects; the third ventricle the seat of thought; the aqueduct of Sylvius the seat

of the soul ; and the fourth ventricle the seat of the memory.

In 1562, Ludovico Dolci, a learned Venetian, published a work upon preserving and strengthening the memory ; and, in illustration of his principles, he mapped out a head into regions, more elaborately than any one which had previously been formed.

In a work of Jo. Baptista Porta, an eminent Neapolitan philosopher and physician, published at Leyden, 1586, entitled *De Humana Physiognomia*, there are contained so many of the principles and illustrations of the phrenology of the present day, that it may well be questioned whether hints have not been drawn from this source by later writers. He proposes to discover the intellectual and moral character of man, by his physical organization, color, etc., and while he embraces the whole body, he lays particular stress upon the configuration of the head. He finds analogies between the human species and several races of the brutes ; but discovers the general characteristics of man in the lion, and of woman in the leopard ; and concludes by arranging under appropriate heads, the various signs by which the intellectual and moral character and disposition of every individual may be determined.

A folio edition of this work is found in the library of Harvard College, and contains a large number of plates of the heads of persons, placed by the side of those of certain animals, illustrative

of his doctrines ; a few copies of these I am enabled to exhibit to the class, through the kindness of Professor Greenleaf.

As late as the middle of the seventeenth century, the celebrated Dr. Thomas Willis, a graduate and for some time a physician at Oxford, and afterwards physician to King Charles II, published a work, in which he asserts that the corpora striata are the seat of perception ; the medullary part of the brain that of memory and imagination ; the corpus callosum that of reflection ; and the cerebellum he considers as furnishing the principle of voluntary motion.

But by far the nearest approach to modern phrenology was made by that extraordinary man, Baron Swedenborg, the author of the system of doctrines of the New Jerusalem church. He not only considered the brain as composed of a plurality of organs, but maintained the principle, that the exercise of the different faculties of the mind changes the configuration of the head, by promoting the development of their respective organs. The following extract will give an idea of his views upon this subject, and will establish also the authenticity of the source from which they are taken.

Capt. F. Walden published at Copenhagen, in 1806, a biography of the celebrated Swedenborg, along with some extracts from his writings. It is very remarkable, as is shown by this work, that the distinguished Swede, about fifty years previous

to Dr. Gall's theory, should have entertained a very similar opinion. The following are the words of Swedenborg : " Every man that is born has a disposition to all sorts of evil, which must be checked by education, and, as far as possible, rooted out. This is first to be attempted by correction and punishment ; then by good society and example, which lead to imitation ; and at last good is secured upon a true and reasonable religious root. When these conditions are all observed, *it is indicated by the beautiful skull of the individual.* On the contrary, should the education be neglected, or no sudden misfortune, nor opposition, hinder the first outbreakings of evil, or disorder, the evil afterwards becomes habit, and produces peculiar wishes, both in design and practice, *which cause the formation of a badly shaped skull.* The cause of the difference of skulls, in such cases, is this : The peculiar distinctions of man, will and understanding, have their seats in the brain, which is excited by the fleeting desires of the will, and the ideas of the intellect. Near the various spots where these irritations produce their effects, this or that part of the brain is called into a greater or less degree of activity, and *forms along with itself corresponding parts of the skull.*"

But I will not detain you with further details upon the history of the science. Those of you who may wish to pursue the investigation, will find the subject amply discussed by that erudite and able

author, Professor Dunglison, in his admirable work on Human Physiology, in his account of the mental faculties.

I will only remark, that the fact of the early writers having known something of phrenology, affords but slender proof, that Dr. Gall borrowed his notions from them ; since it is not uncommon for men of genius to make the same discoveries, strike out the same trains of thought, and pursue the same course of investigation without concert, or the slightest knowledge of each other's pursuits.

Whatever may be the truth with regard to the origin of phrenology, it is through the writings of Dr. Gall, supported by the untiring labors and invincible zeal of his pupils and disciples, that the science has been widely spread through the civilized world. And it is by these labors, and by this ceaseless spirit of exertion, that the subject has been brought to our shores, and has afforded the occasion to investigate it, and ascertain whether it furnishes us with that infallible guide in the study of human character, which has been pretended.

It seems proper that we should investigate it, because it has enlisted so many men of talents in its support, and become a subject of so much interest as to excite discussion in almost every circle, and on every occasion ; and because, too, it is represented to be a science, the knowledge of which is all-important to the well-being of society. A science, which its authors and disciples gravely

tell us, looks down with compassion on the shallow distinctions and puerile speculations of *Bacon, Locke, Berkeley, Hartley, Reid* and *Stewart*. These men tell us, that up to their own time, the philosophy of man was a perfect waste, and that the discoveries of Newton himself were comparatively insignificant ; while that of phrenology is the greatest and most important that was ever communicated to man.

The discoveries, says Mr. Combe, of the revolution of the globe, and the circulation of the blood, were splendid displays of genius in their authors, and interesting and beneficial to mankind ; but their results, compared with the consequences which must inevitably follow from Dr. Gall's discovery of the functions of the brain, sink into relative insignificance.

It may be well, therefore, that we should look into a science which holds up these lofty pretensions, and ascertain how far it is entitled to confidence.

My object on the present occasion, will be briefly to present to your view some of the leading principles of phrenology, and then to ascertain how far these are sustained by the anatomical structure of the parts more immediately concerned.

1. Phrenology, like most systems of mental philosophy, makes the brain the material organ of the mind.

2. It assumes the position, that just in proportion

to the volume of this organ, other things being equal, will be the power of the mental manifestations.

3. That the exercise of the mind promotes the development of the brain.

4. That the character of the mind is to be determined by the configuration of the brain.

5. That the brain is a multiplex organ, and composed of a definite number of compartments, or sub-organs, each of which is the appropriate seat of a propensity, sentiment, or intellectual faculty.

6. That the mind consists of a definite number of original powers, which are divided into propensities, sentiments, and intellectual faculties.

7. That to the existence of each original propensity, sentiment, or intellectual faculty, a specific cerebral organ is necessary, and that every specific mental operation can be performed, only by means of an appropriate organ.

8. That the brain is composed of at least thirty-five phrenological organs, or pairs of organs, all commencing at the medulla oblongata, or top of the spinal marrow, and radiating to the surface of the brain. That they commence at a point, and like so many inverted cones, become more and more voluminous, until that portion which is bounded by the walls of the cranium, presents a surface corresponding in form, size, and situation, with the figured skulls, delineated in plate I., fig. ., II., and III.

9. That just in proportion to the development, or size of each of these organs, or cones, will be the strength of the particular faculty of which it is the residence. The size of the organs to be estimated by their length and breadth, and the extent of their peripheral surface, and consequently that each prominence of the skull indicates the degree of development of that organ of the brain which is situated immediately under it, and of course, the power of the intellectual faculty, sentiment, or passion, of which it is the residence.

10. That the exercise of any particular faculty of the mind, promotes the development of the appropriate organ of such faculty.

It is upon the principles here laid down, that the whole system of phrenology is based.

“By a knowledge of Phrenology and Craniology,” says a distinguished writer upon this subject, “the experienced phrenologist is enabled to judge of the natural amount, and the general character of the intellects of individuals, by an inspection of their heads.”

In accordance with these principles, the cranium has been mapped out into thirty-five distinct territories, corresponding, as is supposed, in position, form and size, with the bases of the different organs of the brain.

When any one, or more, of these compartments is so prominent as to rise above the neighboring parts of the skull, the organ which is im-

mediately under it, is said to be full, and the faculty of which it is the seat, proportionably strong and vigorous.

These thirty-five organs have been grouped, so as to constitute three distinct families, as represented in Plate I., fig. I., II., and III.; one division for the *propensities or passions*, one for the *moral sentiments*, and a third for the *intellectual faculties*. The first group has been appropriated to the back and inferior region of the brain; the second, to the superior portion; and the third, to the anterior portion of this structure.

Having thus presented to you a few of the leading principles of phrenology, I shall, without detaining you longer, point out the position of the individual organs, and briefly sketch the leading characteristics of each of their respective functions, as described by phrenologists.

## I. PROPENSITIES.

### 1. AMATIVENESS.

This organ is situated in the cerebellum, or the lower part of the occiput. When full, it gives a backward protrusion of the occipitis, and a thickness to the upper part of the neck. Its function is sexual love. Numerous instances are given by phrenologists, of the development of the organ, corresponding with the intensity of the function.

## 2. PHILOPROGENITIVENESS.

Situated at the occiput, immediately above Amativeness, and corresponds with the occipital protuberance. Its function is the love of offspring. It is more fully developed in women than in men, and its development corresponds with the strength of the propensity. Of twenty-nine females who had been guilty of infanticide, it is said that the development was defective in twenty-seven. When fully developed, it supports the mother in her toils, and even renders delightful the cares and troubles of rearing a helpless offspring. It is large in the Hindoo, the Negro and Charib skulls.

## 3. CONCENTRATIVENESS.

Situated immediately above Philoprogenitiveness, and below Self-esteem. Its function is to maintain two or more powers in simultaneous or combined activity, so that they may be directed towards one object. Where it is fully developed, persons possess a command over their feelings and intellectual powers, so as to be able to devote them, in their whole vigor, to the pursuit which forms the object of their study for the time ; and hence they produce the greatest possible results. It is small in the American Indian, and large in the Negro and European.

## 4. ADHESIVENESS.

Situated on each side of Concentrativeness. The faculty produces the instinctive tendency to attach ourselves to surrounding objects, animate and inanimate, and to embrace and cling to the object of our affection. It disposes to friendship, and society in general. It often shows itself in attachment to horses, dogs, and other animals. When largely developed, it produces excessive grief at the loss of friends ; and in leaving one's country, the disease called Nostalgia, so common to the Swiss. When feeble, it may render a man an Anchorite or a hermit.

## 5. COMBATIVENESS.

Situated on each side of the head, at the inferior mastoid angle of the parietal bone. The organ, when full, produces active courage, and if very full, a propensity to attack. A considerable endowment is indispensable to a great and magnanimous character. It gives that boldness to the mind which enables it to look undaunted on opposition, to meet, and if possible, to overcome it. When largely developed, it inspires with the love of contention, leads to a quarrelsome disposition, and imparts pleasure in disputation and fighting. When deficient, the individual cannot resist attacks, nor make his way, where he must invade the prejudices, or encounter the hostility of others. The

organ is generally large in persons who have murdered, from the impulse of the moment. It is large in Robert Bruce, David Haggart, Mary Macinnes. It is large also in the Charibs, and small in most of the Hindoos.

#### 6. DESTRUCTIVENESS.

Situated immediately above, and extends a little backward and forward, from the external opening of the ear, and corresponds to the squamus plate of the temporal bone. The faculty produces the impulse to destroy in general. Combativeness gives the desire to meet and overcome obstacles, and having vanquished them, the mind under this inspiration pursues them no farther. Destructiveness prompts to extermination. Anger and rage are the manifestations of this passion, and cruelty is the result of its excessive energy, uncontrolled by benevolence and justice. In cool, deliberate murderers, and in those who delight in cruelty, the organ is conspicuous. It is large in hunters, and keen sportsmen, without exception. It is large in the bust of Dean, Pallet, Thurtell, Heaman ; and in the skulls of Bruce, Gordon, Hussey, Nisbet, Bellingham, Buchanan, Rotherham, Albert ; in the skull of Tardy, the pirate ; and it is said to be very large in the head of a living Scotch divine of great celebrity, now residing in Edinburgh.

## 7. CONSTRUCTIVENESS.

Situated immediately over, and adjoining Destructiveness. When very fully developed it produces unusual breadth of the head, from temple to temple. The faculty inspires with the tendency to construct in general, but the particular direction in which it is exerted, depends on the other predominant faculties of the individual. If combined with large Combativeness and Destructiveness, it may be employed in fabricating implements of war. If joined with large Veneration, it may tend towards erecting places of religious worship. If joined with large Form, Imitation, and Secretiveness, it may inspire with a love of portrait painting. The organ is indispensable to all who follow operative mechanical professions. It is large in Raphael, Brunel, Herschel, and Perkins. It is small in the New Hollanders. It is large in all animals distinguished for their ingenuity in building, as the beaver, field-mouse, and the like.

## 8. ACQUISITIVENESS.

Situated immediately behind Constructiveness. Its function is the love of acquisition generally, without reference to the use to which the objects, when attained, may be applied. It takes its direction from the other faculties, and hence may lead to the collecting of coins, minerals, and other

objects of curiosity, or of science, as well as money. If men had always provided only what they could individually enjoy, they would never, it is said, have emerged from a savage condition ; the function of this organ, therefore, is considered as indispensable to the continuance of civilization. It is the foundation of wealth, of covetousness, and of luxury, in civilized life. When largely developed, and not regulated by the higher faculties, it often leads to dishonesty, and even theft. A chaplain in the Prussian army, in whom it was large, and who in other respects was a worthy and pious man, was remarkable for stealing pocket-handkerchiefs, pen-knives, books, and ladies' stockings, and indeed every thing portable, in the nature of property. It is large in Heaman, and small in Robert Bruce.

#### 9. SECRETIVENESS.

Situated immediately above Destructiveness. Its function is the love of secrecy, and the ability to conceal. It may be applied in a great variety of ways, according to the dictate of the other faculties. When properly developed, it exercises a salutary restraint on the other faculties, and is indispensable to the formation of a prudent, cautious character. When largely developed, and not properly balanced by the higher faculties, it leads to management, lying, duplicity and deceit. It has been found prominent in a large number of habitual

thieves. When properly controlled, it augments the efficiency of character. In Courts and Cabinets, it is a powerful engine. It is the diplomatist's sword and buckler. The fox, and several animals of the cat-kind, are remarkable for it. In some of the human race, it is almost their only power. In writing, it leads to irony. It is full in great actors. It gives a side-long glance, and a watchful look to the eye, and where large, inspires the individual with the desire to discover the designs of others, while he conceals his own. It is large in Raphael and Bruce, in the American Indians, and in the Hindoos.

## II. SENTIMENTS.

### 10. SELF-ESTEEM.

Situated at the vertex under the sagittal suture. Its function is Self-Esteem, or self-love in general. It imparts to the mind that degree of confidence in its own powers, which is essential to their successful application. When combined with the superior sentiments, and intellectual faculties, it contributes to true dignity and greatness of mind. A deficiency of it produces a want of personal confidence, and a proper estimate of what is due one's self. When too strong, it produces arrogance, conceit, pride, egotism and envy. The English have this organ fuller than the French. The turkey-cock, the peacock, and the horse have it strongly marked.

When the organ is morbidly excited, as in some cases of monomania, the individual is prone to imagine himself a king, an emperor, a transcendent genius ; and even the Supreme Being himself. It is large in Haggart, in Dempsey, and in the Hindoos, but small in the American Indians.

#### 11. LOVE OF APPROBATION.

Situated on each side of Self-Esteem. Its function is love of approbation, or applause. If directed to objects of importance, it becomes a lofty and noble ambition, and leads to corresponding efforts and achievements ; but when its objects are low and trivial, it degenerates into vanity, and leads to frivolity. It is more prominent in women, than in men. It is always large in bashful persons. It is very large in the dog, and the horse. Large in Bruce, and in the American Indian.

#### 12. CAUTIOUSNESS.

Situated in front of No. 11. Its function is the sentiment of circumspection, or impulse to take care. Regulated and sustained by the other faculties, this sentiment becomes prudence ; but if not thus modified, it degenerates into irresolution, instability, doubt, demur. It is particularly large in children. The organ is large in Bruce, Raphael, and in the Hindoo. Small in Bellingham, and the Negro.

