

nervous system, which connects the posterior lobes with the visceral organs to which by tradition the emotions have been referred. Women have a smaller base to their brains, hence less criminal passion, and less check on their larger roof—the seat of the religious emotions.

That not all women are so organised, we need hardly affirm. Some have reached a development of intellect as can only be found in the front ranks of great men, though we have no women of such genius as Shakespeare, Beethoven, Raphael, Kant, Bacon, or Galileo. We are speaking only of average women and average men, and that the *average* woman is less intellectual and more emotional than the average man, no one will deny.

CHAPTER XVI

THE EDUCATION OF CHILDREN ACCORDING TO THEIR BRAIN-ORGANISATION

EVERY human being possesses at birth the rudiments of certain distinguishing mental and physical qualities, inherited from a long line of ancestry. During life these rudimentary tendencies are modified or developed through experience and environment. Their right moulding in harmony with the individual idiosyncrasy during the earlier years of life should be our serious endeavour. The triumph or the wreck of a whole career may depend thereon. We should train early so as to render the mental processes automatic. We should take stock of the brain-organisation to arouse faculties that otherwise might lie dormant uselessly and whose existence might not be revealed till adult age, and then perhaps only by accident, but too late to profit thereby. An examination will also be of avail by the recognition of those mental powers which are by nature too strong to bar their persistent use which might produce distortion. As in the mechanic the persistent use of one particular tool will produce distortion of the hand, so in the mind perpetual running of the thoughts in one channel, con-

stant working in one groove, tends to produce mental distortion. However good a mental habit may be, the more predominant it is, the worse are the results on the mind as a whole. The boy who is by nature a spendthrift must be taught economy, but the boy in whom the hoarding instinct is already so strong as to make him "close," by being allowed to follow his inclination constantly, may develop into a miser when old. Since the tendency is probably inherited, the parents are delighted at first in seeing their child develop a similar character to theirs, forgetting that the further exercise of an inherent quality already strong may unbalance the mind, especially when other factors, such as ill-health, act simultaneously. This is true even of the very noblest sentiments in human nature, not excluding even the religious. A person with a brain-organisation adapted to mathematical reasoning must not practise it to the exclusion of imagination; and *vice versa*, those with highly-developed centres adapted for imagination must not allow these too unrestricted play.

A teacher should notice the brain-organisation of his pupils in order to determine what are the natural capacities of each, what degree of perfection is possible to each, what a boy is really capable of or may be brought to by means of education, as well as what he is not capable of and cannot be brought to by any possible means. Men assume that the general goodness of education is to be tested by the quantity of knowledge acquired, whereas it is to be much more

truly tested by the capacity for using the knowledge—by the extent to which the knowledge gained has been turned into a faculty, so as to be available for the requirements of life, and for purposes of independent investigation. Education as at present conducted does not prevent crime, for we find men of education among our criminals; it does not specially fit and prepare for the active duties of life, for we find even prize-men who have proved failures in their professions, as soon as they have entered the active arena of life; nor does it always teach men to lead active, industrious, moral and useful lives. This is owing to people not being educated and trained according to their innate capacities, but only after one uniform rule. Notice the different cranial types of boys, Plate 39.

Education will not create talents. No amount of taking pains can atone for the lack of aptitude. No amount of application will make a musician or a mathematician of a man who does not possess the structural conditions necessary for such accomplishments. When the aptitude is there, its cultivation gives pleasure to its possessor. According to the strength of the innate aptitude, the attention the teacher may obtain from the pupil will vary. Hence teachers should be able to recognise the innate talents and dispositions of children ere commencing their instruction. Then will the mind of the child be to him as clay in the hands of the potter. The earlier we are able to recognise the

innate dispositions, the sooner we can aid their right use and educate the child according to the pursuit for which it is best adapted, on the right choice whereof his future success and happiness depend. If every boy or girl were initiated thus early into the line to which he or she is best suited, it would double the prosperity and material good of future generations and greatly enhance the happiness of the race, besides diminishing poverty and crime.

Too little attention has been given to the right training of the animal nature of children. Propensities that are too active may be subdued or considerably corrected. A child should not be allowed to indulge in feelings of anger and vindictiveness, for these tend to make it more and more habitually prone to outbreaks of irascibility, they increase progressively the inability to control their exhibition, until mere trifles excite in them outrageous storms of passion. If the tendency be recognised by an examination of the brain-organisation before it has had an opportunity of manifesting itself, such fault of character may be destroyed, or at least rendered harmless, through a carefully-directed education. A neglected child of the very poor or criminal class, should it not even have a rudimentary moral sense, may have its mind fashioned by imitation and example if placed amongst a well-conducted surrounding. Children are such imitative creatures that they soon adopt the tone of their environment.

Too little is done at present to curb the animal

1.



Infant theologian.

2.



Resolute character who wants to be master of others.

3.



Boy, deficient in retentive power.

4.



Perfect imbecile, who does not know 2×2 or 3×4 . No memory. An obstinate boy.

FOUR DEGREES OF INTELLECT.

propensities of children of the outcast. They may be imbued with a respect for authority, but this does not imply sympathy. We instil fear into them by punishing them, and this does act as a restraint, but it is the lowest form we should use. The human being in whom the sentiment of fear has been cultivated at the expense of other feelings will act rightly as a youth for fear of his father's whip, then as an employé for fear of dismissal, then as a citizen for fear of the laws, then as a devotee to some religion for fear of post mundane torture, and thus may have right conduct grown by habit into a part of his nature, but it is not very reliable. To make a man moral we must educate his ethical sentiments by constant practice, and avoid any stimulus for the display of selfish instincts, so that in the growing brain the brain-area for the former continues to develop, and that for the latter is arrested from lack of direct use.

Resistance to certain too active propensities would be facilitated with all the more success were the task of curbing them started earlier; and by a suitable mental training commenced from infancy, greater facility of action and more energy to the higher sentiments and intellectual powers would be ensured, and render more vivid and accurate the knowledge of the fatal results of all immoral acts. This is fully recognised by many educational authorities, but what is novel is that by adopting such training in the infant we should see the respective brain segments develop

accordingly, and be able to gauge, by actual measurements, the amount of good achieved. The temporal lobes which, in the child of criminal parents, are found predominating over the rest of the brain, will be discovered to assume a lower position according as we exercise the functions of the prefrontal and superior frontal regions.

Man has a moral nature as well, and this requires to be drawn out. When this is not done, the animal characteristics only have full play. Every moral tendency may be aided by additional motives and carried on to yet higher perfection. A study of the brain-organisation may reveal even in the worst characters some capacity for virtuous improvement which, from the mere absence of opportunity, has not been hitherto dreamed of. Moral feeling should be developed by the *practice* of morality and the enactment of such scenes as awaken the feelings which are their base, such as pity, sympathy, wonder, veneration; but not merely through addressing ourselves to the intellect alone as by storing the mind with moral precepts.

It is generally agreed that a child should be educated according to its natural aptitudes. Hitherto, however, one has had to wait until these aptitudes manifested themselves, which often does not occur until adult age when the brain has nearly reached its full growth. A scientific phrenology enables us to determine these aptitudes, even in infant life, ere they have been actually manifested, and to direct the education in such wise as to influence the brain-

growth in the manner desirable. Physicians should make a study of this subject and not leave such an important branch of science to the practice of quacks.

To the parent, or the practical teacher, the theories advanced in this book would prove of eminent service, for it would enable him to form a rapid and correct appreciation of individual character and of the natural bent of every child, so that the course of study could be shaped accordingly. Notice the shape of heads, Plate 40. By an inspection of the child's brain-organisation the peculiarities of temperament, the development of the intellectual powers, moral dispositions, and animal propensities can be ascertained. The teacher will thereby know the strong and weak points of each pupil, what to encourage and what to restrain, with a view to secure the proper balance of mind and character. He will discover the natural capacity of each child and will be able to make the most of it. He would be enabled to understand and to safeguard the precocious child, and know how to train the backward and vicious child; they would bring the moral and intellectual powers in the ascendant and train the child to employ its natural abilities to best advantage.

How many tears would be spared to children who are forced to learn subjects for which they are not by nature endowed, and how much vexation of spirit might the parent or teacher himself be spared!

Comparatively few youths would, I think, get baulked in the careers in which they are embarked

were their mental capacity for that which they are expected to perform correctly gauged beforehand. A man who is colour-blind is, from necessity, debarred from taking charge of railway signals ; yet over and over again does one see youths whose brain-organisation fitted them for some other calling, forced into a calling for which they are not suited, and where they consequently must have to endure a martyrdom for life, with not one glimpse of a chance for distinction, or for anything more than the set rule of thumb performance of duties which are a daily cross and sorrow.

