

given theme, if it is not, as already suggested, a form of *la folie du doute*. Music requires little or no basis of general observation in the individual; it has few cohesions outside the auditory area and the motor centre where it finds expression. As a class, consequently, musicians do not strike one as exceptionally intelligent or well-informed men.

Painters have a much keener perception of light and shade in a given object than the ordinary observer. They see their model as a patch of diversified colour apart from tactile and motor suggestions of a disturbing character. The eminent French painter Delacroix was exclusively a colourist, with little idea of form. He was bad at drawing, but in the manipulation of colour his genius was marvellous. 'I have seen him,' says Maxime du Camp, 'take coloured skeins of wool, mix and group them, and by that means produce extraordinary effects of colouration.' Delacroix once remarked that the finest picture he had ever seen was a Persian carpet. In his portraits he achieved but an indifferent likeness, but his pearl necklaces and jewels were startlingly real. Destitute of colour, his compositions tended to the grotesque.

'What do you see, sir?' said Fuseli one day to a student, who, with his pencil in hand and his drawing before him, was gazing into vacancy. 'Nothing, sir,' was the answer. 'Nothing! young man,' rejoined the eminent painter; 'then I tell you you ought to see something—you ought to see distinctly the true image of what you are trying to draw. I see the vision of all I paint, and I wish to Heaven I could paint up to what I see.' At the same time Fuseli was near-sighted, so much so that, while painting, he was obliged from time to time to retire from his easel to a distance and examine his picture by means of an opera glass, then return and retouch the defective places.<sup>1</sup> The faculty of seeing their subject in the mind's eye is not an uncommon one among painters of genius. Leonardo da Vinci organised a festive meeting of peasants, fed them, watched them closely, and afterwards painted them from memory. Hogarth writes: 'I had one material advantage over my competitors, namely, the early habit I acquired of retaining in my mind's eye, without coldly copying it on

<sup>1</sup> Allan Cunningham.

the spot, whatever I intended to imitate.' Gustave Doré and David Roberts, the inspired house-painter who rose to be a Royal Academician, possessed the same gift. Of Roberts a biographer says: 'With a few touches he could produce an effect, rivalling in apparent elaboration the most careful productions, and far excelling them in breadth and power. He seemed to be able to photograph objects on his eye, for I have again and again been with him while he was sketching very elaborate structures, or very extensive views, and he took in a large mass at one glance, not requiring to look again at the portion until he had completed it in his sketch.'

How morbid is this faculty of optical retentiveness may be gathered from a remarkable case that came under Wigan's treatment. It was that of a painter of note, who executed portraits with remarkable facility. He required but one sitting, and his system he thus explained: 'When a sitter came, I looked at him attentively for half an hour, sketching from time to time on the canvas. I wanted no more. I put away my canvas and took another sitter. When I wished to resume my first portrait, I mentally took the man and set him in the chair, where I saw him as distinctly as if he had been before me in his proper person—I may almost say more vividly. I looked from time to time at the imaginary figure, then worked with my pencil, then referred to the countenance, and so on, just as I should have done had the sitter been there. When I looked at the chair I saw the man.' The artist possessing this strange susceptibility was very popular for a time and made a great deal of money. Gradually, however, he began to lose the distinction between the imaginary figure and the real person, and sometimes disputed with sitters as to whether they had been with him the day before. Madness supervened, and he remained for thirty years in an asylum. A short time before his death he resumed his pencil and painted nearly as well as formerly.

Another celebrated artist of Wigan's day (probably Haydon), whose fertility of imagination was a general subject of wonder and admiration, is said to have remarked that the preposterous faces and figures he put forth always seemed to him to exist already on the paper, and that his hand did

nothing more than trace the outlines and fix them with the pencil. Here we have an example of that spontaneous activity of the nerve-cells of the visual centre which is at the bottom of creative art. Another illustration is furnished by the case of an 'eminent artist' known to Forbes Winslow. This person died of apoplexy, and, before his death, he exhibited a curious derangement of the visual centre. The cerebral symptoms showed themselves several years before the fatal attack, in the form of flashes of light before the eyes, to which were afterwards added pains in the head and diminished distinctness of sight. This last symptom gradually increased, till the patient's sight was totally destroyed. From that time he suffered from a series of the most dazzling images, playing apparently upon the optical apparatus by day and night. Their brightness was unspeakably distressing. Sometimes they would assume the form of angels with flaming swords, every motion of which seemed like an electric flash to blind the eye and sear the brain by the intensity of its light. With the exception of some irritability of temper, there was not the slightest affection of the intellectual powers. The memory, imagination, and judgment were unimpaired, and there was no change in the coats or humours of the eye.

The actor's genius consists mainly in a special command of voice, facial expression, gesture, and action. Actors do not feel more acutely than other people, but they are able to express their feelings more vividly, and this faculty may be ascribed to a special susceptibility of the area for the articulatory apparatus and for the movements of the body and limbs, more particularly the face, arms, and hands. Of all the arts, acting probably requires the least assistance from the sensory centres. It does not seem to be necessary that the actor should closely observe or have a specially retentive memory for life and character. Working by analogy, he can successfully enact a murder though he may never have assisted at one, and he constantly depicts feelings, such as those of a king or a criminal, which he has never actually experienced. Some of the greatest actors are callous to the emotions they portray; they seem to feel but in reality they do not. Sarah

Bernhardt's pulse does not quicken in her violent scenes of passion. Robson could electrify his audience by his emotional changes; yet Palgrave Simpson described him as one of the stupidest actors at rehearsal he had ever met, and apparently without an idea in his head. Actors who have played with him, relate that in his most pathetic scenes, while he was thrilling the house to tears, Robson could try to make his stage companion laugh by some *sotto voce* remark upon a trivial subject, showing himself to be completely unmoved. ))

Probably there is little in the greatest acting that goes beyond the mechanical aptitudes described. The intellectual *finesse*, so much admired in certain impersonations, is one of the many illusions of the stage. No actor ever possessed it in a higher degree than the elder Farren, who, nevertheless, in private life, according to George Henry Lewes, was 'rather stupid than otherwise.' An actor may, of course, be an acute thinker, but at the same time he is not bound to be intellectual, exceptional powers of observation not being essential to his art as they are to that of the man of letters or the painter, though he must, of course, have intelligence enough to make-up in character, and to adapt himself to the *optique* of the stage. Children with no knowledge of the world act remarkably well, whereas we never hear of infant prodigies in literature or of Royal Academicians of tender years. I am speaking, be it remembered, of the actor's natural endowment, the gift of imitation, which constitutes his speciality. With this a very ordinary degree of intelligence will make a great display, and without it the highest intellectual attainments will avail nothing. Shakespeare was a mediocrity on the boards—at all events, nothing has been recorded in praise of him as an actor, and it is a matter of common observation in theatrical life that the author, who necessarily feels the pathos of what he writes, is usually unable to give it effective expression personally. In the mounting of a play, much of the painter's faculty for colour and form may be displayed; but this, properly speaking, lies outside the actor's province, as does also the business skill required for the successful management of a theatre. ))