## 13. BENEVOLENCE.

Situated at the central and upper part of the frontal bone, in the direction of the sagittal suture. Its function is the sentiment of kindness, connected with the desire of the happiness of others, and disposes to compassion, and to active benevolence. It communicates mildness and cheerfulness to the temper, and prompts to charity, in its various relations. Dogs, horses, and monkeys, which have the organ full, are mild and pacific. It is depressed in all the ferocious tribes of animals, and also in nations remarkable for cruelty ; as the Charibs.

The five following organs are proper to man, and constitute the line of demarcation between him and the inferior animals.

## 14. VENERATION.

Situated immediately behind, and adjoining Benevolence. Its function produces the sentiment of respect, and reverence of superior beings, either human or divine. It enters largely into the constitution of a devoted Antiquary. It is also the chief element in filial piety. When the organ is large, and Self-Esteem small, humility is the result. Its existence shows that religion has a foundation in nature. The full development of the organ tends to produce baldness ; and it is asserted, that of any given number of men, of equal age, in a place of

public worship, those who are bald are the most devout. They kneel lower, and respond louder than others.

#### 15. HOPE.

Situated on each side of Veneration. Its function produces the tendency to believe in the possibility of what the other faculties desire. It inspires with gay, fascinating and delightful emotions, painting futurity fair and smiling. It gilds and adorns every prospect with shades of enchanting excellence, while cautiousness hangs clouds and mists over distant objects. In religion, this faculty favors the exercise of faith, and disposes to a belief of a life to come. In short, it is the castle-builder's home, his heaven, his consolation in disappointment, his panacea for every evil. It is the cynosure to which his soul perpetually points.

#### 16. IDEALITY.

Situated above 7 and 8. Its function is to give exquisiteness of feeling. It is the fountain of enthusiasm, not only of the poet, but of the philosopher, the orator, the painter, the sculptor, the philanthropist, and of the high-minded warrior. It is the organ of poetry, and confers a relish for this kind of composition on those who do not write. It gives refinement and taste. It communicates to elo-

quence its splendor and soul, and to conversation its highest charms and brilliancy. It gives a fondness for vivid description, and often a tendency to exaggeration. The organ is large in Raphael, Voltaire, Wordsworth, Burke, and Haydon ; and is small in Hume, Bellingham, and in the New Hollanders.

#### 17. CONSCIENTIOUSNESS.

Situated behind No. 15. Its function is to give the sentiment of right and wrong, of unspotted justice, and pure morality. It commands the other faculties to the performance of their duty. Its strength is not always in proportion to that of the other faculties. In men of feeble intellect, it is sometimes very powerful ; such men do their duty for conscience sake, and are delighted with the observance of right, and disgusted with the doing of wrong. When the organ is small, the individual is prone to do an unprincipled action, if tempted by interest or inclination. He experiences a difficulty in perceiving the quality of justice, and in feeling its obligations. The organ is large in Hette, and small in Bruce, Bellingham, and Gibson, and in most of the savage tribes.

#### 18. FIRMNESS.

Situated at the upper and posterior part of the head, between Nos. 10 and 14. Its function is to give

firmness, constancy and perseverance. When powerfully developed, and not properly regulated by the other faculties, it produces obstinacy, stubbornness, and infatuation. When weak, the individual is prone to yield to the impulse of his feelings. If benevolence assumes the sway, he is all kindness; if combativeness and destructiveness are forcibly excited, he falls headlong into passion, outrage, and violence. He finds great difficulty in pursuing any established line of action, and is prone to change. The organ is large in Bruce, and in the American Indian, and small in Gibson.

### III. INTELLECTUAL FACULTIES.

#### 19. INDIVIDUALITY.

Situated in the middle of the lower part of the forehead. Its function is to give the faculty of practical observation, and the capacity to acquire knowledge in detached parcels, but not to put it well together. The possessor is full of matter for conversation and anecdote, but is a mere detailer of facts, which he seldom attempts to classify. He is a man of extensive information, rather than a profound philosopher. When the organ is full, and is aided by Comparison, it leads to personification, and to metaphorical writing, such as distinguished Bunyan. The organ was large in Roscoe and Swift, and moderate in Voltaire and Haydon.

## 20. FORM.

Situated immediately under the root of the nose. Its full development gives breadth between the eyes. Its function is to give the faculty of distinguishing form and figure. It was large in King George III., and is also large in the Chinese.

## 21. SPACE.

Situated above, and on each side of the root of the nose. Its function is the faculty to judge of size and space without reference to form. It imparts the power of perceiving and judging of perspective. It was large in Williams and Douglas, and small in Ferguson.

## 22. WEIGHT, OR RESISTANCE.

Situated contiguous to that of Form. It is largely developed in those who excel in archery and quoits, and in those who judge accurately of momentum and resistance in mechanics. It was large in Mac-lachlan.

## 23. COLOR.

Situated near the centre of each eye-brow, so that the full development of it gives to the brow a beautiful arch, or an angular direction upwards and lat-

erally. Its function is to distinguish, enjoy and mix colors. It is found in the portraits of Rubens, Rembrandt, Lorraine, etc. It is full in the Chinese.

#### 24. LOCALITY.

Situated immediately above, and adjoining No. 21. Its function is a faculty to perceive, and judge of space and distance, and to remember and enjoy localities. It produces a fondness for travelling, and constitutes a chief element in the talent for topography, geography, astronomy, and landscape painting. It assists the traveller in finding his way to places he has visited, and gives to him an accurate and vivid recollection of them. This organ is very prominent in the casts of Columbus, Sir Isaac Newton, Galileo, and in Volney, and Sir Walter Scott. It is largely developed in the dog, and in other of the lower animals.

#### 25. ORDER.

Situated adjoining 23. Its function is the perception and love of order, without regard to classical arrangement. Those who have the organ large, cannot bear to see any thing out of its place. They are neat and precise in the arrangement of their wardrobe, library, household furniture, etc. It is full in Humboldt.

## 26. DURATION.

Situated immediately above, and adjoining No. 23. Its function is a lively and accurate perception of abstract duration, and the lapse of time between one event and another.

## 27. NUMBER.

Situated immediately over the external angle of the eye. Its function is the power of calculation. It is full in the bust of Newton, and is large in the portraits of La Place and Humboldt.

## 28. TUNE.

Situated immediately above No. 27. Its function is the love and enjoyment of music. The organ, when strongly developed, gives breadth to the face ; hence high powers of music are rarely connected with a narrow face. The masks of Handel, Haydn, Gluck, and Mozart, are distinguished by the full development of this organ. The heads of certain singing birds are also strongly marked.

## 29. LANGUAGE

Situated immediately under the eyes, rendering those organs prominent when fully developed. Great linguists have generally prominent, and

never sunken eyes. Its function gives a facility of acquiring and using language. Persons who have a great endowment of it, abound in words. Large in Humboldt and Voltaire.

### 30. COMPARISON.

Situated immediately above 19. Its function is the power and love of Comparison, and it gives the facility of perceiving resemblances, similitudes and analogies. The individual who has it large, reasons by comparing one thing with another. It prompts to the invention and use of figurative language. It gives great power of illustration. It is the origin of proverbs. Large in Pitt, Edwards, Burke, Curran, Hume, and in the Hindoos; small in the Charibs.

### 31. CAUSALITY.

Situated on each side of 30. Its function is a talent for logical reasoning and inductive philosophy. It prompts to the investigation of causes and effects, and enables the individual to judge of the direct evidence of facts. A juryman, with large Individuality, and small Causality, will not be disposed to convict upon circumstantial evidence. While he, in whom Causality is large, will often feel that kind of proof to be irresistible. It induces to inquire why and wherefore. It gives the

power of analysis. It appears largely developed in the portraits and busts of Bacon, Locke, Franklin and Voltaire ; moderate in Pitt. It is larger in the English and Germans than in the French.

### 32. WIT.

Situated on a line with No. 31. When large, it gives breadth to the upper part of the forehead. Its function is a quick perception of such analogies, as by their novelty, excite surprise and agreeable emotions. In the masks of Sterne, Shakspeare, Voltaire, etc., this organ is peculiarly striking.

### 33. IMITATION.

Situated on a line with number 13. The function of this organ is the love of imitation, and an aptitude to practise it ; and hence persons who have it large, are qualified to become mimics, actors and painters. Large in Clara Fisher, and in Jervis.

### 34. EVENTUALITY.

This organ is situated immediately above and contiguous to individuality. When full, it gives a prominence to the middle and lower part of the forehead. Its function is remembering, and calling up past actions and events. It is prominent in children, and gives them an appetite for knowledge

in the form of stories, and renders them fond of narration. It gives a talent for observing, and recollecting the events of which history is composed, and of telling the story of what we know. Eventuality and Individuality are often large in the same head, and confer on the individual two important qualities for general business; a readiness of observation and a talent for detail. They are generally prominent in practising physicians, being brought out by the habit of accurate observation. Their full development is essential for the composition of such works as Robinson Crusoe and Gulliver's Travels.

### 35. SUPERNATURALITY, OR WONDER.

Situated between Nos. 16 and 33. The function of this organ is to create a belief in the presence and agency of supernatural beings, and it produces a tendency to believe in inspirations. It begets a fondness for news, and particularly if extravagant. It produces the expression of surprise and astonishment in ordinary discourse, and a turning-up of the exterior angle of the eye-lashes. Such persons as have this organ large, do not distinguish between possibility and impossibility; and this arises from the predominance of Supernaturality over Causality and Conscientiousness.

In addition to the foregoing organs, it is as-

serted that there are several others, and their powers have been described by some of the later writers on Phrenology ; but their position has not been accurately ascertained. The following are of this class :

#### VITATIVENESS, OR LOVE OF LIFE.

As there is implanted in the human constitution a strong and universal desire of life, it is presumed that it has its seat in a separate and distinct organ of the brain. Though the desire is natural to man, and is universal, it glows with very different degrees of intensity in different persons. Some individuals desire life so intensely, that they regard death as the greatest of all calamities, and “ are all their lifetime subject to bondage through fear of death ;” and the desire of living is so great as to prove a most powerful stimulus, and continues to sustain them, long after the physical energies of the system seem nearly exhausted. Other persons on the contrary, experience no such passion for life, and are ready to surrender it with scarcely a feeling of regret. Neither does it appear that this difference depends upon the degree of morality and religion which they possess. The organ, it is supposed, must be far more fully developed in the inhabitants of the United States and Great Britain, than in those of France and Spain ; as we hear of many suicides in the latter countries, where we have one in the former.

## ALIMENTIVENESS, OR APPETITE FOR FOOD.

This also is considered as a primitive power, and as having its appropriate organ in the brain. It is one of the earliest and most certainly developed of all the instincts of living beings ; for no sooner is the infant born, than it thrusts its fingers into its mouth, or cries for the mother's breast ; and scarcely is the chick out of the egg, than it pecks the grain that lies before it. The action of this organ enables the individual to distinguish what is useful for its nutrition, and when large, prompts to the sensual enjoyment of the palate. However questionable the existence of an appropriate cerebral organ to preside over the appetite, certain it is, that a great difference exists among persons, as to their propensities to indulge in the banquet. Some persons seem to live mainly to eat and drink, and the gratifications of the appetite constitute with them the highest degree of earthly enjoyment, while others have but little desire for indulgences of this kind. Not many years since a gentleman who resided in a neighboring city possessed at all times so keen a relish for his food, that he was never known to be satisfied, even with the most sumptuous entertainment. A quarter of veal, or a pair of turkies, formed for him only a moderate repast ; and yet so lean was his giant frame, that he used to wear false calves to his legs to conceal his deformity. And a gentleman who had his thigh

amputated some years ago, in Philadelphia, it is said, sustained during the whole time of the operation, an animated conversation upon the relative merits of the different dishes of good eating.

Although the exact locality of the organs of Vivativeness and Alimentiveness have not been determined, it is conjectured that they will be found in close connection with Destructiveness and Acquisitiveness. And this seems plausible; for it is natural to suppose that the organs whose functions give the desire of living, the enjoyment of living, and the disposition to pursue, acquire and slay, should be grouped together in the same region of the brain; but their position is not yet defined, nor are we told which of the thirty-five compartments, already delineated and established, are to give way in order to make room for the more recently discovered organs; the whole brain being already appropriated.

HAVING thus briefly described the different organs, their situation and powers, as laid down by the phrenologists, I shall call your attention to their combinations.

Three rules have been laid down for estimating the influence of the difference in size, occurring in the organs of the same brain.

*First.* Every faculty desires gratification, with a degree of energy, proportionate to the size of its organ; and those faculties will be habitually

indulged, the organs of which are largest in the individual.

For example : if all the animal organs are large, and all the organs of the moral sentiments and intellect are small, the individual will be naturally prone to animal indulgence in the highest degree.

If, on the other hand, the organs of the moral sentiments and intellect greatly predominate, the individual will be naturally disposed to moral and intellectual pursuits.

*Second.* Should it happen that several large animal organs are combined with a full development of several moral and intellectual organs, the rule then is, that the lower propensities will take their direction from the higher powers.

*Third.* Where all the organs appear in nearly equal proportion to each other, so that the different powers are accurately balanced, the individual will exhibit opposite phases of character, according as the animal or moral and intellectual powers predominate at the time ; and he will pass his life in alternately sinning and repenting. If the individual, thus constituted, be brought under external influences, they will operate powerfully upon him, and his conduct will be greatly modified by them.

*Fourth.* The same may be said of the counteracting and neutralizing influence of the individual organs on each other, as of that which appertains to the different groups.

For example : if the organs of Combativeness

and Destructiveness are very full, and those of Veneration and Conscientiousness are also very full, the latter will so counteract and neutralize the former, that the individual may live all his days in quiet, and not once manifest the smallest disposition to combat or murder. Or, if the organ of Acquisitiveness is large, and that of Benevolence is also very full, the two propensities being thus counterpoised, there may be no especial desire of accumulating wealth manifested, and as little of the spirit of liberal giving. And all the organs may be so accurately balanced, that the good shall exactly counteract the evil desires.

It is, however, a doctrine of phrenology, that the temperament of the individual exerts a strong influence upon the action of the different organs, and groups of organs; and consequently must be taken into the account, in judging of their activity and power, whatever combinations they may exhibit.

Before I close this lecture, I must call your attention, for a moment, to another of the doctrines of phrenology, which should be understood, in order fully to appreciate the philosophy of the practical application of the science. I refer to what is called the natural language of the organs.

This doctrine is, that the action of the phrenological organs tends to control the attitudes and movements of the body, as well as to modify the expressions. That the actions of the body will be in

the longitudinal direction of the organs. For example : if the action of Amativeness be strongly excited, and especially if the organ be large, the head will be thrown backward, because the base of the organ is situated in the lower, and back part of the brain ; and which is the reason, also, that lovers are prone, as it is said, to bring the back part of their heads in contact, when they approach each other.

Combativeness, when strongly excited, gives a sudden backward and lateral motion to the head.

The proud man carries his head erect, because the organ of Self-esteem has its termination upon the superior part of the brain ; while he who is deficient in the development of this organ, inclines his head forward, in an humble attitude.

The devout man bows his head forward, in order to present the organ of Veneration in the direction of the Deity in the heavens.

The logician, when he reasons strongly, is prone to press his forehead with his index finger, because of the action going on in the organ of Causality, which is situated in the forehead.

Preachers and advocates, when speaking with ambition, move the head in the line of Concentrativeness or Individuality, or directly backward and forward.

Secretiveness, when the organ is full, gives a side-long glance and a watchful look to the eye.

The organ of Self-esteem, when large in children,

causes them to mount on chairs and benches, to make themselves equal in height to grown persons ; and adults of small stature do the same, and keep their bodies erect, and have a proud gait.

Those birds which have this organ large, delight in soaring on the wing in lofty flight, and build their nests in the most elevated situations.

The chamois and goat, which take pleasure in climbing craggy and lofty cliffs, and to graze upon the mountain top, have the organ large.