By selecting the calling of a youth in accordance with his brain-organisation and rendering him proficient in those studies or pursuits to which his qualifications and aptitudes incline him, the world would be greatly benefited and the individual himself rendered most happy. For a man finds happiness in any work in proportion as it calls into exercise those natural faculties of his that are most vigorous or most developed, and in proportion to his acquired skill and excellence therein.

The leading aim of education should ever be to develop and bring to perfection the endowments of the person who is being educated ; and both by cultivating excellences and correcting defects, to raise him to the highest condition he is capable of reaching.

At the end of the next chapter will be found a table for the cranial measurement of children which should be started when they are one month old and repeated every six months up to puberty, and every year after-

1.



The student.

2.



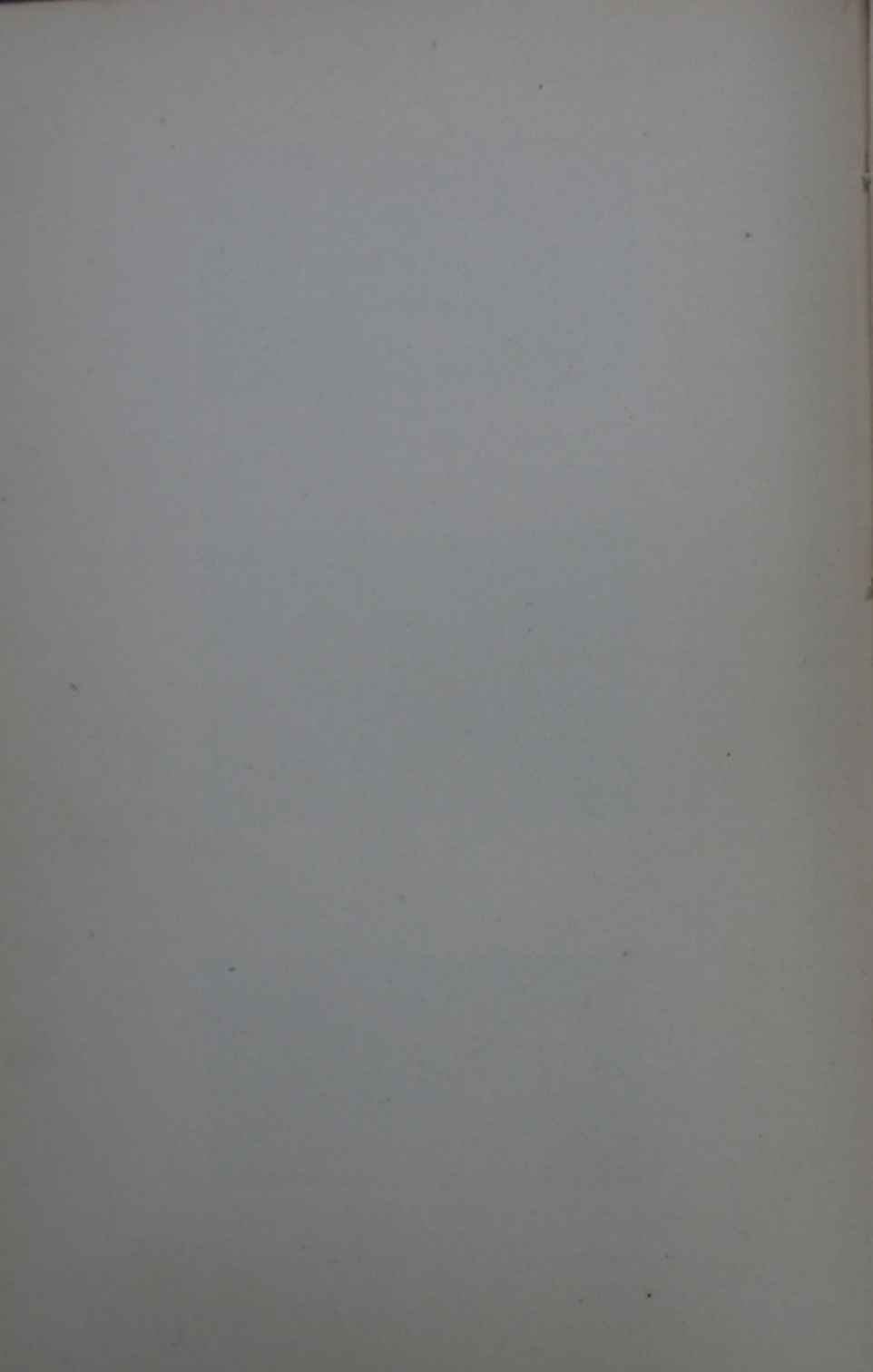
A practical boy, fitted for business.

3.



An energetic boy, fitted for a military or naval career.

THREE BOYS' FOREHEADS.



wards till adult age, in fact so long as the brain is growing. It will be found then according to the direction their studies have taken and the development of the natural dispositions that the relations between the different measurements indicate an alteration, owing to the greater increase of some as compared to others, and thus account can be kept of the progress achieved.

To show the reader how much can be learned from an inspection and scientific measurement of the head and the value of such an examination, I will quote two examples from my notebook ; one, that of a gifted boy, D. M. S., the other of a mentally deficient youth, R. W., the portraits of whom I have obtained permission to reproduce.

D. M. S., see Plate 41, was $2\frac{1}{2}$ years old when I wrote the following description, guided only by what I could discover in his brain-organisation :—

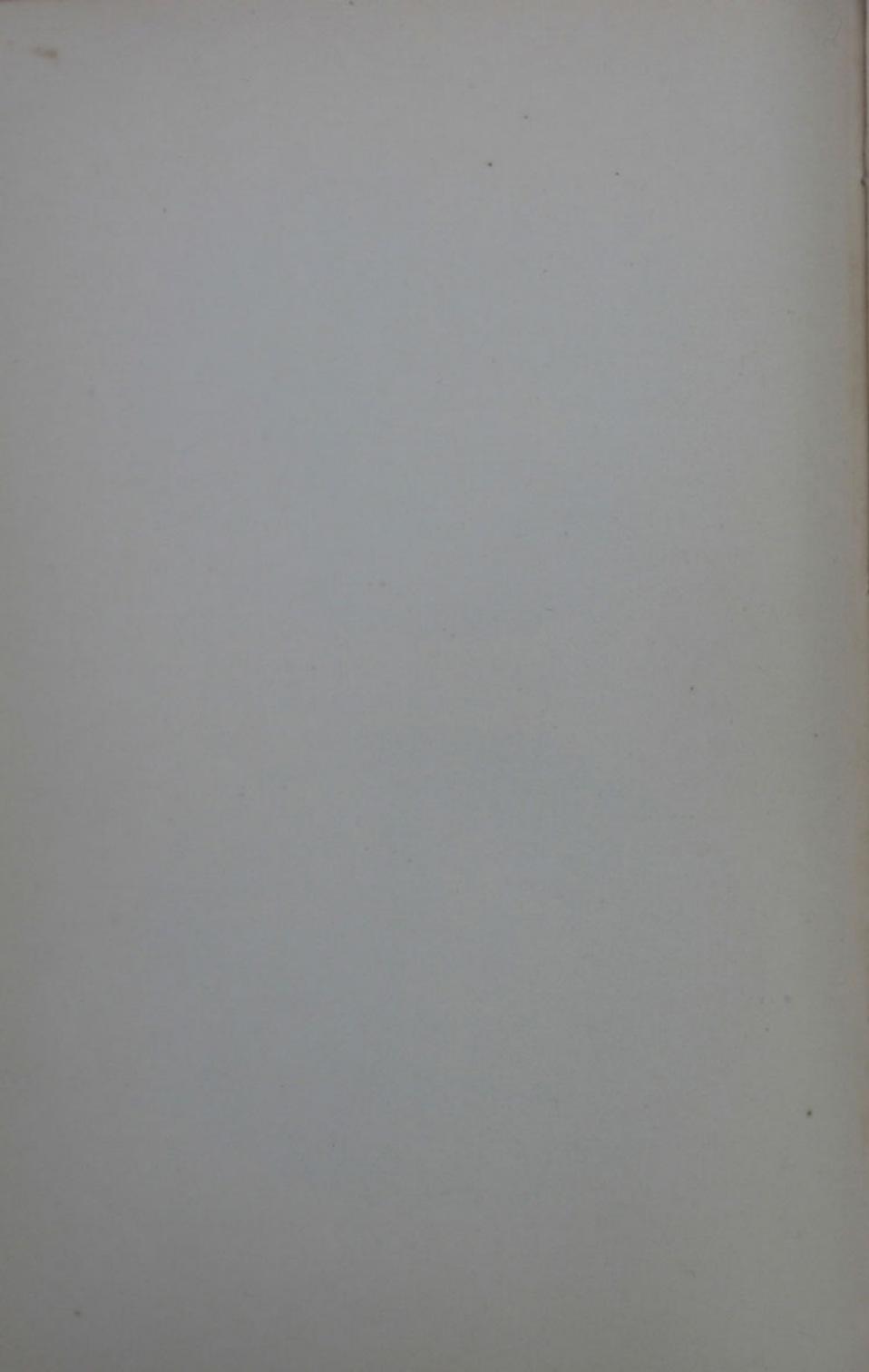
It is a universally accepted fact that "the size of the brain is a measurement of mental power," and since young D. M. S. has a very large head for his age, one may infer that he will show great mental power. As, however, the different parts of the brain have different functions to perform, one must next ascertain which lobes of the brain are most highly developed in order to determine in which direction his mental power will show itself. A glance at his head will convince us that the frontal lobes are by far the most predominant. These lobes form the substrata of the psychic processes which lie at the foundation of

the higher intellectual operations, hence it is perfectly evident that young D. M. S. will show uncommon intellectual abilities. Indeed, his head looked at from the front shows such an even, dome-like structure, that it may be, without exaggeration, described as a truly noble head.