The impulsive actor is one whose muscular mechanism is

9. || highly responsive to the induced emotion of the scene. When Edmund Kean was at his best, 'the fury and whirlwind of the passions,' says a contemporary writer, 'seemed to endow him with supernatural strength. His eyes were glittering and bloodshot; his veins were swollen, and his whole figure restless and violent.' The very looks of a great tragedian are as terrible to his fellow actors as to the public. Murdoch, an actor who played with Junius Brutus Booth, thus describes a scene in which he took part with that tragedian: 'I turned, and there, with the pistol held to my head, stood Booth, glaring like an infuriated demon. Then for the first time I comprehended the reality of acting. The fury of the passion-flamed face, and the magnetism of the rigid clutch upon my arm paralysed my muscles, while the scintillating gleam of the terrible eyes, like the green and red flashes of an enraged serpent, fascinated and fixed me spell-bound to the spot.' And a moment's reflection will show how much the functions of the muscular system are indicated in the following description by Lewes of the genius of Rachel: 'In her early days nothing more exquisite could be heard than her elocution—it was musical and artistically graduated to the fluctuations of meaning. Her thrilling voice, flexible, penetrating, and grave, responded with the precision of a keyed instrument. Her thin, nervous frame vibrated with emotion. Her face, which would have been common had it not been aflame with genius, was capable of intense expression. Her gestures were so fluent and graceful that merely to see her would have been a rare delight. Very noticeable is it,' adds the eminent critic, 'that Rachel could not speak prose with even tolerable success; deprived of the music of verse, and missing its *ictus*, she seemed quite incapable of managing the easy cadences of colloquial language. The subtle influences of rhythm seemed to penetrate her, and gave a movement and animation to her delivery which were altogether wanting in her declamation of prose.'<sup>1</sup>

10. || I have already shown what ground exists for believing that our perception of rhythm is connected with the motor area of the brain. On the theory of dramatic expression as a

<sup>1</sup> George Henry Lewes: *Actors and the Art of Acting*.

muscular endowment one can understand how Macready was able to prepare himself for rendering the rage of Shylock by violently shaking a ladder and cursing in an undertone behind the scenes. Had Macready, however, been an actor of surpassing genius, that is to say, of surpassing susceptibility as regards his muscular system, the induced emotion of the scene would have lashed him into a rage, or the semblance of a rage, without the aid of the ladder.

That the actor or actress can shed tears on the stage is perfectly true; but this, again, is a purely mechanical effect. It is not the expression of a genuine grief. The same automatic action of the lachrymose glands in obedience to a stimulus is experienced by the spectator of a play, who weeps at, while he secretly enjoys, the harrowing scene enacted before him. There is in the brain a mechanism of grief and gladness—a cohesion of sensory and muscular nerve-groupings which is operated upon by direct or induced sensations. The stimulus may be real or false; of that the brain takes no account. A lever is pulled, and the fountains play whether the occasion be a great or a small one. In insanity, examples of automatic grief are frequently met with. For example, a young woman treated by Maudsley passed her time moaning and weeping abundantly. She was not really, however, as miserable as she looked, for in the midst of her sobbing, if a ludicrous remark were made, she would look up calmly, speak quietly, and even smile for a moment before relapsing into her habitual condition. The motor centres for the expression of grief were evidently subjected to some morbid excitement. All theatrical emotion, whether on the stage or in the auditorium, is of this automatic kind, the impressionability of the auditor, like that of the actor, depending upon his cerebral organisation. A special susceptibility of the articulatory apparatus would confer the faculty of learning long speeches by heart, and this the actor possesses in an unusual degree.

It is not a little remarkable that the greatest military commanders in the world have been epileptics. Cruelty or indifference to the feelings of others is a special feature of epilepsy, which seems to sap or destroy the links of association productive of sympathy. Epileptics are notoriously

destructive; they break, maim, or kill without apparent motive, and this characteristic is developed even in children. Napoleon made war as an epileptic smashes the crockery in his room or murders his own child, namely, from a wanton desire to destroy something or somebody. Bourrienne often heard Napoleon say, 'Friendship is but a name; I love nobody.' When physically idle, Napoleon never knew what to do with himself. So great was his natural impatience and hastiness that he could not shave without gashing his cheek. Clive's indifference to consequences has already been noted in his duelling experience. In a military commander of genius there is, of course, much more than mere destructiveness. In addition to great energy and quickness, he must have a keen perception of the effects of strategic movements—a motor susceptibility in combination with quickness of vision, whereby he is enabled to be superior to his enemy at the point of contact; and he must have a spirit of reckless daring calculated to inflame the courage of his soldiers. Of literary or artistic culture he need have none. Clive, one of the greatest of generals, was almost illiterate; Napoleon's scholastic attainments were very moderate. The epileptic is indifferent, not only to the fate of others, but also to his own, as the great frequency of motiveless suicides among epileptic patients attests. In this respect he resembles the born general who, by his calmness, coolness, and courage in the hour of danger carries his men to victory.

The orator, whether in Parliament or in the pulpit, requires the actor's control of voice and gesture, together with a great fluency of speech and command of verbal imagery. Chatham seems to have had all the physical resources of Edmund Kean. 'In his look and gesture,' says a contemporary, 'dignity and grace were combined. . . The terrors of his look, the lightnings of his eye, were insufferable. His voice was both full and clear, his least whisper was distinctly heard, his middle tones were sweet, rich, and beautifully varied. When he lifted his voice to its highest pitch the house was completely filled with the volume of the sound. The effect was awful, except when he wished to cheer and animate; then he had spirit-stirring notes that were perfectly

irresistible. But the terrible was his peculiar power. Then the whole house sank before him.'<sup>1</sup> The keen lighting of Chatham's eye is said to have 'blasted the courage of the most intrepid of his opponents.' Profusion of language implies a great retentiveness in the various cerebral centres concerned. From the testimony of his grand-daughter, Lady Hester Stanhope, we know that Chatham's visual memory was great. 'On passing a place where he had been ten years before,' she relates, 'he would observe that there used to be a tree, or a stone, or something that was gone, and on inquiry it always proved to be so. Yet he travelled always with four horses at a great rate.' Chatham was a wretched financier, and his administrative faculties generally were poor. For statesmanship in its highest form, not only a rich store of facts and figures, but also a far-reaching identifying faculty, is required. In this respect the philosopher and the statesman approximate, though the latter is more alive than the former to considerations of practical expediency. If the philosopher dabbles in statesmanship he is apt to become a doctrinaire.