## LECTURE II.

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GENTLEMEN :

HAVING, in my first lecture, exhibited to you the leading doctrines of phrenology, as found in the standard books upon the science, and as taught by the most eminent lecturers, my object on this occasion will be, to show how far the science is reconcilable with the anatomical structure and organization of the brain, the cranium, and other parts concerned.

I adopt this course from two considerations :

1st. From a belief that the anatomy of the parts concerned, is the proper and indeed the only certain standard by which to ascertain its truth.

2d. That the metaphysical arguments on the subject, while they have been urged with great power, have too often been evaded, and the public mind has not been enlightened, as to the real merits of phrenology, by the usual methods of

investigation. Even the lash of ridicule, under which it has generally been left to wither, has done but little in arresting its progress, or exposing its errors.

The ground which phrenologists assume the right to occupy is so extensive, and the outlets for retreat are so numerous, that it is difficult to present an objection to the science, which cannot, upon the common principles of reasoning, be plausibly evaded. A few examples will illustrate the idea which I wish to convey.

If an individual has a large head, and his mental manifestations are unusually powerful, the case is brought forward as a proof of the truth of phrenology ; but if the manifestations are feeble, it is said that the great size of the head is the result of disease, or that the brain is not well organized, or that other circumstances have exerted an influence in diminishing its power. If a small head be connected with a powerful intellect, it only proves that the brain, though small, is well organized, and acts with uncommon energy.

If an individual has a particular propensity strongly marked in his character, and there is no corresponding development of the brain, it is said that the organ has not been thrown out by indulging its desires ; but if there is a large development of an organ, and no corresponding propensity, then it is contended that the germ of the propensity is there, but that it has been repressed

by education, or other circumstances ; or it is found that some counteracting organ is fully developed which neutralizes the first. For example : if the organ of Covetousness is large, and the person has no uncommon love of gain, and the organ of Benevolence is also large, it is urged that the action of the one neutralizes that of the other.

I have already mentioned that the temperament also is supposed to perform an important part in modifying the action of the different organs, and for which all due allowance is to be made.

When all these fail in furnishing a satisfactory explanation, another method still more amusing is sometimes resorted to, in relieving phrenology from embarrassment. It may be illustrated by the following facts :

There is a celebrated divine now living in Scotland, equally distinguished for his amiable disposition, his gigantic powers of mind, and the great moral influence which he exerts upon the Christian world. This individual, it is said, has the organ of Destructiveness very largely developed, and not having any counteracting organ very large, it is contended by those who are acquainted with the fact, that he manifests his inherent disposition to murder, by his mighty efforts to destroy vice and break down systems of error. In this way he gratifies his propensity to shed blood.

By a recent examination of the skull of the celebrated infidel Voltaire, it is found that he had the

organ of Veneration developed to a very extraordinary degree. For him it is urged, that his veneration for the Deity was so great, his sensibility upon the subject of devotion so exquisite, that he became shocked and disgusted with the irreverence of even the most devout Christians, and that out of pure respect and veneration for the Deity, he attempted to exterminate the Christian religion from the earth.

Other explanations, as much at variance with truth and common sense, are resorted to in carrying out the system.

Allowing, therefore, to phrenologists the latitude they claim, it would seem impossible to present a case so contradictory to their principles as not to admit of prompt and plausible explanation.

It is such considerations as these that have induced me to attempt an examination of the principles of phrenology, on other than metaphysical grounds, or its practical application to individual cases.

In pursuing the investigation I shall inquire ;

I. How far phrenology is sustained by the structure and organization of the brain.

II. How far facts justify the opinion that there is an established relation between the volume of the brain and the powers of the mind.

III. How far it is possible to ascertain the volume of the brain in the living subject, by measurement or observation.

IV. How far it is possible to ascertain the relative degree of development of the different parts of the brain, by the examination of the living head.

V. Notice a few facts which have been used in support of phrenology, and conclude with some general remarks.

I. How far is phrenology sustained by the structure and organization of the brain ?

The brain is that soft, plastic substance, which is contained in the cavity of the cranium. Its weight is computed to average, in the adult, about three and a half pounds, greatly varying, however, in different heads, and in those of nearly the same size. It is developed at an earlier period than most other organs, being larger in proportion to the size of the body, the younger the individual. According to the researches of Tiedeman, it acquires its full size at the age of eight ; and Wenzel and Soemmering state, that at a still earlier period it acquires the size and weight which it will retain through life. It is invested by three membranes, the duramater, the tunica arachnoidea, and piamater. The former of these is thick, dense, and opaque, the two latter extremely thin and transparent. It is divided by a horizontal membrane, the tentorium, into the cerebrum and cerebellum, the latter being connected with the former by an aperture in the tentorium, near its centre. The cerebrum is divided into two hemispheres, the right and

left, by a deep longitudinal fissure, in which the falx of the duramater is situated.

Upon removing the duramater, there are exhibited to the eye, numerous convolutions, rendered distinct by grooves which separate them to a greater or less depth ; but these convolutions do not, in any respect, correspond in form, size, or position, with the bases of the phrenological organs as mapped out upon the figured skull. Phrenologists do not pretend that there is any relation between the one and the other.

The brain, when divided by incision, presents two substances, different in color and texture : the cortical or pulpy portion which forms the external part, and is of an ash color ; and the medullary or fibrous portion which forms the central part, and is of a beautiful white, and is fibrous in its structure. It is the external portion of the brain with its convolutions, which is considered by phrenologists as the seat of the mental functions.

The brain is more vascular than almost any other part of the body. By some anatomists it has been computed that one-fifth, and by others that one-tenth, of all the blood of the body is dispensed to this organ ; while the brain in weight is seldom equal to one-fortieth of the whole body. It is supplied principally by the carotid and vertebral arteries.

Neither the cortical nor fibrous part of the brain reveals, upon dissection, any of those compartments

or organs, upon the existence of which the main fabric of phrenology is based. No such divisions have been discovered by the eye or the microscope. The most common observation is sufficient to show that there is not the slightest indication of such a structure. Indeed no phrenologist, after all the investigations which have been made upon the subject, from the first dawn of the science to the present time, not even Gall and Spurzheim themselves, venture to assert that such divisions of the brain have been discovered ; and yet they insist that such organs do exist.

The fact of the existence of the horizontal membrane, called the tentorium, separating the superior from the inferior part of the brain, as well as the arrangement of the lateral ventricles, the corpus callosum, the fornix, and other parts, clearly show the absurdity of the idea of organs as described by phrenologists. The notion then of the division of the brain into phrenological organs is entirely hypothetical, is not sustained by dissection, and is utterly inconsistent with its whole formation.

These facts are perfectly well known, and are universally admitted by all anatomists. See plates III., VI., with the explanations.

II. How far do facts justify the opinion that there is an established relation between the volume of the brain and the powers of the mind ?

This inquiry involves one of the fundamental principles of phrenology ; and while pursuing the

subject, it is proper to remark, that the phrenologist would escape from the consequences of the doctrine, that the volume of the brain is the measure of the mind, by placing the issue upon the relative development of the different regions of the brain, and not upon the volume of the brain as a whole. If the man of strong intellectual powers, for example, has an ample forehead, the man distinguished for his moral and religious qualities, has the superior region of the cranium large and towering, and the man of strong animal propensities, has the back and lower part of the head large and protruding, the developments are said to accord with the principles of phrenology, although the head be ever so small. This position often proves a secure retreat for the manipulator, especially as the lines of demarcation which are made to separate the different families of organs from each other, are indefinite and variable in their position, and consequently may be drawn where best suits the case under examination. If the forehead happens to be stinted in its dimensions, and the individual still has a powerful intellect, it is only necessary to throw back the line which separates the intellectual organs from those of the moral faculties, so as to allow the former to encroach upon the region of the latter, and the whole difficulty is removed. Upon the same principle, the organs of the moral faculties may invade the region assigned to the intellectual organs, or the animal propensities may

usurp the dominion of the moral faculties, as the circumstances of the case may require. So by drawing the boundary lines of the different regions of the cranium farther forward or backward, the principle is adapted to the case and the case to the principle. By this course, the phrenologist changes his position, and attempts to evade the legitimate consequences of his doctrine ; and cases where individuals were remarkable for the diminutive size of the head, but were distinguished for power of mind, have been brought forward, not only as consistent with phrenology, but as evidence of its truth. But all this neither changes the ground of the argument, nor relieves us from the necessity of regarding the whole brain as the measure of the whole mind.

“ If,” says Mr. Combe, “ we take two heads, in sound health, of similar age, in each of which several organs are similar in their proportions, but the one of which is large and the other small, and if the preponderance of power of manifestation is not in favor of the first, then phrenology must be abandoned as destitute of foundation.”

In this declaration, it is evident that Mr. Combe intended to embrace the whole brain, as the index of the whole mind ; for the position is as clearly stated as if he had said, take two heads in sound health, of the same age and shape, but the one of which is large and the other small, and if the mental power is not greater in the large head, than in

the small one, then phrenology must be abandoned as destitute of foundation.

The doctrine then that the volume of the brain is the gauge which determines the mental power, is not only admitted by phrenology, but is the great fundamental principle upon which it is based. It is the main pillar upon which the whole fabric rests. Strike this out and the structure falls to the ground ; annihilate it and “ phrenology must be abandoned as destitute of foundation.” Consequently he who evades the principle or substitutes any thing in its place, is chargeable with striking a blow at the foundation of the science. No matter whether he does this by allowing one brain a better organization than another, a greater proportion of neurine, a larger extent of peripheral surface, a higher degree of sensibility, or a more energetic action ; in whatever way he accomplishes the object he saps the main foundation ; for if a small brain can be made to perform its mental functions with as much power as a brain of larger size differently constituted and endowed, volume is no longer the index of power, and “ phrenology must be abandoned as destitute of foundation.”

If the volume of the brain then is to be taken as the measure of the mental power, it is important to know whether its absolute or relative size is intended to be understood. If the former, then men of small stature must generally rank as inferior in intellectual power, to men of large size ; and

phrenology has also to contend with the fact, that the whale, the elephant, and several other animals of the lower order, have a larger brain than man, while their intellect is inferior.

If the relative size of the brain be intended, then it is necessary to know with what it is to be compared ; whether with the dimensions of the face, the size and length of the neck, with the size of the spinal marrow, the cerebral nerves, or with the volume of the whole body. Upon this point, phrenologists have not been explicit.

The difficulty of instituting an accurate comparison of the brain with the first four of them, seems likely to prevent either from becoming the standard ; and the great variations to which the body is liable from different causes, losing, as it sometimes does, nearly half its volume, while the brain remains the same, renders this not a more certain criterion. Some facts, however, seem to have afforded the inference, that the volume of the brain as compared with the size of the body, is to be taken as the measure of the mental power ; and just as we descend in the scale of intellectual existence, from man through the various tribes of animals, it is said, the brain will be found to be diminished in size, according to this standard. But the investigations of Haller, Wrisberg, Soemmering, Blumenbach, Cuvier, and other anatomists, show this conclusion to be erroneous, and prove by actual experiment, that it has no foundation in nature.

A summary of the result of Cuvier's investigations upon this subject, is presented in the following table.

He considers the brain in man, in proportion to his body as one to thirty; and though it might with more propriety have been calculated as one to forty or fifty, the relative proportion between man and the lower animals is no less certainly ascertained.

MAN,	.	.	.	.	1:30
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MONKEYS.

Gibbon,	.	.	.	.	1:48
Saimiri,	.	.	.	.	1:22
Sai,	.	.	.	.	1:25
Ouistiti,	.	.	.	.	1:28
Coaita,	.	.	.	.	1:41
Young Malbrook,	.	.	.	.	1:24
Callitriche,	.	.	.	.	1:41
Mone,	.	.	.	.	1:44
Mongabey,	.	.	.	.	1:48

QUADRUPEDS.

Mole,	.	.	.	.	1:36
Dogs, different species,	from 1:47 to				1:305
Cat,	“	“	from 1:82 to		1:156
Beaver,	.	.	.	.	1:290
Rat,	.	.	.	.	1:76

Mouse, . . . . .	1:43
Field mouse, . . . . .	1:31
Elephant, . . . . .	1:500
Sheep, . . . . . from 1:192 to	1:351
Ox, . . . . .	1:860
Horse, . . . . .	1:400

## CETACEOUS ANIMALS.

Dolphin, . . . . . from 1:25 to	1:102
Porpoise, . . . . .	1:903

## BIRDS.

Eagle, . . . . .	1:260
Goose, . . . . .	1:360
Cock, . . . . .	1:25
Sparrow, . . . . .	1:25
Canary birds, . . . . .	1:14

## REPTILES.

Land turtle, . . . . .	1:2240
Frog, . . . . .	1:170

## FISHES.

Shark, . . . . .	1:2496
Carp, . . . . .	1:560

This table shows that four species of the monkey, the dolphin, and three kinds of birds, the canary bird, sparrow, and cock, exceed man in the

proportion of the brain to the body ; and that various other animals are nearly on a level with him.

Nor does the argument in favor of a regular gradation of intellect, according to the size of the brain, hold good, in a comparison of the lower animals with each other ; their intellectual capacities not being in proportion of the brain to the body. This fact is shown by the table of Cuvier.

The doctrine, therefore, that man owes his intellectual superiority to an excess of brain, derives no support from his comparison with the lower animals ; nor does it appear, from observation, that this is the source of the diversity of intellectual capacity, which distinguishes individuals of the human species from each other.

Professor Warren, of Boston, who has probably enjoyed as great opportunities for dissecting the brain of literary and intellectual men of high grade, and of comparing these with the brain of men in the lower walks of life, as any anatomist of our country, if not of the age, says, as the result of his experience on this subject, that in some instances, it appeared that a large brain had been connected with superior mental powers, and that the reverse of this was true in about an equal number. One individual who was most distinguished for the variety and extent of his native talent, says Dr. Warren, had, it was ascertained after death, an uncommonly small brain.

I might accumulate testimony of this description

to an almost unlimited extent, but I will not detain you ; and will only observe that, after a careful investigation of the subject, I feel authorized to say, that the experience of eminent anatomists of all times and countries, who have paid attention to the subject, will be found in strict accordance with that of Doctor Warren.

The whole of the argument therefore, in favor of the volume of the brain being the measure of the mental power, rests for its support upon mere analogy, and upon analogy the most vague and uncertain. A large muscle, say the phrenologists, other conditions being equal, will possess more power than a small one, and a large liver will secrete more bile than a small one ; therefore a large brain must possess more power than one of smaller size. To render this analogy at all applicable, there should be a similarity of structure and of function. And when has it been made to appear that the brain is muscular in its texture, and performs its mental functions by the process of contraction and relaxation, or that it is a secreting organ, and elaborates thought as the liver does bile from the blood ? Or that it is a galvanic battery, and thought the fluid eliminated by its action ?

The various organs of the body in carrying on their physical functions, it should be remembered, act upon matter, and the product of their action is material also. The brain in performing the functions of the mind, does not act upon matter, and

the product is immaterial and spiritual. What analogy is there therefore, between the functions of the brain, the instrument of the immaterial and immortal mind, and an organ which secretes bile or gastric juice? We may institute a comparison between one physical function and another, but to compare physical with intellectual function, is unphilosophical and absurd. First let us ascertain how the brain performs the functions of the mind, and then it will be time to draw comparisons between the action of this and the other organs of the body. For aught that physiology has discovered, the functions of the mind are performed upon a principle which renders a small brain as perfect an instrument for its use, as one of large size.

But, for the sake of argument, let us for the time concede this point, and suppose, with phrenologists, that there is an established relation between the volume of the brain and the powers of the mind, and then inquire :

III. How far it is possible to ascertain the volume of the brain in the living subject, by measurement or observation.

This inquiry, like the preceding, involves one of the fundamental principles of phrenology.

“By a knowledge of both,” (phrenology and craniology) says a distinguished writer upon this science, “the experienced phrenologist is enabled to judge of the *natural amount* and general character of the intellects of individuals, from an inspection of their heads.”