The upper part of the forehead, a region with which the reflective faculties are supposed to be connected, is beautifully developed. Persons with such a contour of head display a relatively marked premeditation—a habitual representation of more various possibilities of cause, and conduct, and consequence—a greater tendency to suspense of judgments and an easier modification of judgments that have been formed. In my opinion, the boy will make a good scholar; he will be more interested in books than in business affairs. He will show a logical tendency, an excellent reasoning intellect. He will think more clearly and rapidly than most boys of his age. He is likely to ask a great many puzzling questions of those who have the care of him. He will always want to know it *now*; he will have no postponement. He wants to solve the problem at once. His questions should not be evaded, but all who teach him should be ready to answer clearly and kindly. Question is the expression of mental appetite. The child that lacks the desire to question is in danger of death from intellectual starvation. Of course, the questions of some children are silly, thoughtless, or aimless, but this will not be the case with young D. M. S.



TWO PORTRAITS OF D. M. S.
*Notice the fulness of the forehead and its length from the opening of the ear to the outer corner of the eye.
(Compare with Plate 42.)*



The middle of the upper part of the forehead is very prominent, showing that he will be much given to inductive reasoning. He will see resemblances and differences readily and make nice distinctions. He will shine as a critic as he grows older, see the good qualities and the defects easily. When people talk to him, they must be consistent and truthful, or he will see the delinquency.

The lower part of the forehead just above the eyes is not so prominent in young D. M. S. as the upper part. From this I conclude that he will be more distinguished for his smart reasoning and clever thinking powers than for his acuteness of perception. His power of observation will not be bad, only his reflective faculties are by far the more powerful.

D. M. S. will not care much about reading mere statements and learning dry facts; things must appeal to his vivid imagination. He is likely to plan and construct well. He will remember events, a story he will not forget. He will learn languages easily and will be good some day both as a writer and speaker, but especially the former. He will say sound things with refinement and taste. He will rejoice in whatever is ornamental, artistic, refined and ideal. Coarse surroundings and common people are not likely to suit him. He will prefer the society of the cultured and refined, and have absolutely no patience with the ignorant and inartistic.

As the formation of the head is at present, it

indicates a tendency to become imaginative rather than practical; a tendency to learn, simply for the sake of knowing, that which he may never have occasion to use much; a tendency to study classics, philosophy, literature, fine arts, rather than natural science. He will idealise rather than realise.

The region of the ethical sentiments is very prominent. He will show generosity and sympathy. He will receive impressions easily, will be easily moved to sorrow or joy, and be possessed in every way of high susceptibility. He may show a great sensibility to pain, increased by his nervous temperament. If he can build up physically by appropriate food, plenty of rest and sleep, and can acquire more muscular development, his sensitiveness will then be supplemented by a background of constitutional vigour.

D. M. S. is likely to conform naturally and readily, and glide easily into the ways and usages of others. He will imbibe the character as well as the purposes of other people by their manners as much as he will by their words, hence example to him is potent. Fortunately his power of discrimination is so strong to prevent his following any other but good example. He is not likely to accept an authority unless it be a good one in his estimation. He has the element of agreeableness, and is likely to make what he feels and what he says very acceptable to other people; but since with that large reflective region he is likely to have great originality of thought, he

may have his own view of subjects as he grows older and gains experience, and may then take exception to things and be inclined to contradict. Opposition would easily rouse him.

D. M. S.'s head is broad from side to side; this is observed in all men who show force of character. He will also show courage. He will drive every enterprise he undertakes, and have enough push and energy to conquer the difficulties that lie between him and success, while he will be cautious and guarded. People who are thus prominent over the ears often show a tendency to be passionate. In young D. M. S., however, it will show itself more in combination with his large reflective region, in a tendency to argue, to discuss, to criticise and to set people right, than a disposition to annoy, to worry and vex them. He will show more irritability and impatience than bad temper, and this is largely due to his nervous temperament. As his constitution grows stronger and more powerful—and every effort should be made to produce this result—he will grow calmer and less sensitive.

His head is wide over the parietal eminences, showing him to be watchful, careful, and wide-awake about danger and difficulty. He will not need an older person to go with him to keep him out of trouble. He will recognise suspicious people easily. He loves the truth, at the same time he will be judicious in his statements and answers, and will consider and think before he says yes or no.

The posterior part of the head, corresponding to the occipital lobe of the brain, is long. He will show sincere love and affection for his friends, and will be much attached to them. If inclined to disobedience, a kind word from those he loves will always have the desired effect. Severity would only stimulate his passion.

The boy will realise the hopes of his friends, and will justify as he advances in years their earlier expectations. He has a large head for his body, the predominance of his brain gives him a sensitive temperament, and inclines him to overdo. Considerable care will need to be exercised in his training and culture to give strength and vigour to his body and to avoid over-excitability and exercise of the brain. He should not be encouraged in extra thought and study in his tender years.

There are two aims in education ; one is the development of the mental powers, the other is the acquirement of information. Now, as regards the first, young D. M. S. has such a well-developed brain that no stimulus need be given for further expansion of his innate faculties ; all that is wanted is sound information, for which he is craving already and will continue to crave as long as he lives. The child should not be hurried in his studies, nor should he be made the object of admiration and excitation on the part of visitors and friends. A bright child is often talked to too much, and its brain is kept in constant activity and fever heat. If children with

an active and such highly developed brain, as young D. M. S.'s, are left to their own resources and have a sufficient number of playthings, they will make excitement enough in their own way from their growing active brains.

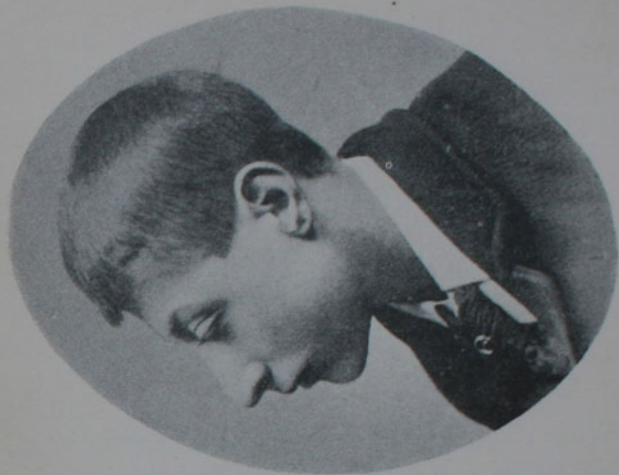
If he should fail to distinguish himself in any one pursuit, it will not be from want of talent, but from being interested in too many things at a time, or from not having stopped long enough at any one subject. Of course, it is an advantage to be an all-round man and brilliant in many subjects, and some people would prefer such a man to one who can claim to have explored the greatest depth of only one department of knowledge and to be the greatest authority in it. Young D. M. S. has just such a head that he may become, with proper training, distinguished in one department and well versed in most others. To study will be easy for him, perhaps easier than to play, if he will only fix his mind on a subject to the very end. His attention is easily roused, but it should be seen that he continues to concentrate his mind until the work is accomplished, the play—or the speech if addressed by any one—is finished.

In my opinion young D. M. S.'s head is exceptionally developed in so many directions, that I feel sure, given the track to run on, he will have the inspiration, the impulse, the talent, the ambition, the enthusiasm and the imagination, to give him all the enterprise which he will need. Given the opportunity,

a great future is in store for him, but with such an organisation, even without favourable surroundings, he should rise to honour and distinction.