Men of science, also, are distinguished for their discernment of likeness in diversity. It was this identifying faculty which enabled Newton to couple with a falling apple the moon's deflection to the earth, and James Watt to see the possibilities of the steam-engine in the boiling kettle. In the same way, from the facts laid down by Malthus showing that the increase of population was limited by the supply of food, Darwin deduced the principle of natural selection. In all these discoveries there was a great stretch of identifying genius—an enormous generalising power displayed. The identifying faculty was very great in Faraday. Bence Jones says he had 'a sort of divination or scientific second sight which led him to anticipate results that he or others afterwards proved to be true.' He laboured to establish the actual identity of all the forces of nature—a conception borne out in part by Joule's discovery of the mechanical equivalent of heat, and by the later developments of the molecular theory in physics.

Of the scope and power of Darwin's mind we have an

<sup>1</sup> Charles Butler: *Reminiscences*.



interesting record in his autobiography. 'For many years,' says the author of the 'Origin of Species,' 'I cannot endure to read a line of poetry; I have tried lately to read Skakespeare, and have found it so intolerably dull that it nauseated me. I have also almost lost my taste for pictures or music. . . . My mind,' he adds in his autobiography, written five or six years before his death, 'seems to have become a kind of machine for grinding general laws out of large collections of facts.' This bent declared itself in his early youth, when he always had 'the strongest desire to understand or explain whatever he observed,' and he had the patience to 'reflect or ponder for any number of years over any unexplained problem.'

In scientific genius the faculty of long-sustained attention is very marked. 'The difference,' says Sir William Hamilton truly enough, 'between an ordinary mind and the mind of Newton consists principally in this, that the one is capable of the application of a more continuous attention than the other; that a Newton is able, without fatigue, to connect inference with inference in one long series towards a determinate end, while the man of inferior capacity is soon obliged to break off or let fall the thread which he had begun to spin.' In the case of the poet, who likewise possesses it, the identifying faculty is affected by strong human sympathies. To these the man of science is commonly as much a stranger as he is to the perception of verbal rhythm. The arithmetical faculty of Zerah Colburn probably consisted in a tenacious recollection of forms, as visible in the ten numerals and their combinations. George Bidder, another famous calculator, relates that, having a great liking for figures, he gave himself up to the study of numbers, learning first the ordinary multiplication table by making lines and squares of peas, marbles, and shot, and then enlarging upon this, until at last he had a multiplication table of his own, rising to a million.

The faculty of fixing and sustaining attention is assigned by modern physiology to the frontal area of the brain, whence the movements of the head and eyes are controlled. What has been called the identifying faculty, must also, however, be concerned with some automatic process carried on

between various cerebral centres, inasmuch as solutions of problems, glimpses of truth, so to speak, occur to the mind when one is not actively engaged in considering the subject in hand; when, indeed, the attention is relaxed. Swedenborg's great inventive genius, based upon a morbid excitability, was clearly of the automatic order. The sub-marine torpedo-vessel, the balloon, and the steam-engine, he anticipated long before they became accomplished facts,<sup>1</sup> while the shrewdness of not a few of his observations is remarkable. 'Nature,' he said, 'is the same everywhere, in suns and planets, and in the smallest particles'—a view which spectroscopic analysis and chemical research at the present day tend to bear out. In physiology, again, his theory that the angels read a man's history in his brain and physical structure after death, is not one that any reader of this book will scoff at. And most of these pregnant thoughts appear to have come to him, not by dint of conscious reasoning, but spontaneously, or automatically, in visions.

The prudential faculty, so important in business, appears to consist in a lively memory for pains or inconveniences, and a consequent eagerness to avoid a recurrence of them. If the mind is untenacious of its worries it will not be prudent. The improvident man is one whose perception of the evils that threaten him is feeble; he is a careless, happy-go-lucky person, who does not realise the force of the sage counsels tendered him from time to time, and who gathers nothing from his own past experience. Bain offers some shrewd remarks on the qualities which ensure success in life: 'As an artist feels at once the effect of every touch in the total of his picture, so some men,' he observes, 'discern in a moment whether they have given offence or caused delight, while to others no indication of either is apparent. The art of reading countenances and interpreting the full force of words, tones, and gestures, belongs to the politician, to the diplomatist, to the man that keeps free of quarrels, and

<sup>1</sup> These inventions took the form in Swedenborg's mind of (1) a sort of ship in which men might go below the surface of the sea and do great damage to an enemy; (2) a flying chariot; and (3) a machine driven by fire for pumping water.

to most of those that attain popularity and rise in the world. Some men may do many foolish things, but by being distinguished in this one branch of circumspection, they procure the reputation of prudence, caution, and foresight, which by sinister applications degenerates into cunning. We cannot doubt that in some corner of the human cerebrum there is a distinguishing development in the instances where this quality of the observation of men is strongly manifested. It may not be an ultimate fact in our constitution, but it is a genuine fact of character unequally displayed in individuals. It is a chief mode of being wide-awake, and an instrument in the hands of every one engaged in ruling, persuading, guiding, instructing, or moulding human beings.<sup>1</sup> In the mental processes above described, one can perceive a quick responsive action between the chief centres, in conjunction with cohering trains of past experiences. A dull mind brought into contact with the same facts would be irresponsive and deficient in its memories.

In the ne'er-do-well there is not only improvidence, but a warp of the organisation conducing to drunkenness and even to crime. Avarice is a haunting prepossession like the 'fixed ideas' of insanity; for the miser has been known to starve himself to death in the midst of his possessions. Philanthropy, benevolence, and the kindred sentiments of compassion and friendship, again, are excited through the sensory centres. To experience these sentiments we must realise the pain or discomfort of those who stand in need of our services. Distresses that are incomprehensible to our minds, that is to say, of which we have no experience direct or indirect, awaken no benevolence within us. A tender-hearted man will kill a minute insect without compunction, though he may hesitate to injure an animal of larger growth more nearly resembling himself in organisation.