And, first, by what means are we to ascertain the volume of the brain ?

Phrenologists have provided two instruments for this purpose, viz : the craniometer and callipus.

The former of these is the instrument principally in use, and by it we are told that we can not only measure the volume of the brain, but determine also the size of the individual organs.

It consists of a brass semicircle, connected at the extremities, with two horizontal bars, terminating in a small knob to be placed in the external opening of each ear. By this means, while the semicircle remains fixed at its extremities, its circumference moves freely backward and forward. Attached to this, is a sliding graduated scale, which is easily brought in contact with any part of the surface of the head. By this instrument, it is presumed that the exact size of the head can be ascertained ; and as all the phrenological organs are supposed to commence at the medulla oblongata, or top of the spinal marrow, which, being nearly on a line with the two horizontal bars that pass into the external ear, the length of each organ, it is said, can be accurately ascertained.

Now, allowing all this to be philosophical, it is evident that in order to render this instrument availing, the integuments of the head and the walls of the cranium must be of a uniform thickness in all persons ; or that we must possess some means of determining the degree of deviation from this principle.

In childhood, both the integuments of the head and the walls of the cranium are thin and delicate ; in the adult they are thicker, but in old age they are again diminished in thickness. There is also some difference in the two sexes ; the male, as a general rule, having the thicker skull. There are, however, frequent exceptions to this principle.

But besides the change which occurs at the different periods of life, and the difference which usually marks the two sexes, there is often a great diversity in the thickness of the integuments and the skull, in different persons of the same age, sex, and condition, and of which we have no means of judging in the living subject. This fact I have verified by numerous dissections.

I here exhibit a number of drawings, made from skulls in my possession, which illustrate some of the points that I wish to establish.

Plates II., VI., represent sections of different skulls, made by passing a saw through them horizontally, about one inch above the superciliary ridge in the frontal, and the same distance above the crucial ridge in the occipital region. These delineations were made from nature, by an eminent artist ; are fac similes, and represent the skull precisely, in form and thickness.

Plate II., fig. 1., represents, by a horizontal section, the skull of a sturdy, athletic waterman, who was drowned in the Potomac. It is scarcely the eighth of an inch in thickness, though it is firm,

compact, and in every respect healthy in its structure.

Fig. 2, in the same plate, represents, by a horizontal section, the skull of a young and once beautiful female, who came to this city from a neighboring state, fell into bad company, abandoned the paths of virtue, and died in abject poverty. It is nearly twice the thickness of the former, and is well organized and healthy in its appearance.

Here we have two skulls from healthy individuals in the vigor of life, the one a male, and the other a female; and, to render the contrast more striking, the skull of the female is twice the thickness of that of the male. Where is the phrenologist, however experienced, who by the delicacy of his touch, the keenness of his eye, and aided by his craniometer, could have pronounced, that the sturdy waterman had a skull scarcely the eighth, while that of the female was at least one fourth of an inch in thickness, and been able to make due allowance, and to ascertain the relative volume of the brain in each?

Plate III. represents, by a vertical section, a skull kindly furnished me by Doctor Smith, Professor of Surgery in the University of Maryland. The subject was an adult male. It is thick and very compact, and well organized. It also presents a lateral view of the surface of the brain with its convolutions.

Plate IV. represents, by a vertical section, an

adult male skull from the cabinet of Professor Smith. It averages nearly one inch in thickness, and appears in every respect healthy and natural. It also exhibits the arrangement of the phrenological organs, as commencing at the top of the spinal marrow and radiating towards the surface of the brain.

Plate V. represents, by a vertical section, the cast of a skull which is from the cabinet of Spurzheim. It was kindly procured and sent me by Professor Warren of Boston.

The crania delineated in plates III., IV., V., which exhibit the vertical section, were prepared for the engraver, by passing the saw through them perpendicularly, on one side of the median line.

The history of the intellectual character of the individuals whose crania are here delineated, I shall not detail, as the only object of introducing them is, to show the natural and insurmountable obstacles which exist in ascertaining the amount of brain by the measurement or inspection of the living head. Such a history would be entirely irrelevant, as it could in no way aid the phrenologist in his examination.

The difference in their thickness furnishes impressive evidence of the impossibility of ascertaining the volume of the brain by the rules of phrenology.

Besides the crania delineated in these plates, I have in my possession a large number, exhibiting

every intermediate degree of thickness, from that of the sturdy waterman to the cast of Spurzheim.

But in order to render this part of the investigation more satisfactory and conclusive, I have instituted a series of experiments, in order to ascertain the exact amount of brain in the skull, compared with its external dimensions. These experiments were made under the immediate inspection and by the assistance of Dr. Thomas P. Jones of this city, and Professor William Ruggles of the Columbian College; gentlemen whose high scientific character ensures the utmost accuracy in the results. I am much indebted to these gentlemen for the aid they have afforded me. In the first series of experiments, we ascertained the volume of each brain, the skull included; in the second series, the volume of the brain alone, or the capacity of the cerebral cavity.

Then, in order to render the difference in capacity more obvious, the volume of each skull, the brain included, was reduced to the dimensions of seventy fluid ounces.

This table shows the result of these experiments, as extended to five of the skulls delineated in the plates.

	Vol. skull, br. included.	Vol. brain.
Plate II. fig. 1,	70 oz.	56.22 oz.
“ fig. 2, “	“	51.72
III.	“	46.21
IV.	“	34.79
V.	“	25.33

In five skulls therefore, of the same external dimensions, we have a difference in the amount of brain between

I and II.	of	4.50 oz.
I “ III.	“	10.01
I “ IV.	“	21.43
I “ V.	“	31.89

In this computation we have a difference in the volume of brain, contained in two skulls of the same external dimensions, of 31.89 ; something more than one half. These experiments have been extended to a great variety of crania, not here delineated, which confirm the above estimate, and show that the external dimensions of the skull furnish no indication of the amount of brain.

I hold it then to be clearly established, that no phrenologist, however experienced, can, by an inspection of the living head, ascertain whether an individual has a skull of one inch, or one eighth of an inch in thickness ; nor whether he has 56.22 ounces of brain in volume, or only 25.33 ounces.

With the result of these experiments before you, gentlemen, I leave you to estimate the value of phrenology as a practical science, in determining the powers of the human intellect.

But we will pass on to inquire :

IV. How far it is practicable to ascertain the degree of development of the different parts of the

brain, by measurement or examination of the living head.

And here permit me again to call to your recollection the fundamental doctrine already stated, "that by a knowledge of phrenology and craniology, the experienced phrenologist is enabled to judge of the natural amount and *general character* of the intellects of individuals from an inspection of their heads." The amount of intellect being estimated by the size of the head, while its character is determined by the form.

In the investigation of this part of the subject, we shall find that anatomy interposes numerous obstacles to the practical phrenologist, the more important of which I shall briefly notice.

1. Of the frontal sinuses. These are cavities situated in the anterior and lower portion of the frontal bone. To show the manner in which they are formed, it is proper to state, that the bones of the skull are composed of two tables, external and internal; and that these are united by an intervening lattice work of bony matter, called diploe. In some parts of the skull, this diploic structure is absent; the two tables recede from each other, and cavities of greater or less extent are thereby created. It is in this manner that the frontal sinuses are formed.

Plate VI. represents, by a horizontal section, the skull of an individual whom I well knew. He was an athletic, laboring man, who became intem-

perate, and died at the age of thirty. During his life, I frequently remarked, that he had what would be called by phrenologists, a fine head for the perceptive faculties. His eye was deeply ensconced under a full projecting brow, and the organs of Form, Size, Weight, Color, Order, Number, Eventuality, Individuality and Comparison were uncommonly well developed. His Locality was enormous. We should, upon the principles of phrenology, have pronounced him a Rubens in painting, a Humboldt in arrangement, and in Form, Size, and Weight, a Wren, a Douglas or a Simpson. The development of his Comparison, Eventuality and Individuality, would have placed him by the side of Dean Swift and the Earl of Chatham; and his Locality represented him as quite equal to Columbus, Newton, Volney and Sir Walter Scott.

But what do we find upon an examination after death? We discover the frontal sinuses to extend over the organs of Eventuality, Individuality, Form, Size, Weight, Color, Locality, Order, Time and Comparison; the two tables of bone, separated in some points at the distance of an inch, and the intervening cavities so capacious as to measure one and a half fluid ounces.

This plate shows the form, size, and situation of the frontal sinuses, by a horizontal section of the skull.

So far, then, from the great apparent develop-

ment of these organs being occasioned by a forward protrusion of the anterior lobes of the brain, the projection was caused by the receding of the outer from the inner table of the skull, in the formation of the frontal sinuses, and the brain is discovered to be actually very deficient in its anterior portion.

I need scarcely observe, that no one presumes to distinguish between that projection which is caused by the full development of the anterior lobes of the brain, and that occasioned by the existence of the frontal sinuses.

Here, then, are ten of the organs, of which no correct judgment can be formed, as to the degree of their development in the living head. From the large frontal sinuses, delineated in this plate, I have skulls in which they are seen of almost every intermediate size, to those which measure only a few grains.

2. The temporal muscle. This is one of the principal muscles of mastication, and from its situation necessarily conceals a number of the phrenological organs. It arises from the temporal ridge, which is in the form of an arch, as it passes over the frontal, parietal and occipital bones, and covers a large part of the lateral portion of the cranium. Its fibres, as they descend from its origin, converge, the muscle becoming thicker till it passes under the zygomatic process of the temporal bone, to be inserted into the coronoid process of the

lower jaw. This muscle is very various in volume, in different persons, being in some twice the thickness that we find it in others. It covers wholly, or in part, the organs of Destructiveness, Constructiveness, Acquisitiveness, Secretiveness, Cautiousness, Ideality, Number, and Tune. Of the degree of development of these organs, therefore, it is evident we can form no correct estimate, by an examination of the living head.

By means of the frontal sinuses and temporal muscle alone, therefore, we find eighteen out of the thirty-five organs beyond the reach of observation.

3. Let us next ascertain whether the skull is in every part of the same thickness, and whether the two tables, of which it is composed, are every where parallel to each other.

To say nothing of the numerous ridges and grooves which are exhibited upon the internal surface of the cranium, and which vary much in size, and somewhat also in position, the two tables are not every where parallel; consequently, the skull is not of uniform thickness in every part, and this want of uniformity varies in different heads. I can show numerous examples in which there is a marked protuberance externally, but no corresponding concavity within. In one skull, we have the organ of Philoprogenitiveness very full, but it is occasioned only by an increased thickness of the bone at this part. In others, the organ of Causality

is very prominent, but so far from finding a corresponding concavity within, the inner table presents a plain surface ; and there are frequently considerable depressions within, where the corresponding surface without, does not exhibit the slightest projection. It is also true, that there are scarcely any two skulls which exhibit the same relative thickness in different parts. This is obvious from an examination of the accompanying plates.

No phrenologist, therefore, who discovers a protuberance on the skull, can determine whether it is caused by a fulness of the brain, at that part, or an increased thickness of the bone.

4. The great number and diminutive size of the organs, as represented in the figured head, present a serious obstacle to the phrenologist, in ascertaining their fulness as well as their actual position.

In the forehead, there are no less than fourteen pairs of organs, huddled together in the compass of a few square inches ; a space scarcely equal in extent to that appropriated to a single pair of organs belonging to the department of the propensities, or that of the moral sentiments, and all concealed by the frontal bone.

You have asked, gentlemen, if the specimens of crania delineated in the plates, were not extreme cases, of irregular structure, and to be regarded as exceptions to the general rule. I have already stated, that I possess skulls of every intermediate

degree of thickness, from that of the waterman, to the cast of Spurzheim ; and those, also, which exhibit the frontal sinuses from the size represented in plate VI., to those which are scarcely perceptible ; and, by visiting the different anatomical cabinets of our country, the same variations will be seen in abundance. But, admit these specimens to be of irregular structure, and to form exceptions to any general rule, which the phrenologist may establish for his guide, and the admission is fatal to the pretensions of the practical phrenologist. The existence of a single exception to the general rule, as to the thickness of the skull, and the size of the frontal sinuses, presents an insuperable objection to the science ; unless the phrenologist can point out some means of ascertaining, in the living subject, when such exception exists.

How is the phrenologist to know, when measuring the head, whether the skull is thick or thin, whether the frontal sinuses are large or small, and whether the protuberances which he finds on the head represent corresponding developments of the brain, or are occasioned by an increased thickness of the skull, at the places where they exist ?

5. In estimating the mental power of the different phrenological organs from their development, much stress is laid upon the extent of their peripheral surface. The convolutions which mark the cortical portion of the brain, say the phrenologists, appear intended to increase the superficial extent

of this organ with the least possible augmentation of its absolute size.

Now as the extent of the peripheral surface of the organs, depends not less upon the number and size of the convolutions, and the depth of the fissures which separate them, than on the amount of cerebral matter which they contain, how are we to judge of their power from the cranial protuberances, since we can ascertain nothing of the number and size of the convolutions, and the depth of the fissures in the living subject. Besides some of the convolutions are so situated as to form a part of different organs, and some of the organs necessarily embrace a portion of several convolutions, all differing in size, and in the depth of their fissures. If then we are to judge of the power of the mental manifestations of an organ from the extent of its peripheral surface, as well as from the quantity of cerebral matter which it contains, it would require the most exact mathematical measurement of the convolutions and fissures as well as the analysis of the chemist, to come at the truth. Since we can ascertain nothing of these anatomical arrangements of the brain in the living head, we consequently can form no estimate of the power of an organ, from any prominence or depression of the cranium.

Again, some of the phrenologists have insisted not so much upon the volume of the organs as the index of their mental power, as upon the propor-

tion of neurine or nervous matter which they contain, admitting the fact that different brains of the same size, contain different proportions of this element. And how are we to ascertain in the living subject, the proportion of neurine, which enters into the composition of the brain, or that of its individual organs? Here the phrenologist would open new avenues by which to escape, when he finds that the power or character of the mind does not correspond with the size and shape of the head. But by attempting thus to extricate himself, he only becomes more deeply involved in absurdity and contradiction, for admitting the principles here laid down to be correct, what a perfect imposition to pretend to ascertain the qualities of the mind by an examination of the superficies of the cranium, where the structure and organization of the brain cannot also be inspected.

Will the phrenologist inform us by what process he has been enabled to find out the amount of neurine which entered into the composition of the brain of Cicero, Dr. Johnson and Sir James Mackintosh, and show us how we can measure the peripheral surface of the brain of Daniel Webster and Lord Brougham. Until this be done we can repose no great confidence in his feats, at reading the heads of the ancient philosophers, heroes and statesmen, nor in his skill in revealing the character of living men by an inspection of the exterior of the head.

V. I will now ask your attention to a few other facts which bear upon this subject, together with some general remarks.

1. It has already been observed, that phrenology makes the powers of the mind, other things being equal, commensurate with the volume of the brain. This is one of the fundamental principles upon which it is based.

I do not deny that there is a difference in the natural capacities of men, some individuals being endowed with stronger, quicker, and clearer minds than others ; but I am far from admitting that this difference depends on the amount of brain, or that the development of the mind in the progress of life is to be determined by the increased size of the head. If we look around upon the intellectual world, we shall find as many men distinguished for intellectual power, with a head of a small or medium size, and as many with a large head possessing a feeble intellect, as the reverse of these ; and had phrenology, in its commencement, received a different direction, and had a small head, in conformity with the preference of Aristotle, been made the standard of perfection, it would doubtless have enlisted as many zealous and confident advocates as are now found in its ranks. It is not the volume of the brain which determines the power of the human intellect. Neither facts nor analogy sustain the proposition. Men of the greatest physical power have not often the largest

muscles. This is remarkably true of great runners, wrestlers, and boxers ; and the same observations apply with equal force to brute animals. There appears to be far more depending on the organization and action of parts, in conferring power, than on the mere volume.