The following are the measurements of D. M. S.'s head taken at the time of writing the book, when he was $6\frac{1}{2}$ years old, that is four years after the above sketch was written. To demonstrate the significance of these measurements, let us compare them, with those of another boy, R. W., 16 years old, see Plate 42. Consult also Plate 50.

	D. M. S.	R. W.
1. Circumference	inches $20\frac{7}{8}$	19
2. Occipito—frontal arch	„ $11\frac{1}{4}$	$11\frac{3}{4}$
3. Lower frontal arch	„ $9\frac{1}{2}$	10
Distance to eyebrow	„ 3	2
4. Middle frontal arch	„ $10\frac{1}{2}$	9
5. Upper frontal arch	„ 11	10
6. Posterior frontal arch	„ $11\frac{5}{8}$	$11\frac{1}{2}$
7. Anterior parietal arch	„ $11\frac{7}{8}$	12
8. Posterior parietal arch	„ 12	$11\frac{1}{2}$
Distance to parietal eminence	„ 3	3
9. Occipital arch	„ $10\frac{1}{2}$	10
10. Cerebellar arch	„ 9	$8\frac{1}{4}$
11. Longitudinal diameter	„ $6\frac{7}{8}$	$6\frac{1}{2}$
12. Lower frontal diameter	„ $3\frac{7}{8}$	$4\frac{1}{4}$
13. Upper frontal diameter	„ $4\frac{3}{4}$	$5\frac{1}{8}$
14. Middle temporal diameter	„ $5\frac{3}{4}$	$5\frac{7}{8}$
15. Posterior temporal diameter	„ 5	$5\frac{1}{4}$
16. Bi-parietal diameter	„ $5\frac{1}{8}$	$4\frac{7}{8}$



TWO PORTRAITS OF R. W.

A mentally deficient boy.

*Notice the concavity of the forehead and its proximity to the ear.
(Compare with Plate 41.)*

It will be seen that notwithstanding the great difference of age, R. W.'s head is still $1\frac{7}{8}$ " smaller in circumference than D. M. S.'s, the older boy measuring only 19" as compared to $20\frac{7}{8}$ " of the younger. The pre-frontal segments of the two boys are nearly alike in cubical capacity, but not so in relation to the whole head. The forehead of R. W. is only 2" distant from the ear, whereas D. M. S. is 3". The forehead of the older boy presents a marked concavity, the forehead of the younger boy is markedly convex. In addition, R. W. presents the motive temperament and an inferior brain-quality, whereas D. M. S. is of the mental temperament and has a refined brain-organisation which points to a high nervous activity.

R. W.'s cranial measurements show the whole head to be small for his age, but that it is the pre-frontal region alone which is arrested in development, the other brain-segments being of normal size. Hence one may draw the inference that he will show himself defective in the manifestation of the purely intellectual powers. He will lack observation, retentive and reasoning power. A more detailed examination reveals that he tends to notice only conspicuous objects, cannot measure well by the eye, is poor in calculation, lacks system, lacks power of expression in words and often fails in explaining himself, has a confused memory, tends to forget what is wanted, has no capacity for the study of history, does not remember events and their dates, is deficient in discerning power, jumps readily to conclusions, and lacks application. He will be fit only

for menial or mechanical labour, and to work under control of others. As a matter of fact, he only succeeded in passing the 3rd Standard of the Board School. While most subjects of science, literature and art, will be open to D. M. S., or at least interest him, all higher culture will be beyond R. W.'s understanding.

As regards the other measurements it has been pointed out, that these are normal, and it will be seen that his head is relatively high in the superior frontal and parietal regions, showing him to be a moral boy, kind-hearted, hopeful, having respect for his superiors, as well as for himself, with sufficient self-esteem and perfect contentment. His occipital region as compared with the rest of the head is fairly developed, so that he likes friends and has parental attachment; considering his high head, he will probably manifest much regard for his parents. The temporal width is not marked, and he is not likely to be combative, though he may defend himself when attacked. Again, his large superior frontal region (3rd and 4th segments) would tend to prevent him from inflicting suffering on others. He will be noted more for perseverance than force, and he is likely to be open and truthful.

Altogether, then, notwithstanding the deficiency of the pre-frontal region, R. W. is a good boy, and can be trusted in his station of life. True, he lacks the intellect to raise himself to a higher level, but an individual with a brain-organisation like his, has but few desires, is easily contented, and for his position and requirements he possesses enough mental power.

R. W.'s organisation ought to have been recognised by his teachers when he was the age of D. M. S. The one uniform rule of education applied to all boys at our public schools, leaves an organisation as that of R. W. behind, and is only wasteful of his young years.

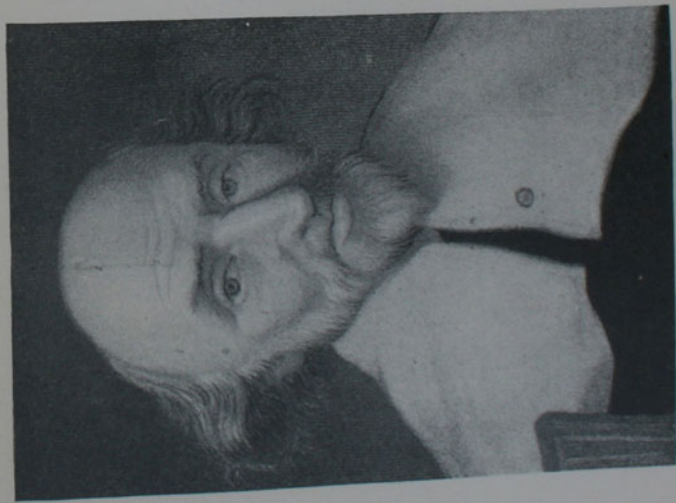
We may be permitted to ask, by what other method could we obtain such information as given in the sketches of D. M. S. and R. W. And what grand science could be founded were the subject to be taken up by properly qualified men, and not left to quacks!

CHAPTER XVII

OTHER APPLICATIONS OF A SCIENTIFIC PHRENOLOGY

THE theory expounded in this book, of the functions of the brain, proves our entire dependence on the primitive laws of creation, the source of moral good and evil, the cause of the diversity and the antagonism of our propensities, of the strength or the weakness of our understanding, and the inner motives of our will and actions. It demonstrates to teachers, moralists, legislators and judges alike, that there is no fixed quantum, either of the power of doing good, or avoiding evil, or of the degree of moral liberty with which each individual is endowed. It possesses consequently a general interest for all classes of society.

Not only does it explain to us the diversity of the moral and intellectual character of individuals, but furthermore, the cause of such difference in them, in both sexes, and in different races. See Plates 2 and 43. It shows why a uniform system of education, rewards, punishments, laws, etc., is not in conformity with nature, whether as regards individuals or nations in general.



JOHN KNOX (1505-1572).