Simple piety or veneration seems to resolve itself into an absence of the identifying faculty, the generalising power which is so marked in scientific genius. It is not to be confounded with the theological spirit, which is often well versed in the methods of controversy. A typically pious

<sup>1</sup> Bain: *On the Study of Character*.

mind would have been incapable of discerning, as Franklin did, that electricity and lightning were identical. True religion is the antithesis of self-esteem. The mind imbued with it distrusts itself and is fond of relying upon authority or dogma. The identifying faculty, if not pushed to the extreme which produces the genius of a Newton, is a great safe-guard of mental stability. Hallucinations of sight or hearing do not affect the reason if there is a strong identifying faculty in the individual whereby he is enabled to keep in touch with his actual surroundings. By dint of extensive memories and cohering impressions in his brain he *knows* that the figures he sees or the voices he hears can have no objective reality. He can even calmly study the phenomena as the result of some disorder of the visual or the auditory area. If, on the other hand, he is without the identifying faculty, he is carried away by his errors of sense. A man like Nicolai knows that his phantoms have no reality, but an ignorant French peasant girl who sees the Virgin accepts her vision as a miracle. Swedenborg combined in a remarkable degree the most opposite qualities, reminding one a little of Coleridge, who was as much a philosopher as a poet. But the Swedish prophet was not an example of ordinary piety; his sensory hallucinations were too strong for him and so warped his understanding. Religious inspiration, like the inspiration of the poet, never transcends the actual knowledge of its own day. No ancient prophet anticipated the Copernican theory of the universe. Mahommed's inspiration was coloured by his ideas of Judaism and Christianity. George Fox believed that the Lord had given him 'a spirit of discerning,' by which he could see the inward condition of people, and the use he put this to was to 'discern witches.' 'As I was going to a meeting,' he says, 'I saw some women in a field and I discerned them to be witches,' upon which he told them his mind. Swedenborg, in his ecstatic trances, conversed with the inhabitants of all the planets except Uranus and Neptune, which, unfortunately for his pretensions, had not then been discovered.

Of criminality there are many varieties, but a common feature underlies them all—an obtuseness with regard to the

n. || consequences of unlawful acts, whether as affecting the criminal himself or his victim. The criminal can hardly be expected to study the welfare of society when he is indifferent to his own. In civilised communities, crime most emphatically does not pay; it is in the long run a losing game. Yet it is taken up by a regular percentage of individuals, generation after generation, who persist in their evil courses despite the cumulative punishments meted out to them. The investigations of Lombroso and others leave no room for doubt that crime is literally a moral insanity, depending in the main upon congenital causes. In extreme cases, the vicious proclivity manifests itself in childhood, and the individual, acute though he may be in many respects, betrays a total incapacity to appreciate the moral bearings of his offence. There are, of course, degrees of this insanity as of every other. Punishment may deter a large class who hover on the brink of crime, or normally constituted individuals who, through passion or stress of circumstances, are tempted to break the law; but when the congenital bent is strong no repressive measures avail.

( The great frequency among criminals of anomalies in the shape of the skull testifies to a special mental organisation; and this is confirmed by an anatomical study of the convolutions. So complex is the mechanism of the brain as a whole, and so numerous the functions called into activity even in the commission of crime, that no constant set of anomalies in the brain-structure of criminals can be looked for. But so far as one can judge from the recorded confessions of malefactors of all descriptions, the working of the criminal mind revolves itself into a partial, instead of a general, activity of the different centres. The murderer strikes, the thief steals, in obedience to a first impulse. His associated impressions or memories are comparatively few; his cohering trains of ideas are imperfect. The question then arises: Ought the criminal to be relieved of the penal consequences of his acts? My answer is, No. The welfare of the community is the supreme consideration. If he is a danger to it he must be suppressed. The majority have the right to protect themselves against him as they would against a madman, a venomous reptile, or a wild beast.

## CHAPTER XI

PHRENOLOGY AND ITS LIMITATIONS—EVIDENCE IN FAVOUR OF IT—  
 THE FOREHEAD AS AN INTELLECTUAL REGION—EFFECTS OF  
 INJURY OR DISEASE OF THE FRONTAL LOBES—THE CONCENTRATIVE  
 FACULTY—CRIMINAL HEADS—LOCALISATION OF WIT—SWIFT'S  
 SKULL—PARALLELISM BETWEEN THE OLD PHRENOLOGY AND THE  
 NEW—CORRECT AND INCORRECT LOCALISATIONS—SIZE AND WEIGHT  
 OF BRAINS—HEADS OF REMARKABLE MEN—SAVAGE AND CIVILISED  
 BRAINS—THE PHRENOLOGY OF THE FUTURE

AFTER suffering much neglect and obloquy from the scientific world, phrenology begins to appear in a somewhat more favourable light than heretofore. No doubt any method of guessing at the functions of the brain from the shape of the head must in a great measure be untrustworthy. The volume of the brain is not the only point to be considered; the quality of it is a matter of importance, and this it seems to be impossible to gauge through the skull. But such a condemnation as Bastian passes upon phrenology is obviously too sweeping, namely, that it is 'fallacious in almost every respect,' 'eminently unsatisfactory in its localisations, and altogether defective in its psychological analysis.' Bain's conclusion is more just: 'There is much that is noticeable in the coincidences between the shape of the head and mental peculiarity, and of the entire number of such included in the phrenological system, it is possible that some may stand and others turn out mistaken.' The elements of character are very numerous, and they are found united in individuals in infinitely varying proportions. That particular functions are carried on by the various centres of the brain is proved beyond a doubt, and it follows inevitably that all mental functions, however complex, have an equally material basis. To concede this, as physiology must do, is to concede the principle of phrenology. The only question that can arise

is as to the particular regions of the brain where the various mental functions are exercised.