It has been admitted by a distinguished writer upon phrenology, that the intellect of idiots, where the volume of the brain has been greatly deficient, has been surprisingly improved during the continuance of an inflammatory cephalic fever ; and that cerebral irritation, arising from mechanical injuries, has often added greatly to the vigor of the intellect of ordinary men.

A son of the late Dr. Priestly, says this writer, whose intellect was naturally feeble, fell from the window of a two story house, and fractured his skull. From this time his intellect became greatly improved.

An extraordinary case was recently communicated to the Medical Society of Ghent ; that of a young man of naturally very limited intelligence, who lost to the amount of two tea-cups of brain by a pistol shot, besides considerable quantities which were discharged at several subsequent dressings. He lived for two years after this occurrence, with his intellect vastly improved.

Accidents of the same nature, followed by similar consequences, are recorded of many others.

Every one, who has observed cases of intermit-

tent fever, must have been struck with the increased vigor and activity of the mind during the hot stage of the disease. Men of very ordinary capacity, while under its influence, often rise to a degree of strength and boldness of conception, and brilliancy of expression, truly astonishing. When the brain is excited, whether from moral or physical causes, the mind often acts with vastly increased power, and the individual exhibits all the phenomena of a temporary brain fever.

Who has listened to the debates of Congress during times of high political excitement, or attended the pleadings in the Supreme Court, and has not been impressed with the truth of this observation? I could detail numerous instances illustrative of this remark, but will state only a single case.

The late William Pinkney, of Maryland, whose extraordinary power in debate is universally known, when unexcited, exhibited nothing in the appearance which manifested great activity or energy of mind; but when roused by debate, his face became suffused with blood, his eye sparkling and animated, his carotids pulsated violently, his jugular veins became swollen, and every thing indicated that the blood was carried to the head with an impetus proportioned to the excitement of the occasion and his intellectual effort; and it was only during this cerebral orgasm, that his thoughts were poured forth with that fluency and power for which he was

so remarkably distinguished. The same phenomena occurred, to some extent, in his private studies, whenever he fixed his mind intently on any one subject for the purpose of deep investigation.

It was after one of these cerebral paroxysms of protracted and powerful excitement in the Supreme Court, that the integrity of his brain gave way, and fatal disease ensued.

In his last illness he informed me, that after periods of high intellectual effort, he found the blood rushing to the head, long after the occasion which had excited it, had gone by, and that he often found it difficult to compose his mind sufficiently for sleep.

I could point you, were it proper to do so, to many living examples of the same description.

In these cases, there is no augmentation in the size of the head ; there is no change in its form.

It is evident, then, that there is something that gives power to the mind, which has no connexion with the volume of the brain. Whether this is to be found in the peculiar organization of the cerebral structure, the increased energy and action of its vessels, the quantity of arterial blood propelled to the organ by the heart, or to some other cause, is beyond the present state of anatomical and physiological knowledge to determine.

While I admit that there is a difference in the natural capacities of men, I am equally clear that this difference is utterly insignificant, com-

pared with what is impressed upon the mind by circumstances.

The influence of climate, occupation, literature, science and the arts, commerce and war, civil and religious institutions, the state of society and the modes of life, all exert a powerful influence upon the human intellect ; but, above all, it is the discipline of the mind which developes its powers. The intellectual, like the physical functions, acquire strength by use ; and he who would attain eminence, must subject himself to the habit of long continued and close application to study ; to deep and systematic reflection, severe investigation, and accurate analysis. These give a vigor to the mind that nature never imparts.

But were it true, that there is an established relation between the power of the mind and the volume of the brain, the fact would avail the practical phrenologist nothing, as he has no means of ascertaining the amount of brain in the living subject.

2. You have seen that the complex character of the brain, as an intellectual organ, forms one of the leading doctrines of phrenology, and professes to rest mainly on observation for its support. Indeed, the discovery of the fact that there is a coincidence between the protuberances on the skull and the intellectual and moral character of man, first led Dr. Gall, as he informs us, to the study of the subject.

It is no part of my purpose to disprove this coin-

vidence. Whether there is a correspondence between the external form of the head and the character of the mind, I leave for future observations to determine. If I have established the fact, that a protuberance on the skull is no proof of a corresponding development of the brain, my end is accomplished ; and this, I think, has been clearly shown.

The strong argument which phrenology brings forward to induce us to believe, in opposition to our senses, that the brain is composed of separate organs, is that of analogy. Each organ of the body, say its advocates, performs but a single function. The stomach digests the food, the heart circulates the blood, the liver secretes the bile, the lungs perform the function of respiration, and the eye, that of vision. These functions are all dissimilar in their nature, and each one can be performed only by its own appropriate organ. One function cannot be performed by the organ of another. Therefore as the functions of the mind are many, and various in their nature, each one must have its own appropriate organ, and the brain therefore must be divided into as many different compartments as there are mental functions to be performed.

Now let us see how this analogical argument bears upon the subject, when carried out. While we admit that the various functions of the body are different in their nature, we should remember that

the organs which perform those functions are also widely different in their form and structure. The stomach bears no resemblance to the liver, the lungs to the heart, nor the eye to either. Consequently, if the analogy holds good, each faculty of the mind should not only have a distinct and separate organ, but each organ should be dissimilar in its structure and form. The structure of the organ of Combativeness should be entirely unlike that of Veneration, and that of Benevolence should bear no resemblance in its mechanism to that of Destructiveness. The organs of Color, Music, Calculation and Language should each exhibit a form and internal structure as distinct and dissimilar as those of the stomach and liver, the heart and the eye. But unfortunately the brain exhibits no such variety of structure. The same kind of cortical and medullary matter, fashioned into the same shape, performs the functions of love and murder, of music, poetry, language and mathematics; it acquires wealth, dispenses alms, builds ships, circumnavigates the globe, and worships the Deity. Nor is there the slightest indication manifest upon dissection, that those separate compartments, dreamed of by the phrenologists, have any existence in the brain.

The idea that the brain is composed of a plurality of organs, and that each has its own appropriate functions, has elicited every argument which could be brought to its support. To sustain the proposition, volumes have been written, experiments

have been made, and the records of medicine and surgery have been ransacked in pursuit of facts.

If the brain be composed of a plurality of organs, as represented by the figured head, each of which is the seat of a separate faculty, it necessarily follows, that when any one of these organs is injured or destroyed, its faculty must be injured or destroyed also.

Yet in all the mutilations of the brain to which man has been subjected for two thousand years, it appears that the records of surgery do not furnish a single well authenticated case, in which the loss of a particular faculty has happened according to the organ on which the injury was inflicted, while the other faculties remained unimpaired.

We learn from the researches of Haller, Dr. Ferrier and numerous others, that a vast variety of cases are recorded, in which large portions of the brain have been actually destroyed, and in so many parts of the head, as to dispose of nearly all the phrenological organs in turn, and that not a single case has happened of such partial destruction of intellect, as must have occurred if the doctrine of separate organs be true; and we can hardly find a surgeon who has not met with cases in his practice, where portions of the brain have been destroyed by wounds, the consequences of which fully confirm the statement of these writers.

In many of these cases, blindness and deafness have been produced, motion and sensation destroyed, and all the intellectual faculties sus-

pended ; but there has not been a destruction of a particular faculty of the mind, while its other powers have remained untouched. How, then, can it be, after the lapse of so many ages, that there are no facts of this description to confirm the doctrines of phrenology ? Certainly, it cannot be for the want of an opportunity for observation.

To say nothing of the accidents of private life, there is scarcely a naval or military battle, in which cases of injury of the phrenological organs are not met with in abundance ; and yet the science derives no support from this source.

The following case, if there were no other on record, would be sufficient to overthrow the idea of a plurality of cerebral organs, each limited to its appropriate function, as held by phrenologists. It occurred in the practice of an eminent physician of Ohio, and was communicated by him to Professor Dunglison of Philadelphia, by whom it has been published in the *American Medical Intelligencer* for April, 1837, a work edited by that distinguished author.

*Case of Fatal Disorganization of the Brain, without corresponding derangement of the intellectual and moral acts. By G. W. BOERSTLER, of Lancaster, Ohio.*

LANCASTER, OHIO, SEPT. 3d, 1836.

DEAR SIR,—Having leisure, I take the liberty of furnishing you with the facts of a case, which to me are of deep concern, and are not devoid of in-

terest to the physiologist and pathologist. I transcribe from my note book, as follows:—In August, 1833, I was called to see William Miller, a lad about eleven years old; he had just received a kick from a newly shod horse, which fractured the right superior portion of the os frontis, and the anterior portion of the right parietal bone. During the operation of removing the fractured bones, I found one portion an inch and a half long, of an irregular triangular form, driven into the right anterior lobe of the cerebrum, to the depth of an inch; on removing it, about a table-spoonful of brain was discharged. The piece of bone having its edges serrated, and being driven from before backwards, necessarily produced a very great laceration of the meninges. The common integuments over the fracture were much contused and lacerated, and sloughed in the course of a few days, leaving exposed a very considerable portion of the skull and brain. I moulded to the convexity of the cranium wet pasteboards, and then saturated them with albumen, which, when dry, gave them considerable firmness; these I confined with the double-headed roller. I looked upon these precautionary measures as important, for I feared hernia cerebri; four days gave reality to those fears; hernia came on, but after six days' perseverance I succeeded in preventing any farther protrusion. There was no compression, save by the fractured pieces, which were readily removed. The boy's faculties were not destroyed, but there

was some intellectual confusion, from the time of the injury, during the operation, and for two hours after ; *from which time he recovered every faculty of the mind, and they continued vigorous for six weeks, and to within one hour of his death, which took place on the forty-third day.* During all this period, there was little *apparent* derangement in any of the organs, except a slight irritative fever, which supervened sixteen days after the injury, and continued to the termination of the case. So slight was this fever, that, in despite of all entreaties, the patient sat up every day, and frequently walked to the window and withdrew the curtain, in order to see the boys play in the streets, in which he took deep interest—frequently laughing at their gambols. Four hours after death, I proceeded to the examination, in the presence of Doctors Edwards, Ohr, and Newcomer. Upon removing the cranium, the dura mater presented strong marks of inflammation over the entire arch of the head, being deeply injected in parts, and having depositions of coagulable lymph in others. From the antero-inferior angle of the right parietal bone, in a line back to its junction with the occipital, the dura mater was disorganized in three points by ulceration. The space of the skull, previously occupied by the right anterior and middle lobes of the cerebrum, presented a *perfect cavity*, the hollow of which was filled with some sero-purulent matter—the lobes having been destroyed by suppuration : the third

lobe was much disorganized. The left hemisphere was in a state of *ramollissement* down to the corpus callosum. It was so much softened that the slightest touch would remove portions; and, with the aid of a sponge, I wiped away its substance to near the corpus callosum, when it began to be firmer, but presented more the appearance of a homogeneous mass than of regular organization. The chiasm of the optic nerves, as well as their entire tract, was so soft as to yield to a slight touch with the handle of the scalpel, and the olfactory were in the same condition. The corpus callosum, thalami nervorum opticorum, and tubercula quadrigemina, presented no pathological condition. The cerebellum and medulla oblongata were in a physiological state. The spinal column was not examined. This boy was remarkably intelligent. In my daily visits I held frequent conversations with him, and in all my observations I could not discover the slightest derangement of his intellectual faculties—no dulness of sensibility, no obtuseness of perception, no impairment of judgment, no want of memory, and, so far as mind is concerned, he gave no evidence of disease. His vision, audition, and voice, were unimpaired.

We here have a case, which presents that portion of the brain from which the nerves arise in a physiological condition, and the general nervous apparatus in a sound state, fit for conveying impressions, whilst the organ, upon which depend

perception and the perfection of ideas, is in a great degree lost, and what remains is in a highly pathological condition ; yet we have all the manifestations of intellect, as if the encephalon were not required in those highest functions. His case contradicts the opinion of Sir Charles Bell, that disease of the general surface of the brain is always attended with derangement of the mind ; and it is equally opposed to the views of Desmoulins, Gall, Spurzheim, and others, who contend that the seat of intellection is in the periphery of the brain, or its convolutions. In like manner the opinion of Magendie is contradicted,—that the sense of sight is always destroyed by removal of the cerebral hemispheres ; for here the right hemisphere was destroyed, and yet vision was perfect with either eye. Where, I would ask, were the functions of mind executed in this case ? Intellection was performed, the moral faculties were exercised, and that portion of the brain, in which we believe those important and complicated actions are generated and perfected, was either gone, or in a highly pathological state. I have given briefly, and I hope clearly, the facts in this case. To you I look for the deductions. I hope I have not trespassed too much on your time, by detailing a case which presents much interest to the physiologist.

I am, dear sir, very truly, your friend,

G. W. BOERSTLER.

PROFESSOR DUNGLISON.

Here then is a case in which all that portion of the brain, which has been assigned by phrenology to the intellectual functions, viz.: Individuality, Form, Size, Weight, Coloring, Locality, Order, Time, Number, Tune, Language, Comparison, Causality, Wit, Imitation, Eventuality, and Wonder, was found in a state of disease and disorganization, and yet not one of those functions destroyed or impaired. And it should be borne in mind, that not one hemisphere of the brain only was found diseased, for in such an event, the phrenologist would say, that although one hemisphere was disorganized, the other being healthy, the sound half performed the functions of both, as the brain is composed of two symmetrical portions. But in this case the anterior lobes of both the right and left hemispheres of the brain were diseased, and to an extent which precludes the possibility of any mental operation being performed by them. Take in connexion with these facts, the position of the phrenologist, that the periphery or external portion of the brain is that in which the mental operations are performed, and what becomes of the doctrine of a plurality of cerebral organs, or a separate compartment for each of the mental functions? As well may we talk of walking without legs, or seeing without eyes, as to suppose this youth capable of those intellectual functions which phrenology has placed in the anterior lobes of the brain, if the doctrine of separate compartments be true.

Under all this devastation of cerebral organization, what was the state of the boy's mind? "The boy's faculties," says the surgeon, "were not destroyed, but there was some intellectual confusion, from the time of the injury, during the operation, and for two hours after, *from which time he recovered every faculty of the mind, and they continued vigorous for six weeks, and to within one hour of his death, which took place on the forty-third day.*"

3. It is not my purpose to go into an analysis of the human mind, nor to discuss at length the philosophy of that division and arrangement of its faculties which is peculiar to phrenology. But I cannot pass over this branch of the subject, without bestowing upon it a moment's attention.

It has been shown that phrenology divides the brain into at least thirty-five distinct and separate organs, each of which is the instrument of thought and the source of specific mental manifestation; which manifestation is the product of material organization. That each organ is endowed with a specific faculty, to the exercise of which it is as strictly, as the eye is limited to sight, or the ear to sound. One organ is endowed with a faculty for music, another for painting, another for mathematics, and so on. But each organ, it seems, before it can be set in operation, has to be endowed not only with its own distinctive faculty, but invested also with nearly all the attributes of the human mind. It must have the power of perception,

memory, imagination, reason and will, and however reluctant the phrenologist may be to call in the aid of these "*obsolete*" qualities of mind, he acknowledges their presence and agency in every function which he describes. Each organ, it is said, is not only distinct from the rest, but is as capable of performing its function independent of the other organs, as if it had its locality in another head. So independent indeed are the organs of each other, that they may all carry on their various and conflicting operations at one and the same time, without the slightest confusion or discord. We must regard the different organs, therefore, as so many distinct and independent brains, and each endowed with the larger proportion of all the powers of the human intellect.

If all this be so, the Deity, it would seem, has been more beneficent to man than we had supposed, by bestowing upon him such various and independent faculties as qualify him to carry on numerous mental operations, and engage in a multiplicity of pursuits at the same time. His organ of Tune may enjoy the music of the harp, while that of Color feasts upon the beauties of the rainbow, his Causality follows an argument, his Veneration bows at the altar, and his Calculation works its problem in algebra.