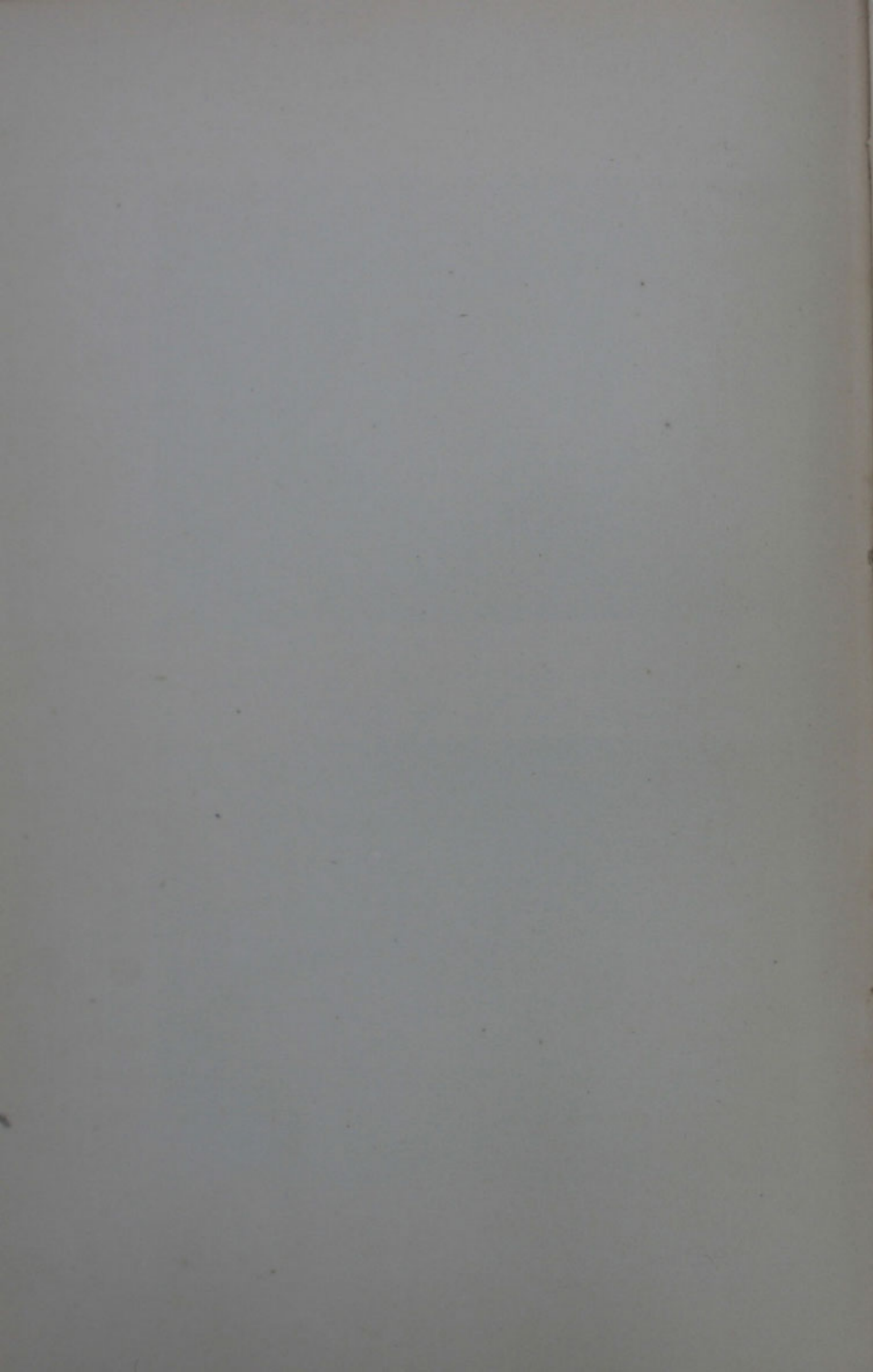
Scottish Reformer and Historian.
Region of religious sentiments large, also good base, hence able to overcome difficulties. His life was full of conflicts. He was unforgetting, and vehement even in his prayers, and in some things coarse.



ROBERT LEIGHTON (1611-1684).

Archbishop of Glasgow.

A saint from his youth, inclined to mysticism and abstraction from the world. Benevolent. Everything that he could spare was given to pious purposes, and he employed others as the agents of his charity; that he might not get the credit of it. Never in a temper. Head high, temporal region not prominent.



Notice the types of heads as portrayed in this book, and you will soon become familiar with the classes which they represent. Bear in mind, physical vigour, coarseness and sensuality are expressed by the lowest parts of the brain; refinement, sympathy, ecstasy, by the highest parts. Notice the lofty brain-organisation of the divines with its dome-like structure, in harmony with their elevated sentiments and heavenward aspirations. See Plates 2, 5, 9, 16 and 43. Contrast their heads with those of pugilists, who lack this expansive top-region but have a large convex base to their brains which fits them for muscular energy and animal life. See Plates 14, 30 and 44.

In the military commander, we see, as in the pugilist, ample physical vigour, firmness and "pluck," but with this difference that there is a well-developed intellectual region enabling him to direct his executive abilities. See Plate 44. Contrast this type with that of the poet, with his mental susceptibility and high human sentiments. See Plates 7, 17 and 46. He will render in magnificent, well-sounding words those feelings which are strongest in his own organisation, thus—devotional feelings as in Milton with his spiritual head—amorous affections as in Thomas Moore and Byron with their large occipital regions—poetry of a deep reflective kind, as Browning with his prominent forehead; and so on.

Surgeons, too, require a good base to their brain, for courage, energy, coolness and steadiness of nerve, in the use of the knife, and to endow them with a

love for operating. Their prominent perceptive region gives them practical talent and mechanical ability. Contrast this type with that of the physician whose large reflective region is necessary for "diagnosis and advice," and whose higher head in the region of the loftier sentiments gives him the facility of entering into the feelings of his patients and sympathising with them. Compare Hunter's portrait with that of Abernethy, Plate 45. The latter was more of a physician than a surgeon, more distinguished as a philosopher than as an operator.

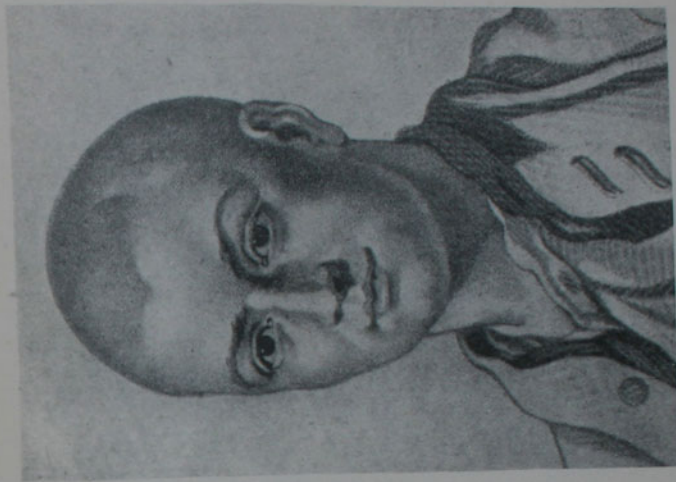
Those who study the different developments of the various parts of the brain, as taught in this book, will no longer be deceived as to the primary motives which determine their tastes and actions. They will be competent to judge exactly of their merit and demerit. They will know the reason, why it does not depend on themselves that they have any predominant propensity, or any talent to become a mathematician, mechanic, musician, poet, or orator. They will comprehend why they excel, apparently without effort, in one thing, whilst in another they are inevitably doomed to mediocrity. They will know why he who is brilliant in a particular station must necessarily be eclipsed in another. Finally, they will be able to explain the double man within them, and why their animal propensities and moral sentiments, or their propensities and reason, are so often opposed to each other.

The person who has mastered these theories, while studying in history the lofty deeds of great men, will

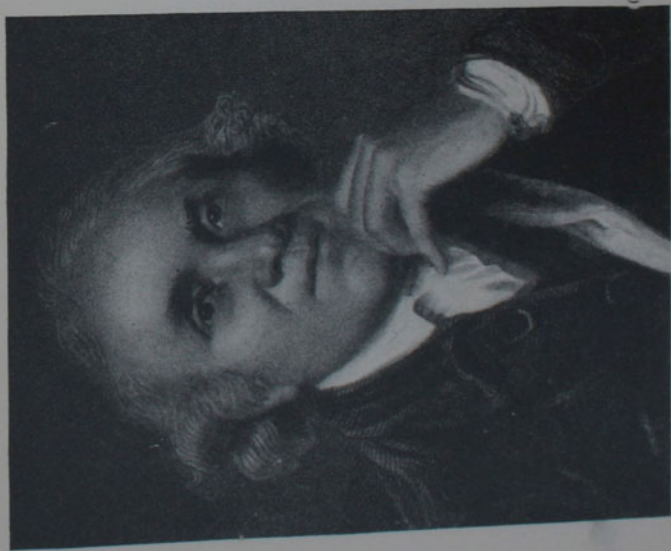


VISCOUNT WIMBLETON (1572-1638).
High military authority.

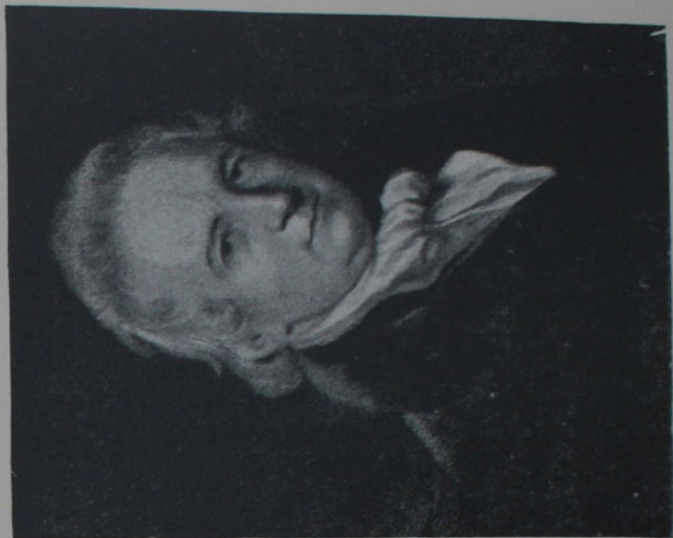
Temporal region large in both, but see the difference in size of frontal lobes.



GEORGE TAYLOR (Died 1750).
Pugilist, called George the Barber.