The phrenologists, it must be owned, have been singularly rash. They have not only carried their pretensions to an absurd pitch, but they have shown an almost incredible laxity and credulity in their investigations. 'It is impossible,' says Spurzheim, 'to unite a greater number of proofs in demonstration of any natural truth than may be presented to place the seat of the amative propensity in the cerebellum.' What these so-called proofs amount to is this: The effects of lesion or disease in the cerebellum have been shown in repeated instances to be accompanied by a disturbance of the amative propensity, while unusual force of the feeling has been seen to accompany a large cerebellum, and weakness of the propensity a small one. There is nothing, however, in these cases to preclude the possibility of mere coincidence; and in point of fact the only proved connection of the cerebellum with amativeness is that the nerve-connections between the hemispheres and the organs of generation pass near it, and are therefore liable to be affected by disease in the cerebellar region, just as the telegraphic communications between London and Edinburgh might be disturbed by floods in the Midlands. Of Gall many amusing anecdotes are related. He is said to have mistaken the skull of an imbecile for that of his colleague Spurzheim. On one occasion he went to the prison of Bicêtre for the purpose of examining the heads of some notorious convicts. In anticipation of the visit, Pariset dressed up a dozen of the worst criminals as warders and presented them to Gall, with the result that the founder of phrenology found nothing remarkable in them. After Gall's death, three portions of skulls were found in his museum representing the organs of 'music,' 'caution,' and 'amativeness.' They were labelled as having belonged to a musician, a baroness who had committed suicide in a fit of monomania, and a merchant who had lost his reason through love. Leuret found that the three cranial specimens were all parts of the same skull.

All allowance being made for coincidence, however, there is still a certain amount of evidence in favour of the theory that the shape of the head bears some relation to mental

capacity. Phrenology need not be thrown over altogether. It was originated at a time when knowledge of the functions of the brain was extremely limited, but it roughly accords, not only with general experience, but in some important respects with the latest discoveries in physiology. The forehead has long been regarded as an important seat of the intellectual faculties. Now, the electric stimulus produces no effect upon the frontal lobes of the brain; but the fact of their being connected with the sensory and motor centres by great bands of fibres shows that they play some important part in the cerebral economy. Of this there is also some negative evidence. Animals whose frontal lobes are destroyed become stupid. They eat freely enough but cannot look for their food. If a bone is thrown to a dog so injured, it will run to it with great alacrity, but it has not the sense to stop at the right moment; it overshoots the mark. Then, instead of turning round and looking for the bone in a methodical way, it appears to forget what it was after and runs on heedlessly until the object is again brought under its notice. Meanwhile the animal is able to hear, see, smell, touch, and taste perfectly, but it has a stupid expression of the eyes and inability to fix the gaze. The same results are observed in monkeys. When their frontal lobes have been removed, 'instead of as before,' says Ferrier, 'being actively interested in their surroundings and curiously prying into all that comes within the field of their observation, they remain apathetic, or dull, or doze off to sleep, responding only to the sensations and impressions of the moment, or varying their listlessness with restless and purposeless wanderings to and fro. While not demented, they have lost to all appearance the faculty of attentive and intelligent observation.'

Evidence directly bearing upon the functions of the frontal lobes in man is very scanty, disease being seldom entirely local in its effects and special experiments with the electric stimulus or the cautery being forbidden even in the case of the worst criminals. Several cases are recorded, however, in which disease or accident to the frontal region has produced in man an intellectual deficiency and an instability of character exactly as in monkeys and dogs. An American workman, for ex-

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ample, had his frontal lobes injured by a crowbar and lived twelve years after the accident. Before sustaining the injury he was steady, shrewd, intelligent, persevering, and well-mannered; afterwards the balance of his intellectual faculties appeared to be destroyed, and he became nervous, irritable, impatient, obstinate, capricious, disrespectful, and profane in his language--a child in intellect, a man in his passions and instincts. Idiots in whom the frontal lobes are notably undeveloped have no power of concentration whatever, but turn from one object to another without gathering any informing impressions. Darwin's head, on the contrary, showed a striking development of the pre-frontal region. Immediately over the eyes it jutted forward so much as almost to be a disfigurement. This peculiarity is very marked in a photograph dating from 1854, when he was forty-five, and is still more so in the portraits of his latter years. The brain of Gauss, the mathematician, was very much convoluted in the frontal regions. Rudolph Wagner compared his frontal lobes with those of an artisan and found a marked difference between them. Bastian examined the brain of another mathematician, De Morgan, and although the convolutions were by no means so intricate as those of Gauss, the frontal development was still very large. In the lower races of mankind the frontal lobes are comparatively small.

Note { The anatomical evidence by which Ferrier seeks to establish the solidarity of the post-frontal region, whence the movements of the eyes and head are governed, with the pre-frontal region, which are not electrically excitable, is plausible, and no better conclusion can at present be arrived at than that the whole frontal area of the brain is concerned with intellectual observation. It is here that the phrenologists locate the perception of facts, movement, and cause, together with the faculty of comparison. This last is the identifying faculty, already noted as so important an element of the higher intellectual operations. Its exercise one can almost feel to be muscular, prolonged concentration of thought producing fatigue like a severe physical effort. The connection of thought or attention with muscular action is not at first sight apparent, but it is none the less real. In

hypnotism, suggestions may be conveyed through the muscular system as well as through the sensory centres. The operator places a limb in such a position as to suggest an act, and the subject spontaneously completes the act so suggested. This shows that, just as sensory impressions tend to call up movements, so the excitation of movements tends to call up by association the various sensory factors with which these particular movements cohere. Now, as movements of the head and eyes are intimately concerned with attention to an object actually placed before us, it follows that, if the portion of the brain governing these movements be well developed, there will be a special faculty for reviving these movements ideally and so reacting upon the associated sensory cohesions that constitute the fabric of thought. If, on the other hand, the portion of the brain referred to be poor as regards the number or the activity of the nerve-cells, there will be no persistence of the muscular effort with which the whole mechanism of thought coheres; our ideas will slip from our grasp, so to speak, and we shall find ourselves thinking of nothing. Men differ greatly in this power of concentrating their attention. It is unquestionably a natural endowment, and there is every reason to believe that its seat is in the frontal region of the brain. As the material of thought is supplied by the sensory and motor centres, well-developed frontal lobes do not, by themselves, imply acute mental powers; they may be like an excellent machine which has nothing passing through it, and which consequently produces nothing. Rudolph Wagner remarks, however, that 'the convolutions and fissures, as a rule, are better developed in all portions of the brain when the frontal convolutions are specially complex.'