But here we are reminded to stop and inquire if the author of our being has not committed an error in one part of this arrangement, that while

he has invested man's brain with such various and independent powers, he has bestowed upon him but one set of organs for the use of the external senses ; for I suppose it will be admitted that the eye can receive and transmit to the mind but one image at the same time, and the ear can receive and transmit at the same time but one distinct impression of sound. The tongue can obey the mandate of but one organ at the same time. If Causality commands its services in delivering an argument, it cannot at the same moment yield to the solicitations of Veneration in offering up prayer. The hands cannot at the same time employ the pencil and the chisel, write poetry and play upon the organ. Nor can the feet transport the body at the same time to the church and the theatre. If the organ of Constructiveness demands the use of the limbs and the external senses, what is to become of the claims of Combativeness and Destructiveness ? While the external senses, therefore, are employed by one organ, all the rest must be shut out from the surrounding world, and be locked up in repose.

In this view of the subject, would there not be frequent collision and discord, among the different members of this republic established in the brain ? or is there some great regulating power, some high court of judicature to decide upon their respective claims and control their operations, and if so, in what part of the brain is it situated ? Is

it seated at the top of the spinal marrow, or does it hold its residence in the pineal gland, and where is the organ through which it performs its functions ?

If the phrenological organs are separate and distinct, and each limited to its appropriate function, they should be sufficiently numerous to perform all the mental operations that manifestly are performed ; and each organ should be endowed with powers adequate to all its duties. In no case should one organ be called upon to perform the functions of another. There should be no redundancy, no deficiency. Is this the case ? Phrenology has given us both an organ of form and one of size. The knowledge of extension includes both. Combativeness and Destructiveness appear to be the same function differing only in degree. Firmness and Adhesiveness produce the same emotion. Veneration is the result of love, fear, admiration. Concentrativeness is nothing more than the exploded faculty of attention. As phrenology would say, it is the power of keeping two or more organs, when in simultaneous operation, applied to their task. It has been seen moreover that each organ is endowed with its own reasoning power. Wherefore is it necessary that there should be an organ, as that of Causality, appropriated exclusively to this function ; and why should there be an organ of Ideality, if every other organ is endowed with the power of imagination ? A critical examination of

the subject will show a still greater redundancy in this catalogue of organs. But is there no deficiency?

The metaphysician endows the mind with certain faculties, and these he designates according to the nature of their function, and not according to the nature of the object upon which they are exercised; and though few in number, he concentrates and brings them to bear upon whatever subject engages the attention; and thus he produces the infinite variety of manifestations, displayed in the operations of the human mind. Phrenology divides and designates the mental faculties according to the nature of the object upon which those faculties are exerted, and assigns to each a specific cerebral organ.

Now according to this latter system, should there not be as many separate organs and independent faculties as there are objects of attention in the universe? We have an organ of Philoprogenitiveness, or love of offspring. Should there not be an organ of Philoprogenitorness, through which children might exercise the same emotion towards their parents? Should there not be an organ also for the love of brothers and sisters, an organ for the love of dogs, another for the love of horses, and another for the love of gambling, propensities quite as strongly developed in the human character as those of music, painting and mathematics? Every occupation, virtue, vice, passion,

and amusement, it would seem, should have its appropriate organ. And thus, instead of thirty-five organs, there should be as many thousands, if the views upon which we are called to admit the principle be correct. But the principle is not correct. As well may we talk of the retina of the eye being divided into different sections, one of which is for the image of a man, another for the image of a horse, and another for that of a tree, as to divide the brain up into separate and independent organs. What should we say of the physiologist who should tell us that there is one set of muscles to bear us to the church, and another to carry us to the theatre, and a third to transport us to the race course? And yet the church, the theatre, and the race course are all objects of attention, and as distinct and various in their nature as those of painting, music and poetry.

This then is that intellectual machinery which has been so much lauded for its simplicity and harmony, and its admirable adaptation to the condition of the human race, and which claims to be founded upon fact, reason, and observation.

4. Phrenology assumes the position, that the exercise of the mind increases the volume of the brain, and that the exercise of the individual faculties of the mind increases the volume of the cerebral organs in which those faculties are seated; just as the use of the limbs augments the volume of their muscles. Of the truth of this position

there is no adequate proof. It appears to be a mere gratuitous assumption, and there is no more evidence that the exercise of the mind increases the amount of the neurine of the brain, that element which is regarded as the source of mental manifestation, than there is that the exercise of the body increases the fat ; that the exercise of vision increases the amount of neurine contained in the retina of the eye, or that the exercise of hearing increases the amount of neurine in the auditory nerve. On the other hand, the researches of Tiedeman, Wenzel and Soemmering, physiologists of the highest authority, seem to have established the fact, that the brain acquires its full size and weight at the age of eight years. Consequently, any increase which may take place in the dimensions of the head after this period of life, arises not from an augmentation of the volume of the brain, but from a thickening of the integuments and bones of the cranium. All the mental exercise, therefore, which is performed subsequent to the eighth year, it would appear, has no effect in increasing the magnitude of the brain ; nor is there any proof that its development previous to this period, depends at all upon the exercise of the mind. How clear is it, therefore, that the development and strength which the mind acquires from its discipline and use, depends on causes in no way connected with the volume of the brain.

But suppose the position were true, what would

be the result ? Would not the brain increase most rapidly in its volume at that period of life when the mental powers are the most strenuously tasked ? And this surely is not previous to the eighth year. Should we not also find the head of those who had devoted their lives to the acquisition of knowledge, to hard thinking, and close investigation, twice the size of the head of such as had spent their days in mental indolence, as the arm of the man who has tugged at the oar, or swung the sledge hammer, is twice the size of his who has only wielded the pen. And should we not be enabled to distinguish by the prominences of the skull, those who had devoted themselves to particular studies and pursuits, with as much precision as we distinguish the brawny porter from the sinewy Arab, or the dray-horse from the courser. The architect and the musician, the mathematician, linguist and logician, the traveller, painter and poet, the patriot and warrior, should all be distinguished by the developments of the cranium. The libertine, the thief, and the assassin, would be known and avoided, and our divines also might be distinguished, and even the amount of their piety ascertained and gauged by this rule.

Thus the various pursuits and occupations of men should be known by the prominence of the organs which had been especially called into exercise, not merely by those imperceptible shades of development, that only can be appreciated by the

craniometer, or which the charlatan manipulator pretends to recognise. The protuberances should be palpable and stand out in relief, and be invariable and constant in their position, according to the faculties which had been called into requisition.

If this doctrine be founded in truth, what should have been the size of the head of such men as Bacon and Leibnitz? What the developments of Porson and Lagrange? The Causality of Locke, Newton and Edwards; the Ideality of Shakspeare, Milton, Byron and Scott; the Constructiveness of Watt, Fulton and Perkins; the Veneration of Pascal, Kempis, Fenelon, Fletcher and Brainerd; the combative and destructive organs of Alexander and Bonaparte, of Lord Nelson and Paul Jones; should have stood out in pyramids upon the skull.

If the theory of a plurality of cerebral organs be true, and the brain be capable of being moulded by circumstances, as phrenology would have us believe, we might, perhaps, with some show of plausibility, by mechanical means, as well as moral influence agreeably to the proposition of Emanuel Swedenborg, endeavor so to modify the developments of the skull, as to promote the growth of the good organs, and repress those that are evil; and thus turn a sour into a sweet temper, and a knavish into an honest disposition. Upon this principle, we might manufacture our heroes and statesmen, our philosophers and divines, our poets and painters, and all of the highest order.

For aught we know, the brain is a unit, and the whole organ concerned in each and every operation of the mind.

That the different faculties of the mind are modified by occupation, is universally known and admitted.

The individual, who cultivates exclusively his memory, acquires a facility of retaining facts to an extent inconceivable to those who neglect this faculty; and such persons often make vast attainments in knowledge without the power of arranging or applying it to practice; while the metaphysician, who principally exercises his understanding, arrives at a power of analysis, and of distinguishing cause and effect, known only to those who accustom themselves to long and deep thinking. He who cherishes his fancy to the neglect of his judgment, acquires an exquisiteness of feeling and refinement which often disqualifies him for the more rigorous exercises of the mind. The will, unbridled, acquires strength, until it gains an omnipotent control over that man who habitually yields to its dominion.

5. An argument frequently urged in support of phrenology, is the success with which its principles have been applied to practice in distinguishing character. Dr. Gall himself, we are told, subjected his theory to the most rigid scrutiny, and with triumphant success; and that on several occasions he was enabled to ascertain, by the devel-

opments of the head, the precise crime for which multitudes had been convicted and sent to prison.

To expose the absurdity of this argument it is only necessary to bring to view the fact, that men of the same natural propensities, perpetrate different crimes, when placed under different circumstances ; and that individuals of different, and even opposite tendencies, commit the same crimes when placed under circumstances which are similar ; nay, that men often perpetrate crimes to which they have no natural propensity, but a deep abhorrence, when strongly operated on by external influences. One man commits murder wantonly, or from the natural cruelty of his disposition ; another, that he may inherit a post of honor, or possess himself of fortune ; and a third, to conceal another crime which he has already perpetrated. One individual steals from the mere motive of acquisition ; another, that he may possess the means to gratify his sensual desires, or foster his pride or ambition ; while a third is impelled to the crime from extreme poverty.

The history of man in every country and age, will show, that nine-tenths of all the outrages committed are the consequence of defective education, bad example, vicious company, or other circumstances which attend the offender, rather than of any inherent propensity to the crime perpetrated.

How preposterous, then, to look to the developments of the head as the measure of a man's vir-

tues and vices, or even to regard his known propensities and dispositions as the true index to the history of his life.

Can any one who reflects upon the various circumstances of human life, the incidents which often control man's destinies, the temptations which assail him in different situations, believe, that of the four hundred and seventy culprits examined by Dr. Gall at the fortress of Spandau, upon which so much stress has been laid, each was convicted of the precise crime for which he had the strongest propensity by nature? As well may we suppose that every one dies of the disease to which he has the strongest natural predisposition; that because a man is predisposed to apoplexy, he cannot die of fever, be buried in the ocean, or be struck down by the lightning of heaven.

6. Again, it is said, if phrenology is destitute of foundation, why is it that it has become a study of so much interest in the circles of literary and scientific men? A moment's attention to the subject will enable us to answer the inquiry.

Phrenology, if it did not originate with, was early espoused by zealous and distinguished advocates. Gall and Spurzheim were both men of genius and of letters; and the latter, especially, has shown himself to be a man of extraordinary zeal and perseverance; an eloquent writer, an untiring investigator, and possessed of extensive literary acquirements; and whatever may be thought of his

phrenology, it is not denied, that his investigations of the nervous system have contributed something to physiological science ; and more especially, that they have excited a spirit of inquiry in others which has led to important results. We still have living advocates of phrenology who justly rank among the most eloquent writers of the age. Mr. Combe, of Edinburgh, is scarcely surpassed for the beauty of his style, his command of facts, the richness and facility of his illustrations, or for philosophical observation. Nor is our own country destitute of men of ability and high literary attainments, who give all their influence to the support of phrenology.

These writers have intermingled with their doctrines so much of philosophy and truth, have introduced so many novel facts and illustrations, and have exhibited the whole subject in such an aspect, as to render the study exceedingly captivating, especially to the young and those of speculative minds.

But, beyond all this, there is another, and deeper principle, which disposes men to the study and belief of phrenology.

From the earliest history of man, he has ever been seeking after something which would solve all difficulties, reveal all secrets ; and something, too, which savors of mystery or of miracle. Something to supersede tedious observation, and laborious research ; and if this principle of his nature has not

always been manifested in a pursuit of the philosopher's stone, or animal magnetism, it has shown itself in projects equally unattainable and futile.

It is true, also, that the study of the human mind, and the development of human character, have ever been favorite objects of attention. But upon the common principles of investigation, judging of men by their actions, his progress is slow, and the result doubtful. To avoid this delay and uncertainty, men have been impatient to discern some broad principle, some external sign, by which to judge of the character of the mind, and reveal the hidden emotions of the soul. Every age has afforded proofs of the justness of these remarks. The speculations of Aristotle, Albert the great, Montagnana, and Dolci, all evince this propensity, and seem only to have been precursors of the present system of phrenology.

At one time, we find a Porta attempting to ascertain the character of men by discovering in them resemblances to certain animals of the lower order. At another period, the physiognomy of Lavater becomes the universal guide. Next, the facial angle of Camper is made the measure of the human intellect. These have all been put forth, under the most confident assurances of their truth, and the sanction of great names. Each has prevailed for a time; has been tested by experience and observation, and been abandoned. Phrenology has taken their place. Whether this, also, is destined to the same end, remains to be seen.

Is it strange, then, when we are told that a science has been discovered, by which the character and capacities of the human mind can be ascertained, the secrets of the heart disclosed, and this, too, by a momentary examination of the exterior of the head, that we should find men disposed to study and advocate its doctrines?

In concluding my remarks, gentlemen, upon phrenology, a subject which has withdrawn, I fear, the attention of many able minds from far nobler objects, allow me to suggest some considerations in relation to your future pursuits, and the duties which you owe to yourselves and to the world.

You will soon be called to exchange the quiet scenes which now surround you, for the more public theatre of life, and to unite with your present intellectual pursuits the arduous, practical duties of society. High and honorable is the trust to be confided to you, and it will doubtless be assumed with a suitable sense of your responsibility, as well as with a steadfast resolution, that no reasonable expectations on the part of your friends, or the community, shall be disappointed.

If there are some things in prospect which cause you to tremble, there are many also that meet the eye, calculated to cheer you, and to suggest, at the same time, the nature of those objects which more especially demand your attention.

Providence has assigned your sphere of action in a country boundless in extent and inexhaustible in

its resources ; blessed with a free constitution, and with civil and social institutions, calculated to encourage the boldest enterprises, and to ensure to your exertions the highest rewards ; a country unparalleled for the free, unembarrassed facilities of applying moral, physical and intellectual power to the great purposes of life. The field which lies before you is vast in the number, as well as in the magnitude of its objects, and is constantly enlarging from the discovery of new sources of wealth and of labor in every portion of our land.

If we turn our eyes to the Atlantic coast, we behold disembarking from ships which throng our harbors, a countless multitude of adventurers from every clime, the tide of foreign emigration rolling in like a flood, and the cities of the seaboard crowded with population and loaded with wealth. If we turn to the great West, but recently the hunting-ground of the savage, we see the noblest and richest valley in the world, its forests falling before the hardy pioneer, and towns and villages rising as by the touch of enchantment. And turn where we may, we see the demand for moral and intellectual effort keeping an even pace with the footsteps of enterprise.

The period, too, in which you are called to active life, is unprecedented for the rapid advancement of society in great practical improvements. In a few years, you may live through more events of interest, than whole generations which have

preceded you. In our day, from the influence of moral and physical causes which are in operation, the well directed energies of one enterprising spirit will accomplish more than the combined exertion of multitudes in a former age. But it is not as champions of some brilliant theory, which attracts attention because of its mysterious and extravagant character, by which you can become useful, and acquire a desirable reputation. It is practical talent, regulated by a high sense of moral obligation, which is in requisition throughout our whole country, and this supported by decision, energy, and action ; and it is by your own exertions that a renovating power is to go forth. Endeavor, then, to cultivate a deep sense of your personal responsibility, and realize that you are accountable for every hour of time, for every impression you make, for every sentiment you advance. Never had any people higher destinies than ours to fulfil, or less excuse for pursuing shadows or indulging in airy speculations.

In determining the objects of your pursuit, let me admonish you, that the period of human life is so short, the objects to which it can be directed to purpose so few, and those which invite your attention so numerous, that a judicious selection and limitation of them is indispensable to eminent success.