JOHN HUNTER (1728-1793).
Anatomist and Surgeon. The founder of scientific surgery.
No taste for books. Read little. Poor speaker. Only twenty
pupils. *Great observer*. All money spent for his collection.
He liked to know things by personal investigation. Never
clung to former opinions by conservatism. An "observing"
head.



JOHN ABERNETHY (1764-1831).
Father and grandfather divines, hence inherited high head.
Brilliant lecturer, great power of exposition, admirable teacher,
crowds of students. Wrote "philosophical" essays on surgery
and physiology. Was speculative. No great fame as an
operator. In later life, averse to operations. "Not a good
observer" (Paget). A "reflective" head.

avoid being the dupe of biographers, for he can consult the portraits representing the brain-organisation of these heroes. See supposed portrait of Shakespeare, Plate 46. Thus he will be able to judge of the relative results of their innate mental powers and of the external circumstances ; what they owe to chance and what they owe to their own determined purposes ; how far he can ascribe honour to their enterprises, their concerted intellectual plans, or to the energy of certain propensities.

It teaches us how man is fitted by nature to become a sage or fool, an artisan or poet, a despot or a slave. Average men have average heads, of course, and average characters. But, if in social life we perceive a particular form of head with some brain-segment relatively large, we can say with some confidence that the tendencies which are connected with this region are stronger than his other qualities. But we are ignorant as to whether circumstances have permitted this person to devote himself to the pursuit to which his leading disposition would direct him. Birth, status, education, laws, customs and religion have the greatest influence on the occupation, and the exercise and perfection of the mental powers. We can speak of a tendency, but are not able to say he is actually so. If the question concern propensities capable of leading to mischievous actions, contrary to the laws, we abstain from judging, because we admit that sane and reasonable men are able from nobler motives, and the result of fortunate habits, of controlling such propensities, or employing them in a legitimate manner.

The man of mediocrity places the extreme limit at a point beyond which the man of genius passes at his very entrance on the career. See Plate 47. We ought then to be on our guard and choose only for the subject of our observation those men whose eminent mental power is acknowledged generally and well proved by their deeds and productions. We must not select individuals who are "all round" men, who have all the brain-parts proportionally developed. To judge of a particular brain-segment or a particular centre, one should choose men in whom the particular aptitude or disposition is marked and who in all other respects exhibit mediocrity. In obtaining confirmation from others one has to bear in mind that the person's friends and his enemies will estimate his qualities and talents very differently. His own estimate is no criterion. Hence talk to the stranger whose head you are observing and touch upon what you have thought to be his favourite subject. If you are right, he is sure to display a lively interest. If you think a person should, from the relative size of his temporal lobe, be bad-tempered, irritate him but slightly and you will obtain a manifestation strong enough to dispel all doubt.

The occupation by which we get our living generally proves nothing in relation to our aptitudes or our ruling disposition. Fathers and patrons put young men into positions, frequently regardless of their natural aptitudes. These are much more likely to declare themselves in the pastime or hobby they recur to. See portraits of



SHAKESPEARE (1564-1616).

If this be a genuine portrait, Shakespeare wrote the plays attributed to him, for the type of head represented is that of a great poet and author.

5, acts - oval - nose median
+ of teleto 28



FREDERICK, DUKE OF YORK (1763-1827).

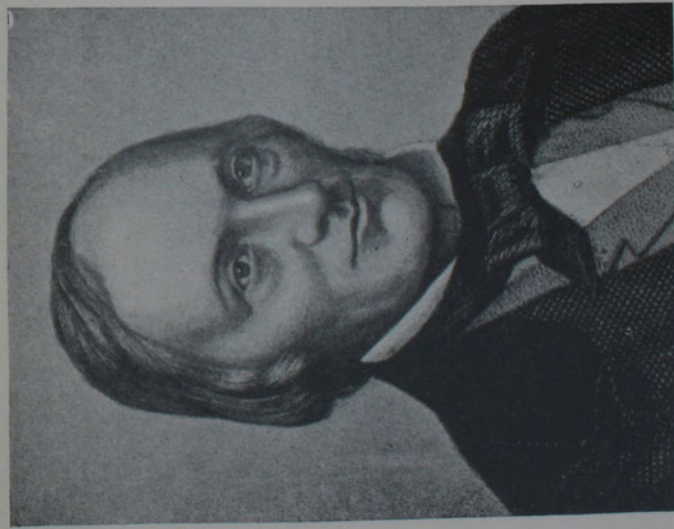
Failed as a Commander. Good-tempered, affable, great favourite. Strong attachment. Notice large occipital region.

Compare the massive forehead of Napoleon, its width, depth, and fulness, with that of the Duke of York.



NAPOLEON BUONAPARTE (1769-1828).

Military Genius.



PROFESSOR OWEN (1804-1892).

A naturalist fond of poetry. Strongly developed imagination besides observation. Great width at base; addicted to acrimonious controversy.

Two scientists with large observation (see lower part of forehead) and strongly developed imagination—love of poetry (see height of forehead at the sides).

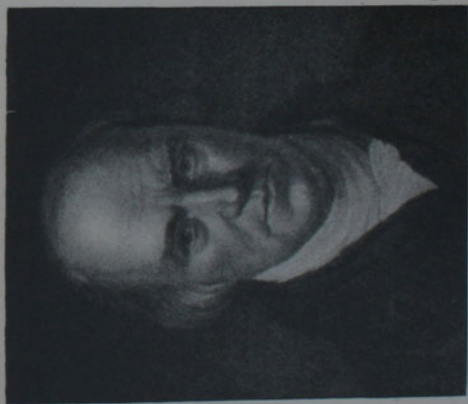


SIR HUMPHRY DAVY (1778-1829).

Another natural philosopher with love of poetry. Wrote good verses.

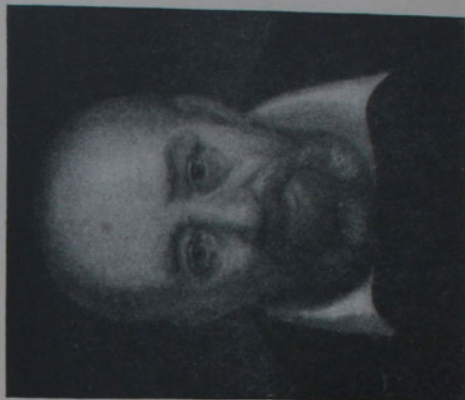
Two scientists with large observation (see lower part of forehead) and strongly developed imagination—love of poetry (see height of forehead at the sides).





DAVIES GILBERT, P.R.S. (1767-1839).

Historian, Scientist, Dramatist and Mystic. Notice the full development at top of head, its height compared to the width, and the flat sides.



GEORGE BUCHANAN (1506-1582).

Historian and Poet. Morose, coarse; see large bulging temporal region. It is a wide head, yet it is also high anteriorly, hence he could be humane and cultured, when he wanted to.



Owen and Davy, Plate 48, two scientists with strongly developed imagination and a love of poetry. Notice too, the portrait of Gilbert, a man who combined science and mystery. Plate 49.

No such discretion is, however, needed in the case of children as yet wholly untrained or but little trained, nor in the case of the mentally deranged, or of prisoners.

CRANIAL MEASUREMENTS. See Plate 50.

Children should be measured every six months up to the age of puberty, to note the growth of the head in its different directions, and the increase in size of the various brain-segments.

<i>Name.</i>	<i>Age.</i>	<i>Date.</i>	<i>Remarks.</i>
1. <i>Circumference.</i>			From centre of forehead around the head across the most prominent part of occiput.

ARCHES.

2. <i>Occipito-Frontal.</i>	(Longitudinal measure) from glabella at root of nose over top of head to most prominent part of occiput.
3. <i>Lower Frontal.</i>	Between upper insertion of ear, over glabella. (Mark distance from ear to eyebrow.)
4. <i>Middle Frontal.</i>	Do., over centre of forehead.
5. <i>Upper Frontal.</i>	Do., over frontal eminences. (Mark distance to frontal eminences.)
6. <i>Posterior Frontal.</i>	Do., across anterior border line of hair.
7. <i>Anterior Parietal.</i>	Do., vertically across head.
8. <i>Posterior Parietal.</i>	Do., across parietal eminences. (Mark distance to parietal eminence.)
9. <i>Occipital.</i>	Do., across most prominent part of occiput.
10. <i>Cerebellar.</i>	Between upper insertion of ear, across nape of neck at junction of occipital bone.

DIAMETERS.