Among criminals a low or narrow forehead is common. This bears out to some extent what Lombroso says of them morally. 'Taken as a whole, criminals show a great want of coherence and continuity in their mental operations, which, if occasionally powerful, are intermittent.' Some famous criminals no doubt have shown remarkable cunning in their enterprises, but they have generally failed through overlooking some source of danger which a mind of scientific

{ calibre would have perceived and guarded against. The scientific mind is, *ipso facto*, the least criminal of any. With the doubtful exception of Bacon, criminals of scientific attainments are virtually unknown.<sup>1</sup> On the other hand, men of poetic and artistic gifts are not indisposed to crime, especially crime arising from the passions. Notwithstanding the frequency of low and narrow foreheads among convicts, however, criminality is most assuredly not a question of the size of the frontal lobes or of the shape of the head alone. The brains of criminals are in many cases found to be defective in a manner which could not possibly be detected outside the skull. They exhibit a deterioration of the gray or white substance, the blood circulation is imperfect or the convolutions are abnormally fissured.<sup>2</sup>

{ Wit is located by the phrenologists in the frontal region, and in view of what has been said of this faculty as consisting in an identification of the like with the unlike, the presumption is in their favour. Swift's skull when disinterred proved, however, to be phrenologically disappointing. The forehead was extremely low, and the so-called organs of wit, causality, and comparison were scarcely developed at all. This relic of one of our greatest humorists was, in 1835, handed to an eminent phrenologist, who 'pronounced it to be a very common-place head indeed—nay, from the low frontal development, almost that of a fool.'<sup>3</sup> This reading the phrenologists afterwards sought to explain away on the ground that the skull must have collapsed during Swift's period of mental derangement. That a skull previously normal alters its form in insanity is not, however, a physiological fact, as Esquirol proved by a long series of observations upon the inmates of his asylum.

Examined in the light of the new phrenology, Swift's skull is pretty much what we should expect it to be. Its sensory and motor capacity is very great. A medical man who examined it at the time of its exhumation, after remark-

<sup>1</sup> The principal cases are those of Eugene Aram, Doctor Dodd, Mercadante, an able Italian chemist who put himself at the head of a gang of thieves and a number of medical men of no great professional eminence.

<sup>2</sup> Lombroso.

<sup>3</sup> Wilde.

ing upon the lowness of the forehead, goes on to say: 'The head rose gradually, and was high from benevolence backwards. The portion of the occipital bone assigned to "philoprogenitiveness" and "amativeness" appeared excessive. The side view showed great elevation above the level of a horizontal line drawn through the ears. The front view exhibited extreme width of the forehead. It was, however, when looking into the interior and examining the base that the wonderful capacity of the skull became apparent. The room for the anterior lobes of the cerebrum was very great; the depressions also for the middle lobes were very deep. The cerebellum must have been very small, and the posterior lobes very large. . . . Although the skull, phrenologically speaking, might be thought deficient, yet its capacity was in reality very great. I took an ordinary skull, and making a section of it on the same level with Swift's, I compared their outlines, drawn on paper, and found that the latter exceeded the former in a remarkable manner, particularly in its transverse diameter.'

It has already been remarked that the smallness of the cerebellum would account for Swift's fits of giddiness, which made his gait so frequently that of a 'drunk man.' As for the hugeness of the posterior and middle lobes, representing the visual, auditory, and chief motor centres, this formation would clearly favour an accumulation of intellectual material. Ignorant as we are of the precise functions of the frontal lobes, it is impossible to say what other uses Swift might have made of this material had his forehead been of the three-storey order of architecture so much affected by artists since the rise of phrenology, but a mere lateral extension of the frontal area is evidently not incompatible with the exercise of a keen satirical humour. Probably, however, there was little reflection or sustained thought in Swift's writings. Swift's skull showed the blood supply of his brain to be unequally distributed. In the posterior lobes the marks of the blood-vessels were large and deep; in the middle they were ordinary; and in the frontal area small. One may certainly conclude from the general plan of the brain that the

discriminating faculty called wit has its seat somewhere in the frontal lobes, but it is by no means proved that the possession of it is coincident, as the phrenologists contend, with a high and square forehead.

Although 'form,' 'size,' 'order,' and 'weight' depend somewhat upon ocular adjustments, there can hardly be any warrant for the phrenological localisation of those faculties round the eye. They are probably associated with sight and touch. Language, again, is auditory, visual, and motor in its genesis. To locate 'colour' in the frontal region is clearly a mistake. The optical sense pure and simple must be assigned to the visual area at the back of the head. Jeffrey, of the 'Edinburgh Review,' had a hollow where the bump of colour is supposed to be, but he had, nevertheless, a keen enjoyment of bright hues; and this difficulty Combe, the phrenologist, tried rather disingenuously to get over by detecting Jeffrey in the admission that his pleasure had to do, not with the intrinsic effects of the colours themselves, but with their associations, the red of flowers suggesting a lovely season, and so forth. Arithmetical calculation or 'number' is probably dependent in some degree upon a memory for naked forms or visual abstractions, and 'locality' would seem to resolve itself into a sense of forms and colours in combination with muscular movements. Both faculties are assigned by the phrenologists to the forehead. The primary seat of both must be in the sensory and motor areas, but it may be in the frontal region that the raw material of judgment in such matters is utilised. In dogs, 'locality' is essentially a memory for smells.

Over some portion of the motor area the phrenologists have come wonderfully near the truth. Thus, their bump for 'imitation,' the actor's art, is almost identical with Ferrier's centre 'for the extension forwards of the arm and hand'—in other words, for gesture, one of the main elements of the actor's genius. The seat of 'imitation,' however, must be more extensive than the phrenologists have supposed; it must cover at least another of Ferrier's centres in a downward direction, that, namely, for 'movements of the lips and tongue,' as in articulation. With the centres for movements

of the hand and arm, again, the 'constructiveness' of the phrenologists has evidently a close affinity. 'Constructiveness' is a talent for the mechanical arts, as found in engineers, engravers, painters, operative surgeons, and mechanics of great skill. It consists in nice powers of muscular discrimination in the hand. With a pressure or sweep of the fingers or a turn of the wrist the operator produces a desired effect, and he retains for future use an exact memory of the degree of muscular force expended. Meissonier's fingers were so sensitive that he could, with his eyes shut, lay on the exact amount of colour that he wanted at a given spot, if somebody placed the point of the brush upon it. The phrenologists are probably right, therefore, in associating mechanical constructiveness with a bump on the side of the head, though it ought not to be exactly where they locate it, namely, between the eye and the ear on a higher level, but a little further back over the ear, where Ferrier places the centres for movements of the fingers and wrist.