Men are too liable to be engrossed by the novel-

ties of the day, and to be led away by those subjects which serve rather to amuse, than to instruct the mind. How many great minds, capable of the highest effort, have dissipated their powers by the multiplicity and uncertainty of their pursuits ! Do not weaken your minds by feebly grasping at every thing ; and while you limit the objects of your attention, be sure that those you aim at are within the probable reach of attainment ; and that they are such, too, as will render you useful, as well as distinguished, members of society.

Let me not be understood to discountenance, or undervalue, that sublime science, the philosophy of the human mind. Nothing will contribute more to give you a commanding influence, and to render circumstances subservient to your purpose, than a deep knowledge of the human character. Some men of great talents, and of high scientific attainments, have utterly failed of success in practical life, from an ignorance of men, and an inability to adapt their knowledge to the circumstances in which they have been placed. But this knowledge is not to be sought in the study of man's physical organization, any more than the value or brilliancy of a jewel in the form of the box which contains it. There is no short way to the philosophy of the human mind. Man must be studied as he ever has been, to ensure success, by close and accurate observation, and an actual mingling with mankind in the various stages and conditions of life. In the

language of Napoleon, that great practical philosopher, whose knowledge of human nature was one of his most wonderful attainments, I would say,—“ Nature does not reveal her secrets by external forms. She hides and does not expose her secrets. To pretend to seize or penetrate human character by so slight an index,” (as the developments of the head) “ is the part of a dupe or an impostor. The only way of knowing our fellow-creatures is to see them, to haunt them, to submit them to proof. We must study them long, if we wish not to be mistaken ; we must judge of them by their actions. This is my opinion, and this has long been my guide.”

Beware, gentlemen, of a science so delusive as that which pretends to detect and mark the countless varieties of human character, and gauge and measure the capacities of the human soul, by a graduated scale of brass ; a science which finds an apology for the vices and follies of mankind, in the forms bestowed upon them by a good and all-wise Creator.

Let me caution you, also, to distrust its application to yourselves, as well as to others ; and not to rely on any native endowments you may thereby be induced to attribute to yourselves, for the stations you may aspire to in life. What rank you shall hold among intellectual men, depends not on the prominences of the cranium, but upon your own exertions. The mind, not less than the body,

is susceptible of inconceivable improvement from the culture it receives. It is attention fixed on proper objects of pursuit ; perseverance that never wavers from its purpose ; application, steady and untiring, that constitute the most striking differences among men. It is these which will enable each of you, not only to attain, but to deserve the highest distinctions and rewards.

## EXPLANATION OF THE PLATES.

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### PLATE I.

EXHIBITS the name, form, size, and position of the phrenological organs, as represented on the figured head of Mr. Combe. It also shows the form and application of the craniometer.

### PLATE II.

Shows, by a horizontal section, the thickness of two skulls. Fig. 1, shows, by a horizontal section, a portion of the skull of an adult male, a robust waterman; *a*, the fore part of the skull; *b*, the thickness of the skull.

Fig. 2, shows by a horizontal section, a portion of the skull of a delicate female, aged 25; *c*, the fore part of the skull; *d*, the thickness of the skull.

### PLATE III.

Shows by a vertical section, the skull of an adult male, which was furnished me by N. R. Smith, M. D., Professor of Surgery in the University of Maryland. Fig. 1, the thickness of the skull. Fig. 2, the frontal sinuses. Fig. 3, the convolutions of the brain. Fig. 4, the grooves which separate the convolutions of the brain. Fig. 5, the cerebellum. Fig. 6, the tentorium, or horizontal membrane, which separates the cerebrum from the cerebellum. Fig. 7, the medulla oblongata. Fig. 8, the spinal marrow.

## PLATE IV.

Shows, by a vertical section, the skull of an adult male, from the cabinet of Professor Smith. It also shows the arrangement of the phrenological organs, commencing at the top of the spinal marrow, and radiating to the surface of the brain. It exhibits also the situation of the tentorium and the spinal chord. Fig. 1, the thickness of the skull. Fig. 2, the spinal chord. Fig. 3, the origin of the phrenological organs. Fig. 4, the tentorium.

## PLATE V.

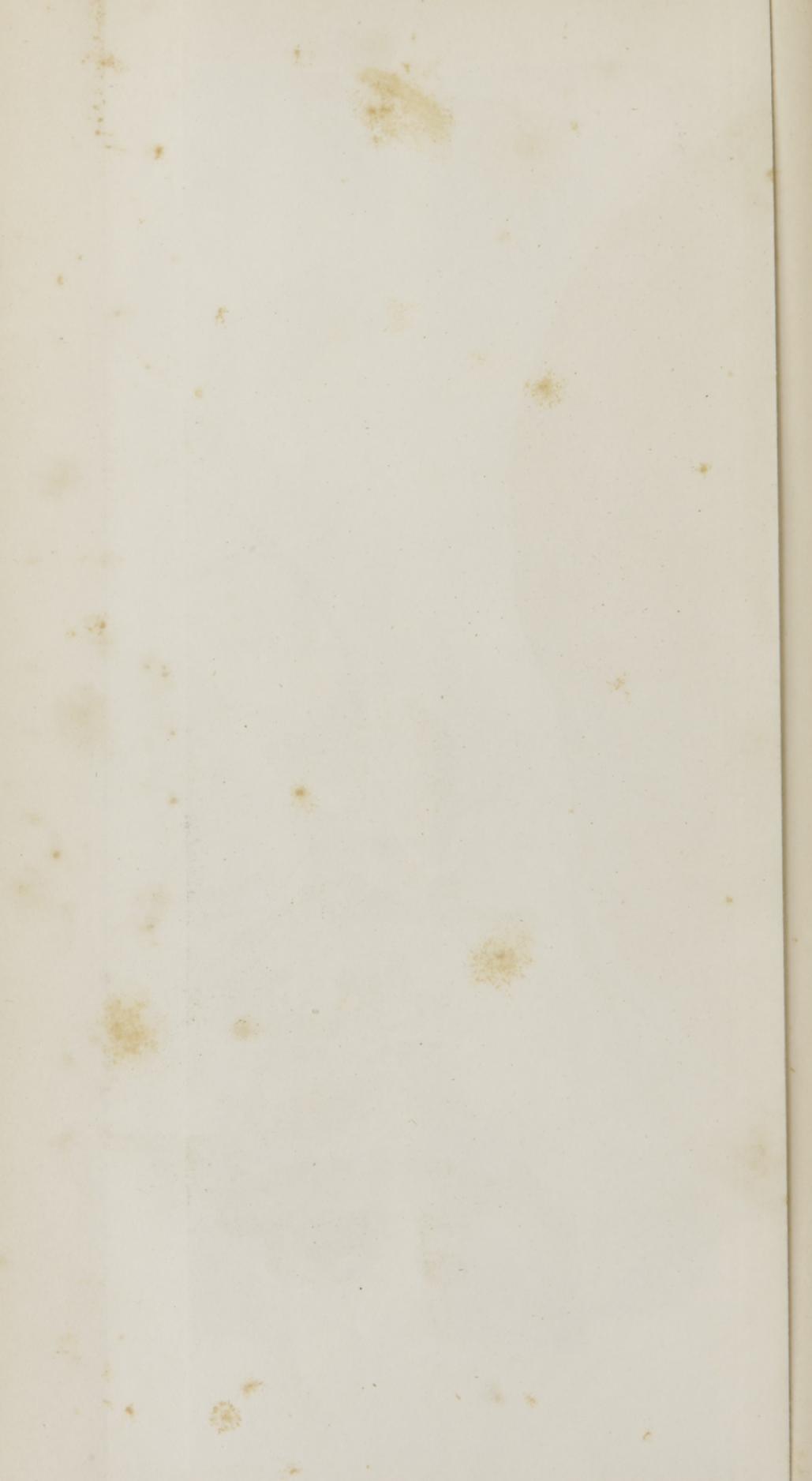
Shows, by a vertical section, the thickness of a skull, the cast of which is from the cabinet of Spurzheim, and was procured and sent me by J. C. Warren, M. D., Professor of Anatomy and Surgery in Harvard University. Fig. 1, the thickness of the skull. Fig. 2, grooves in the skull, showing the position of the middle artery of the duramater.

## PLATE VI.

Shows, by a horizontal section, the skull of an adult male, aged 30. Fig. 1, the thickness of the skull. Fig. 2, the frontal sinuses. Fig. 3, the zygomatic process, under which the temporal muscle passes to the lower jaw. It also exhibits a horizontal section of the brain. Fig. 4, the fore part of the skull. Fig. 5, the fissure in which the falx of the duramater is situated, which divides the right and left hemispheres of the brain. Fig. 6, the falx of the duramater turned back. Fig. 7, the cortical or pulpy part of the brain. Fig. 8, the medullary or fibrous portion of the brain. Fig. 9, the grooves which separate the convolutions of the brain. Fig. 10, the corpus callosum, or great commissure of the brain.