11. <i>Longitudinal.</i>	From glabella to most prominent part of occiput.
12. <i>Lower Frontal.</i>	Between the two external angular processes of frontal bone at outer corner of eye.
13. <i>Upper Frontal.</i>	Between two points above external angular processes on line of frontal eminences.
14. <i>Middle Temporal.</i>	Between the two most projecting portions of temporal bone in a vertical line above opening of ear.
15. <i>Posterior Temporal.</i>	Between two points just above and behind the mastoid processes behind the ear.
16. <i>Bi-Parietal.</i>	Between the two parietal eminences.



PRINCIPAL CRANIAL MEASUREMENTS.
(See page 256.)



CHAPTER XVIII

AN APPEAL FOR LIBERTY OF INVESTIGATION

IN "The Mental Functions of the Brain," I have adduced a mass of evidence, including 800 cases with post-mortem records of limited brain-lesions, all confirmatory of our localisations, and the whole taken from the records of opponents of the theory before us. In this volume I have laid stress on the strictly phrenological method—of observing special parts of the brain, distinct lobes and convolutions, and comparing their size to the development of the rest of the brain—which, if applied in conjunction with a study of the mental characteristics of our fellow-beings, would enable us to make observations by the million. This method, which was considered unscientific and hence shunned for so long a time, has found favour with scientists, since the author's first papers on a scientific phrenology were published in 1886, and was for the first time advocated publicly, last year, by Dr CUNNINGHAM, Professor of Anatomy in Dublin University, in his Presidential Address to the Anthropological Section of the British Association at their meeting in Glasgow.

Dr Cunningham was upheld by Sir WILLIAM TURNER, Professor of Anatomy of Edinburgh Uni-

versity and President of the General Medical Council, who, like Sir SAMUEL WILKS, the Ex-President of the College of Physicians, and the late Sir JAMES PAGET, besides others with whom I have not come in contact, have always kept an open mind on this subject. In Germany, Dr LANDOIS, Professor of Physiology at Greifswald, has been long urging a re-investigation of Gall's doctrine; Dr R. SOMMER, Professor of Clinical Psychiatry at Giessen, recommends it, not dogmatically, but as a working hypothesis; and the Swiss Professor of Physiology, Dr VON BUNGE, in his text-book just published, acts as pioneer in devoting two chapters to a rehabilitation of Gall; Dr MÖBIUS of Leipsic has published several books on the same subject; and, quite lately, the renowned Professor of Psychiatry in the University of Vienna, Dr R. von Krafft-Ebing, has joined in the defence of this great discoverer.

Erroneously holding Gall responsible for phrenology as it is talked about by "quacks," many men have scoffed at his theories without thinking it worth while to read even a page of his works or to repeat a single one of his observations. Now that, through my persistent labours, the medical profession has been enlightened as to the brilliant anatomical discoveries of Gall, a list of which has been published by me in "The Mental Functions of the Brain," and it is proved that he, not Broca, was the discoverer of the universally accepted speech-centre and put on record the first authentic cases of aphasia, and that

S. Wilks
 J. Paget
 Landois
 Sommer
 von Bunge
 Möbius
 Krafft-Ebing

many of his other discoveries have been confirmed within recent times, it can no longer be a question of fact, but can only depend on our standard of ethics, as to whether we acknowledge Gall's work in our textbooks, and render him the honour which is his due. There are several medical men of repute thorough phrenologists, but they have preferred hitherto not to be known as such. By keeping silent and allowing prejudiced leaders of learned societies and scientific journals to suppress all attempts to bring these theories before public notice, they have only themselves to blame that the subject remained limited to "quacks" and to those writers who have not possessed sufficient courage and moral sense to acknowledge their indebtedness to Gall, but who, in the words of M.D., F.R.S., "have earned fame by giving phrenological doctrines to the world without confessing their derivation."

Even honourable and conscientious men are liable, through a too strongly conservative feeling, to be mistaken at times. We need only remember Dr HENRY MAUDSLEY'S arguments (*Lancet*, 1868) against Broca's localisation of the Speech-Centre, as "having been promulgated so hastily, and, I may add, received so rashly. To my mind, there has been nothing like it in psychology since Descartes located the soul in the pineal gland." The two brains were of persons who had died insane, hence says Dr Maudsley: "It is not easy to see why M. Broca might not, with equal justice, have maintained that a *faculty of sanity* was located in the third left frontal convolution. Broca

and his followers seem to have deceived themselves by the creation of a wonderful metaphysical entity distinct from the phenomena, which they call a 'speech faculty,' and locate in a portion of the third left frontal convolution. Every idea of the mind is then supposed to be obliged to travel there from the most distant convolutions of both hemispheres, from the north and the south and the east and the west of the brain, to get itself spoken—translated into a muscular act of speech. In no other way can it get outward articulate expression. But if this be so, it will be necessary to suppose that nerve fibres from all the ideational centres of all the convolutions converge to this particular convolution. We know that communicating fibres, the radiating fibres of the cerebrum, do converge from all parts of the convolutions to the motor-centres below; but of any similar fibres converging to a particular convolution we have not the shadow of any evidence. *Now the truth is that there is no more a special faculty of speech in the mind, than there is a special faculty of dancing, or of writing, or of gesticulating.*"

Even when a subject is practised exclusively by quacks, there may still be some truth in it. What is science to-day was mysticism or quackery in times past. Medicine itself is the outcome of practices which we should not recognise to-day. The "exclusiveness" can be carried too far. To give only one example. Mesmerism or animal magnetism may have been pure charlatanry, perhaps it was, but that was no reason to

reject the paper on the strictly scientific investigation of these phenomena under the term of "Hypnotism," which Mr BRAID, the Manchester surgeon, offered to the Medical Section of the British Association, in 1842. For, thirty-eight years after, in 1880, a new generation of medical men, the British Medical Association, invited a German Professor, Dr PREYER, to deliver an address at their annual meeting and explain to an English medical audience what Mr Braid, their distinguished countryman, whom the Germans had learned to honour, had done. And was not the Darwinian doctrine eagerly embraced in Germany long before it had obtained credit in England? Are we so afraid of the honest accumulation of facts and of the conscientious conclusions, to which they must necessarily lead that we must boycott every new investigator, because the truth that he teaches is threatening the fashionable sophisms and orthodox opinions of the passing moment? When the fashion turns in favour of his new doctrine, then all the thanks he gets, is that those who practised it all along in the obscurity of their consulting rooms, afraid of the susceptibilities of the majority, come forward to claim that they knew all the author wrote long before he was born.

Let the younger generation of investigators, therefore, not be discouraged by the arguments brought forward from professional and editorial chairs, but observe for themselves. Phrenology, if practised by properly qualified men would be raised from its present

level. Some may remember that there was a chair of Phrenology at the Andersonian University of Glasgow in the days of George Combe.

The examiners of scientific researches are frequently teachers of long experience, hence their ideas are apt to become so fixed by long-continued teaching that, notwithstanding their anxiety to do justice to the fresh investigator, they are unable to grasp fully his new subject, and therefore write disparagingly of it or else keep silent about it. The examiners being men of high ability and integrity hesitate to express opinions anent matters which they do not fully and clearly apprehend, or which lie really outside their own speciality, and other men of science follow their example and remain silent. The professional journals, equally afraid of committing themselves, either ignore the book or write of it in a language conveniently vague and general to insinuate that the writer's method is not strictly scientific, or that he is too combative in spirit, to take any notice of his investigation, and that the twenty years, which he sacrificed to it, might have been spent more profitably. Thus laborious and expensive researches, which fifty or a hundred years later are found to be of the greatest benefit to humanity are practically suppressed and consigned to oblivion.

Let the younger generation of investigators be not afraid of the new method. Let them ask themselves what *practical results* have the old ones produced during the century that they have been on trial. Has

the irritation and mutilation of the brains of living animals thrown any light on the mental aptitudes and dispositions of man, and is it likely ever to do so? True, however ridiculous the results of vivisection, such as one renowned experimenter's conclusion "that the function of the frontal lobes was the innervation of the muscles of the back" (*Journal of Mental Science*, April 1886), it is considered as science, and volumes of the Proceedings of Academies are filled with it, but sober-minded men have come to see, that this method of investigation has reached its limit, and that even its supposed assistance in operations for certain forms of epilepsy has not met with that success which had been anticipated.

Let us ask ourselves, have recent researches on the "neurons," though an important addition to our knowledge of brain-cells, helped us in the inquiry before us? When we examine with the most scrupulous minuteness all the properties of the neuron, no sentiment can be perceived slumbering in its meshes, nor half-formed ideas starting from its processes. As in the case of the discovery of motor-centres, the triumphant proclamation of the neuron-theories has led many a student to think that nothing else is necessary for the further elucidation of the functions of the brain. All the neuron-theories will not explain the different degrees in which men are endowed with the various mental powers. One vast intellect, like NEWTON'S, fathoms the profundities of science, while the mind of another can scarcely grope its way through the daily occur-

rences of life. One individual spends his life in an ardent chase of wealth, which he stops not to enjoy ; another scatters in wasteful prodigality the legacy of his sires, and perishes in want from a mere incapacity to retain.