The emotional constructiveness of the poet or the playwright is a totally different endowment. Unlike mechanical constructiveness, which is a pure nicety of touch, as the actor's diction is a nicety of articulation, emotional constructiveness is a co-ordination of sensory and motor impressions, which probably has its seat in the frontal region. 'Music,' as already shown, must be both a motor and an auditory endowment, and I should expect it to be denoted by a lateral bulge of the head covering the centres for movements of the limbs and trunk, and for hearing. Similarly, a poet ought to be well-developed in the articulatory centre, the probable seat of rhythm, which is a motor faculty. The phrenologists appear to place 'music' rather too far forward. Some of the perceptions involved in musical composition may belong to the frontal region, but the main constituents of time and tune must be motor and auditory. In the motor region, also, will lie the executive faculty of the painter. All the arts, indeed, on their executive or motor side, would seem to be indicated in phrenology by the vague term of 'ideality,' which is obviously not a special faculty at all, but a mass of widely different feelings or aptitudes.

All that can physiologically be said for phrenology is probably summed up in the foregoing pages. As regards the frontal region and the fore portion of the side of the head, the system of Gall and Spurzheim contains elements of truth which no doubt serve to keep it alive. But all its localisations in the back and upper parts of the head are very contestable, even allowing for the fact that the physiologists talk a different language from the phrenologists, as when Ferrier says 'movements of the fingers and wrist,' and Gall 'constructiveness.' The visual centre in man covering the back part of the head, has, no doubt, manifold functions to perform. But one cannot satisfactorily connect 'love of home,' 'friendship,' 'cautiousness,' 'combateness,' 'love of approbation,' or 'love of offspring,' with visual images. Equally incompatible are 'destructiveness,' 'acquisitiveness,' or 'secretiveness,' with effects of hearing, smell, or taste. The 'self-esteem' of phrenology is almost identical with Ferrier's centre for 'movements of the leg and foot such as are concerned in walking.' Here, again, there is no reasonable parallelism to be established. Nor is there between 'firmness,' 'conscientiousness,' 'veneration,' 'hope,' 'benevolence,' or 'wonder,' and the different motor centres for the legs, arms, etc., actually underlying them. Many of these phrenological faculties are not simple but compound. Such characteristics as vanity, veneration, and philanthropy cannot be the outcome of so many particular bumps, but must rather depend upon a combination of qualities or defects in the brain. Under analysis, vanity seems to resolve itself into an automatic persistence of the various images and effects, sensorial and motor, affecting the personality; the main feature of veneration, on the other hand, an absence of the identifying faculty—that main-stay of the scientific mind—probably arises from some weakness in the frontal lobes or their nerve-connections, while philanthropy is, in the main, sympathy—a ready emotion induced by the susceptibility of one or more of our sensory centres to the painful experience of others.

The size and weight of the brain are important, but not so much so in an absolute as in a relative sense. Usually the

efficiency of a brain-centre bears some proportion to its development, and so far the system of phrenology is justified. But size is not always a trustworthy criterion. With a brain smaller than a pin's head, the ant is capable of acting in an organised community and exercising mental functions as complicated at least as those of a bullock. The muscular movements of an animal consume a great deal of nerve-energy, and a large brain may be expected to go, therefore, with a large body. It is mainly for this reason, no doubt, that the male human brain on the average weighs one-tenth more than the female. More important, however, than size is efficiency. One brain, without being greater in volume than another, may be better supplied with nerve-cells and fibres, and the same may be said of one area of the brain as compared with another. Acknowledged genius, again, is a very uncertain test of brain-efficiency. Of the many different kinds of genius, some may arise from the inordinate activity of one or two centres, while their possessor as regards the common concerns of life may be a very ordinary person indeed, or even a fool.

Among men of genius, accordingly, all sizes of heads are found. Napoleon's head always appeared to the Duchesse d'Abrantès to be 'too large for his body,' and his portraits show great lateral breadth in the motor region. Mozart's head was also disproportionately large. As Napoleon and Mozart were physically small men, it may be inferred that they had both a great deal of superfluous nerve-energy. Wordsworth had a good forehead. Landor, in a letter to a friend, describes it as 'broad though somewhat heavy,' adding: 'There are few indications in the forehead, however. I would not say *nulla fides*, but one of the emptiest heads I ever saw was a man's so exactly like Erskine's that you might look at both together and doubt which was which, and I once saw a postilion at La Cava as exactly like Napoleon.'

On the other hand, Keats, Byron, and Shelley had all small heads. Leigh Hunt, who had not himself an abnormal head, says he could not get their hats on. Hartley Coleridge and Charles Lamb, too, were small headed. The average



circumference of the heads of Englishmen is from  $22\frac{1}{4}$  to  $22\frac{1}{2}$  inches. Nevertheless, Galton has found 'thirteen eminent scientific men with heads under 22 inches, and only eight with heads of 24 inches or upwards, and of the thirteen there were only two or three who had not "remarkable energy."'

(As he omits to tell us, however, what size of body accompanied his small heads, his figures are rather inconclusive.

(A little man with the same size of head as a big man will, other things being equal, possess more energy. In weight of brain, again, considerable differences exist among men of acknowledged power. The average weight of the male brain in civilised races is about 49 ounces. Cuvier's brain weighed 64 ounces; Abercrombie's and Schiller's 63; De Morgan and Gauss, the mathematicians',  $52\frac{3}{4}$  and 52 respectively. But Grote, the historian, had a brain only three-quarters of an ounce above the average, while the brains of Tiedemann, the anatomist, and Hausmann, the mineralogist, fell 5 and 6 ounces below it.

(In congenital idiots the average weight of brain is low, as is also that of persons dying in lunatic asylums; and Gratiolet says that where it falls below  $31\frac{3}{4}$  ounces ordinary human intelligence is impossible. But many idiots and lunatics have been found with brains far above the average in weight;

(Thurnam, for example, having met with an epileptic butcher, barely able to read, whose brain turned the scale at 62 ounces.

Among men of the artisan class who were perfectly sane, but by no means superior in endowment, brains of this weight have occasionally been found. The heaviest known human

(brain belonged to a Sussex bricklayer, who died of consumption in University College Hospital in 1849. It exceeded 67 ounces, and was well proportioned; while in

physical size its owner was not greatly above the average, being 5 ft. 9 in. in height and of robust frame. But the

man could not read or write, though he was said to have a good memory and to be fond of politics. Age makes some

(difference in brain weight, but not enough to materially affect the foregoing figures.