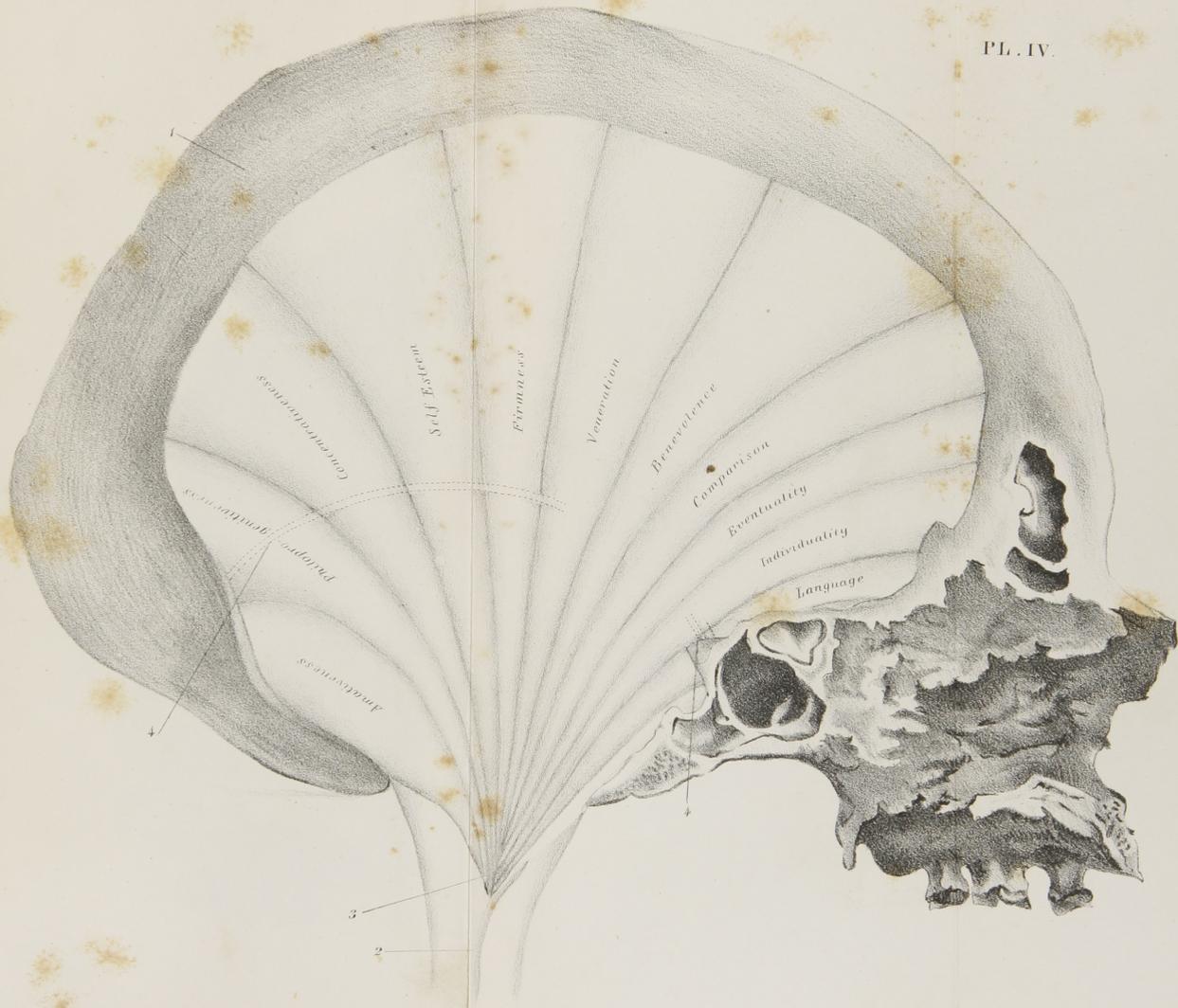


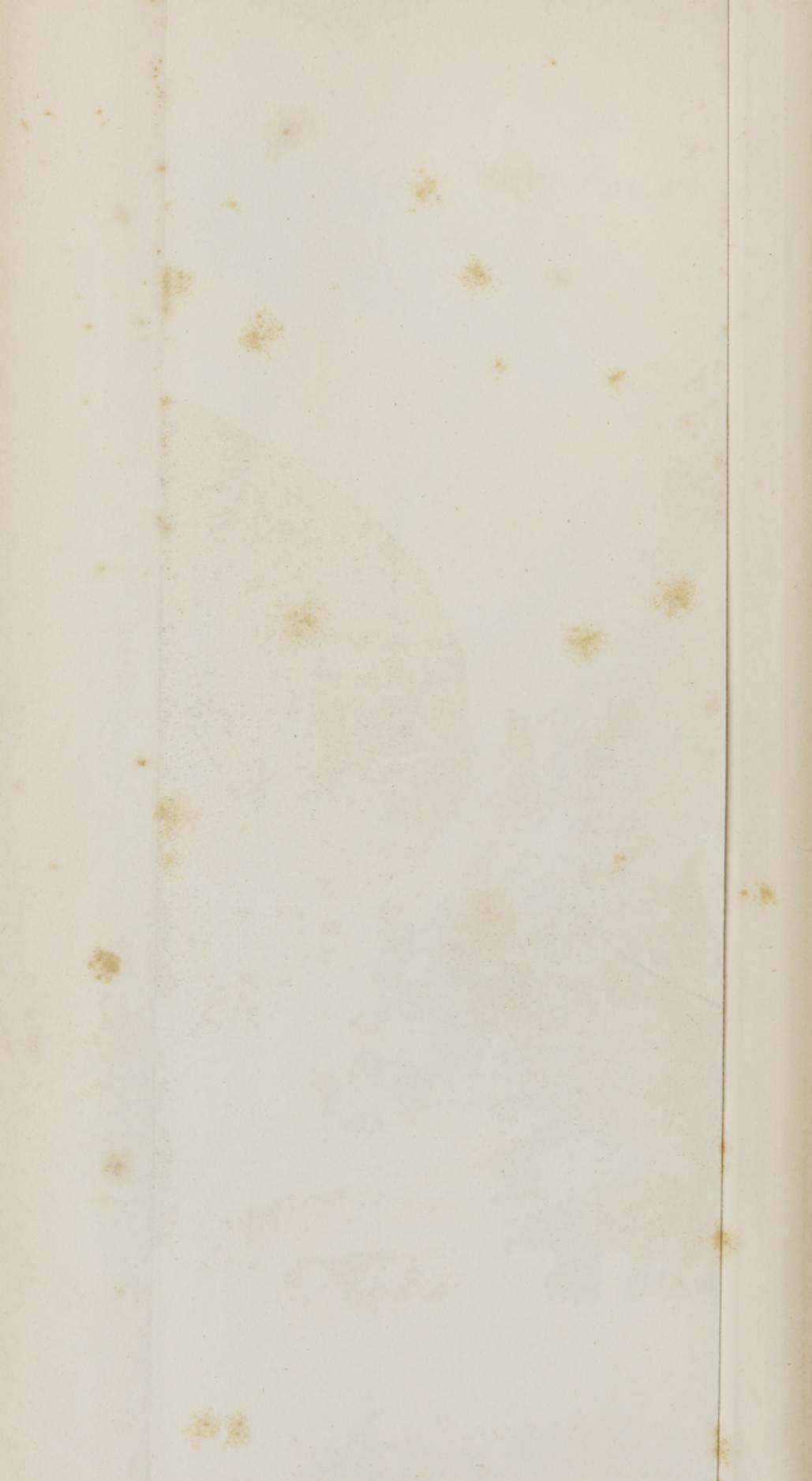




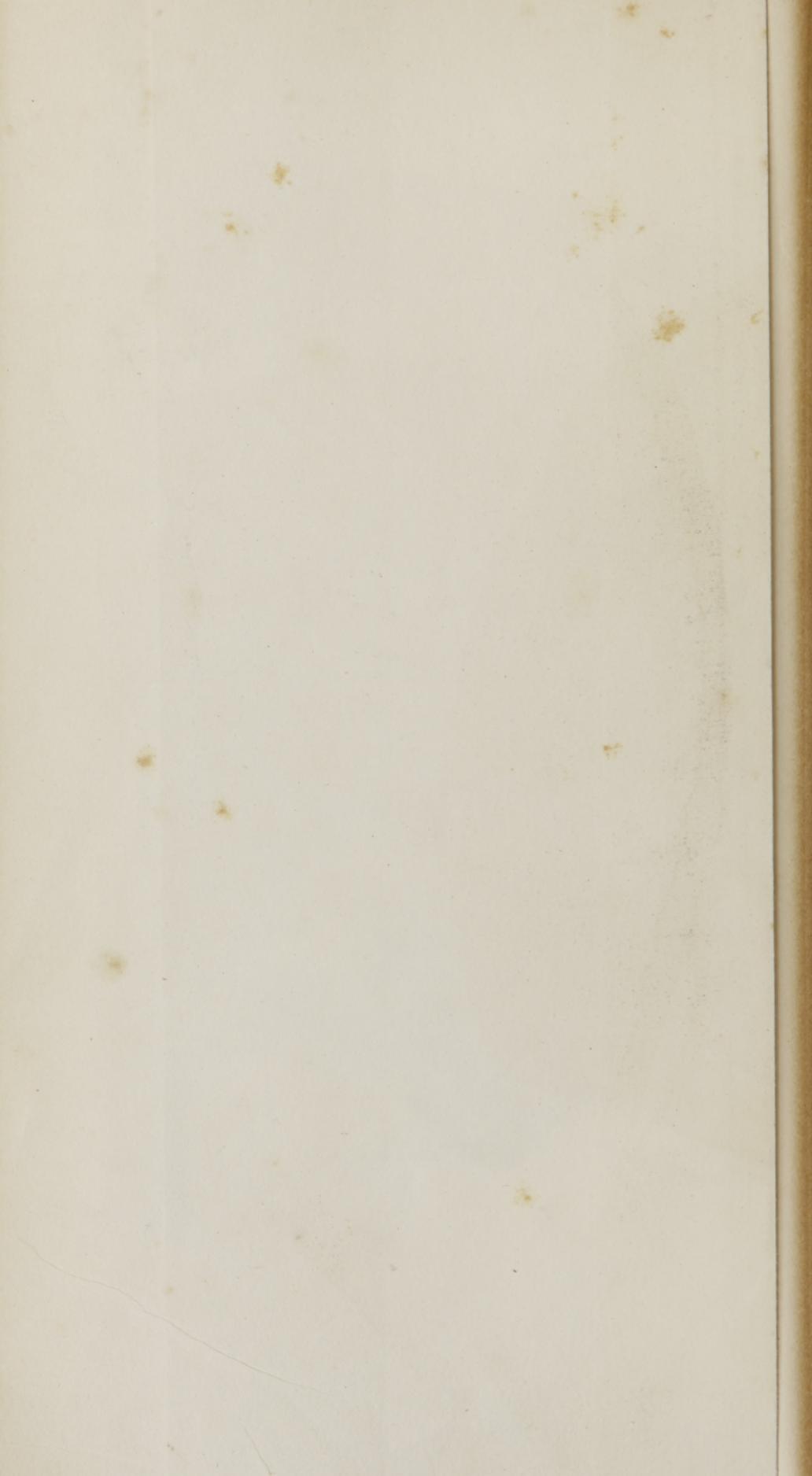


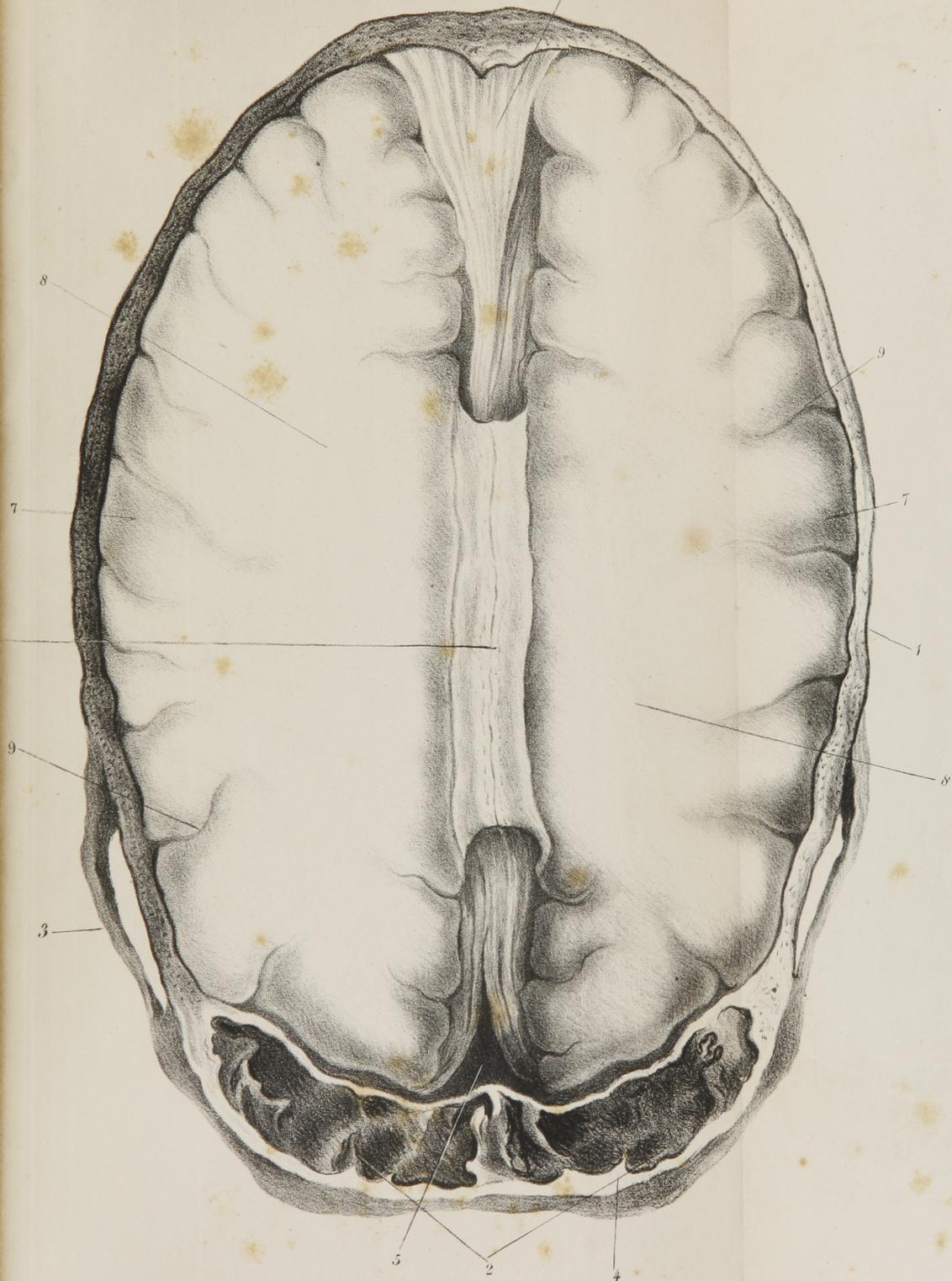


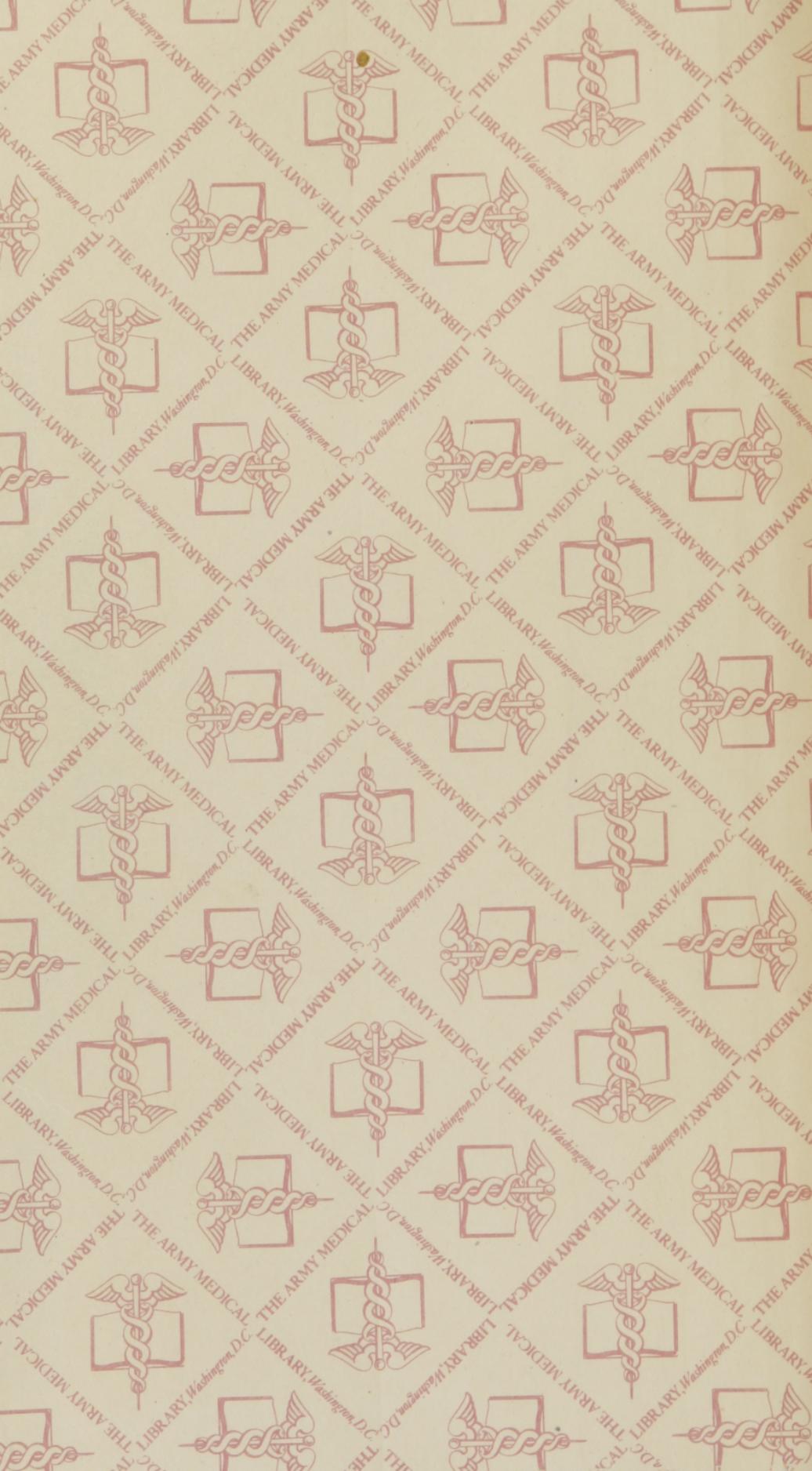


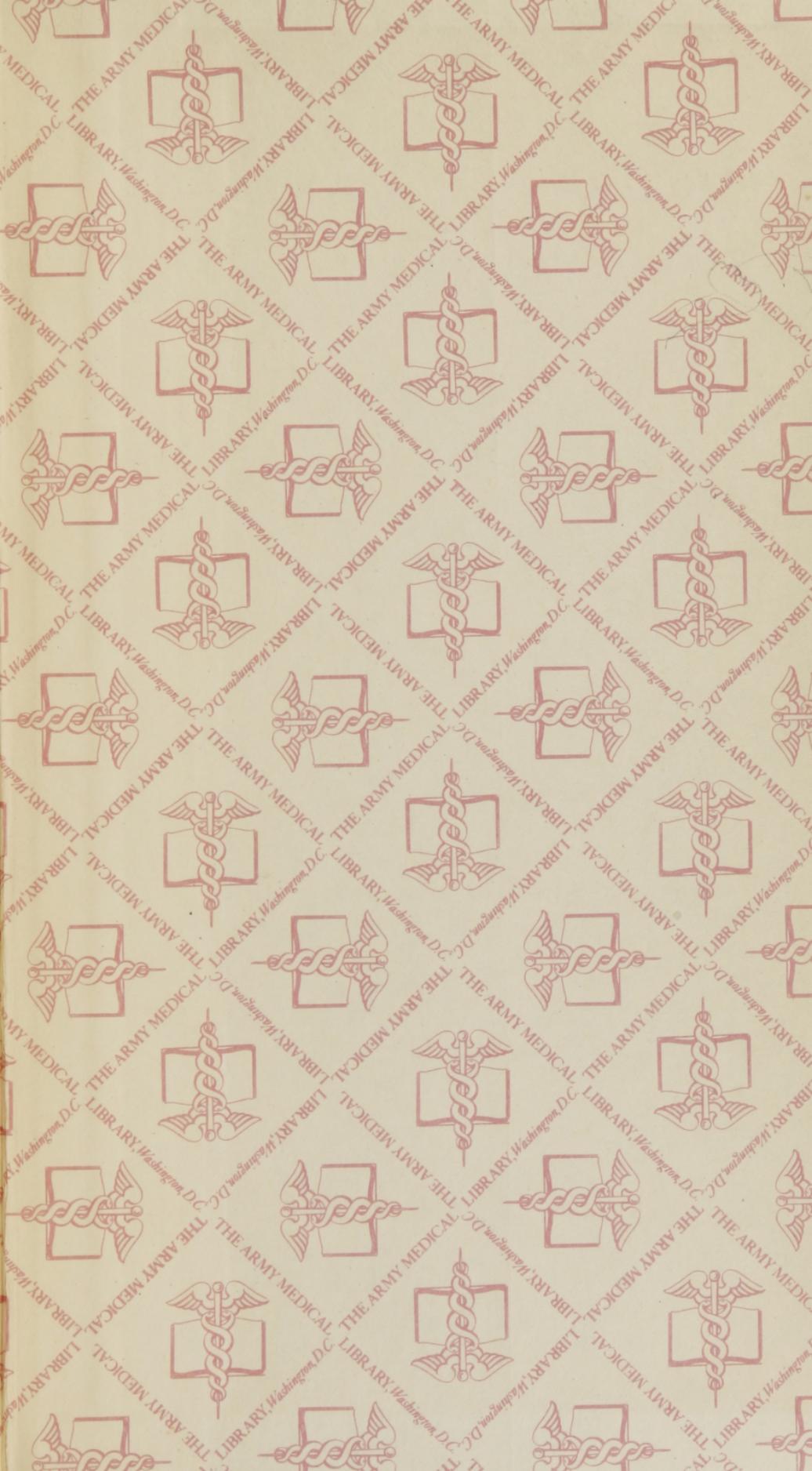












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