We refused for a whole century to repeat Gall's observations. How far have we advanced without them in our localisations of the intellect alone ? There are some investigators who hold that the intellectual functions are related to the whole brain ; some who agree with us that only the frontal lobes are concerned with them ; some again who hold that only the posterior lobes, at the back of the head, have to do with these functions ; and the latest are those who declare that only the parietal lobes, at the sides of the head, are concerned with the higher intellectual operations. I suppose it has hitherto been considered undignified for a Fellow of a learned Society to have a look at his own head in a mirror, or to observe those of other men, but he might have enquired of clinical experts and ascertained the fact that derangements of intellect involve the frontal lobes, if not exclusively, to a greater extent at least than any other.

For a physician to treat *mental diseases*, he needs more than an acquaintance of the anatomy and physiology of the brain, of the results of vivisection of animals, and a knowledge of some speculative system of psychology. He must have a perfect acquaintance with human nature, the character and motives of men, women, and children, in all walks of life. Anatomists

and physiologists study the machinery of the brain, the physician must study the motive power. It is the science of *human life*, not merely the science of mind, with which we must be familiar. Yet how many possess that knowledge?

“If the patient is free from delirium and can say ‘Good morning,’ and put out his tongue when told to do so, it is recorded that ‘his mental faculties remained entire,’ that ‘there was no deficiency of intellect,’ or that he ‘was clear and collected to the last.’ This testimony, of course, to be of any value, necessarily supposes a skilful and exhaustive exploration of the mind in all its departments, and a scrupulous attention to minute and intricate details in each particular case. Being founded, however, only upon the most superficial examination, it is not merely valueless but mischievous and misleading. To evidence of this kind must, I believe, be traced many fallacies which have impeded scientific progress, such as the statement that a whole hemisphere of the brain may be destroyed without the mind suffering in any way, or that every part of the brain has been found disorganised in one case or another, without any derangement of the mind having existed.” (Sir James Crichton Browne.)

“That mental symptoms or mental deficiencies have not been recorded in cases of bilateral cerebral lesions, is a negative statement of very little value. Unless a man becomes so demented as to neglect the ordinary wants of nature, or so furious, maniacal, or irrational as to require restraint, there are few engaged in the

practice of medicine who think of enquiring narrowly into a patient's mental state, and even if more attention were directed towards this subject, are we in possession of any means of accurately gauging the mental condition of an individual, so as to be certain that it has altogether escaped damage, notwithstanding the presence of a cerebral lesion? I see little to justify, and much to contradict such an assumption. A man may not be incapacitated for the ordinary duties of life, but that his mental powers are altogether unscathed even by a unilateral lesion, I venture to question." (Dr David Ferrier.)

Lastly, I would ask those who object to the psychology contained in this book, although Herbert Spencer and Alexander Bain have deemed it acceptable, whether they have produced a system which can be applied to education and to the diagnosis of morbid states of mind? And I would also remind them, that the psychology of the author is not of his creation. He is simply stating what he has observed in nature, which observations can be verified. Let the psychologists discover why what is, is as it is.

The brains of no two men are alike, nor is their character. We have studied these differences. Let others repeat the observations! This is the only way of verifying the truth or of exposing the error.

I have presented this subject, which I admit to be still very rudimentary, to the best of my ability. Knowing the discredit which is attached to the very term of "Phrenology," I am conscious that my work

will be subjected to much criticism. Defects there must be in it; no new doctrine was ever advanced at once perfect. Honest arguments that can be adduced against the new theory can be but welcome in the interest of truth. But save me from those enemies of progress who, to prevent discussion, select a few passages to hold up the whole subject to ridicule and seek to discredit the author by means and terms which, they know, do not come within the law of libel. It is to be hoped that those in position and authority will not allow the statements of such men to bias them in their calm judgment of a work which is so easy of demonstration, and if true, would be of great benefit to humanity. The heads of established Institutions may be diffident to act as pioneers in applying the new doctrine, yet it is highly desirable that there exist some place where those desirous of studying the subject should have the opportunity of receiving instruction, and where the public could come for gratuitous advice. Many men might be saved from becoming a burden to the state, whether as criminals or lunatics, and the offspring of rich and poor alike might receive directions for their education, and be recommended to such positions for which they are best fitted.



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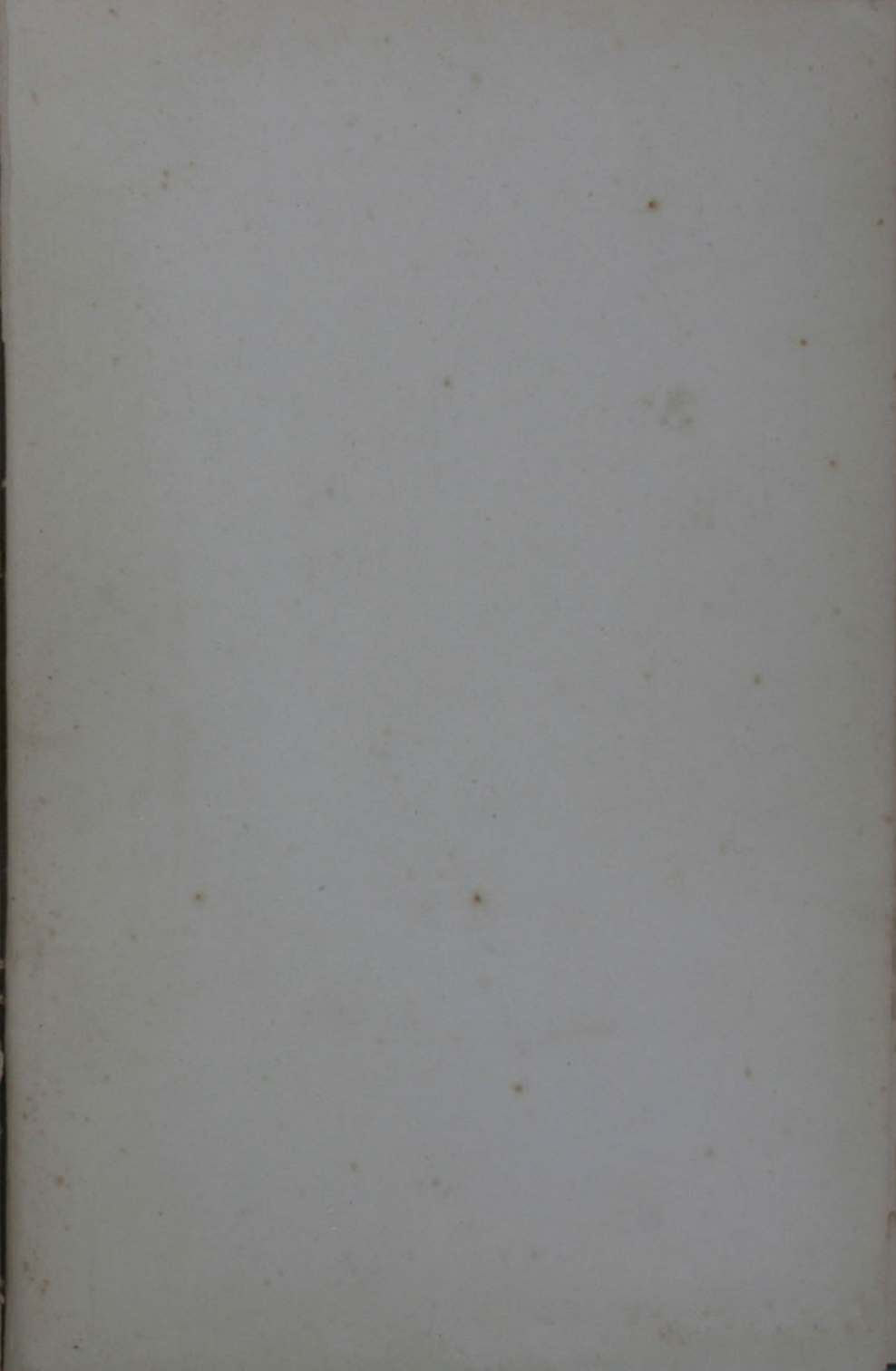
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Note for measure of intellect

Measure first over the brain, from nose to
corner. (a)

Then the cerebellum and (b)

Then $\frac{b}{a}$

Then take the capitulum frontale arch (c)

Intellect = $\frac{c}{\frac{b}{a}}$

For comparison

The cerebellum enters \therefore it may
be part of a man's mind intellect
to another; the arch makes
different the simple measure.