At the same time the brains of civilised races are considerably heavier on the average than those of the uncivilised and also

more convoluted, showing a general correspondence between size and function. Thurnam's figures establish a difference between Europeans and African negroes of about 5 ounces. A Bushwoman's brain examined by Marshall was found to be remarkably deficient in its convolutions, especially in the occipital, the middle and lower frontal and the temporal regions—a formation which would clearly conduce to poverty of ideas. The human brain of the lowest type approximates in fact to that of the monkey. Le Bon estimates the cranial capacity of the gorilla at 600 cubic centimetres, the poorest African or Australian black's at 1,200, and the modern Parisian's at from 1,800 to 1,900. So that some human races would seem to be mentally nearer to the gorilla than to the highest civilised type. Among Frenchmen, Le Bon has found head measurements running in the following order: 1st, scientific and literary men; 2nd, tradesmen; 3rd, nobles of old families; 4th, male domestic servants; and 5th, peasants; while both he and Broca conclude from an examination, the one of Egyptian mummies, the other of French skulls of the twelfth century, that civilisation tends to increase the cranial capacity.<sup>1</sup>

Not only the frontal but all the lobes of the brain appear to grow in bulk and complexity as the race advances in intelligence. Apart from the localisations actually proved, there is a presumption amounting to certainty that every variety of human character is represented by some variety of detail in the cerebral system. The phrenologists have had a glimmering of the truth; it is to physiology we must look for the further light that may be thrown upon this interesting subject. So much of our mental action depends upon the relations of the different centres to each other, independently of the shape of the skull, that phrenology can never be made an exact science. But clearly if the moral localisations of the brain are to be attempted on anything like the scale adopted by the phrenologists, the existing chart of so-called faculties

<sup>1</sup> Thurnam: 'On the Weight of the Human Brain,' *Journal of Mental Science*, 1866; Marshall: *Proceedings of the Royal Society*, 1875; Gratiolet: *Anatomie Comparative du Système Nerveux*; Le Bon: *Revue d'Anthropologie*, 1879.

N. must be recast into certain main visual, auditory, tactile and motor effects with manifold combinations. Meanwhile, it may safely be asserted that an ample forehead, provided the brain be otherwise well proportioned, will commonly be found associated with powers of reflection and concentration of a high order, and that breadth of head is a good indication of that executive energy without which no kind of genius will be able to make itself felt.

## CHAPTER XII

MEN OF GENIUS MORE SUBJECT TO NERVE-DISORDER THAN THE COMMUNITY AT LARGE—COMPARATIVE STATISTICS ON THE SUBJECT—PHYSICAL CONDITIONS OF GENIUS RARE—EXAMPLES OF IMPERFECT GENIUS—VARIETIES OF FACULTY AND TEMPERAMENT IN EMINENT MEN—VANITY—THE SEXUAL PASSION—GENEROSITY AND MEANNESS—POETRY AND SCIENCE—IMPORTANCE OF THE NATURAL BENT—THE PERFECT MAN UNKNOWN—FAMILIES IN WHICH GENIUS MAY BE LOOKED FOR—NEUROPATHIC UNIONS AND THEIR BEARING UPON DARWINISM—INAPPLICABILITY OF NATURAL SELECTION TO MAN—UNKNOWN AGENCIES AT WORK—ORIGIN OF THE FITTEST—EVIDENCE OF A GROWTH-FORCE IN NATURE—GENIUS AS A LAW

It will be seen that the connection of genius with nerve-disorder manifests itself in two ways, positively by the neuropathic character of all the great men enumerated in the foregoing chapters, and negatively by the difficulty, I may say the impossibility, of finding a single celebrity of the first rank who, the facts of his life being sufficiently well known, does not either personally or by heredity fall into the morbid group. Taken by themselves, of course, these considerations are still not conclusive. If it could be shown that all men, great and small, distinguished and undistinguished, were equally subject to nerve-disorder, the theory of genius as a neurosis would fall to the ground. It is important, therefore, to see in what proportion nerve-disorder affects mankind at large compared with that small section of mankind with whom we are specially concerned.

Altogether I have dealt specifically with some 250 men of genius. Selected upon no other ground than their eminence in the first instance, the total number of these are found to be neuropathic, suffering from, or dying of, some description of nerve-disorder. Now the Registrar-General's returns for

England for 1888 exhibit the proportion of deaths from the chief constitutional or nerve-diseases to a million deaths—from all causes in round numbers as follows:—

Phthisis, 86,500; pneumonia, 60,000; convulsions, 40,600; inflammation of the brain, and brain paralysis, 34,000; apoplexy, 31,500; heart-disease, various forms, 17,000; hydrocephalus, 13,000; scrofula, 9,600; rheumatism, various forms, 7,000; softening of the brain, 6,000; epilepsy, 5,600; asthma, 4,600; diseases of the spinal cord, 3,700; syncope, 3,300; diabetes, 3,000; chronic alcoholism and delirium tremens, 2,800; rickets, 1,600; angina pectoris, 1,300; gout, 1,000; stone, 500; and paralysis agitans, 390.

Other constitutional diseases there are, though comparatively unimportant, but for the sake of contrasting the ordinary death-rate with that of genius I mention only those disorders which the biographer, as a rule, has been able or has thought fit to specify in the case of eminent men. The death-rate of the general population from the above-mentioned diseases would appear to be about one in  $3\frac{1}{4}$ . Among the men of genius enumerated it is at least three times greater. Certain varieties of nerve-disorder, moreover, such as gout, paralysis, and epilepsy, occur in an enormously greater proportion among men of genius than among ordinary individuals. So likewise with insanity. Of this, however, owing to the fact of there being so many degrees of mental unsoundness unrecorded in statistical returns, no trustworthy percentages can be arrived at, though it is clear from the biographical portion of my record that the proportion of eccentricity or insanity observed in great men and their families is very much in excess of that prevailing in the community at large.

Very notable as a sign of nervous degeneration is the extreme mortality of the family stock to which the greatest men belong, and more especially among the immediate heirs of an illustrious name. Examples abound in the biographical chapters. As a rule the families of great men die out in the course of a few generations; occasionally they recover themselves through an admixture of healthy and undistinguished blood, but in that event the period at which the man of

*note*  
genius makes his advent will be found to coincide with the lowest ebb of the family vitality. Had the human race consisted three hundred years ago of Shakespeares, Miltons, and Cromwells, it would long since have disappeared from the face of the earth. Napoleon divorcing Josephine with the view of obtaining by another marriage a dynastic heir, is at the best a sorry example of human vanity; it is doubly so when we perceive, as we now do, that the very greatness which the conqueror of Europe sought to perpetuate was itself fatal to his hopes. Nature is rich in compensations. The undistinguished citizen, centuries after his death, is represented by the vital principle which he has transmitted to his descendants; the great man has often to be content to influence posterity indirectly by his works.

Here, a plausible objection to the theory of genius as a neurosis suggests itself and has to be met. There are many insane persons, many paralytics, many epileptics, many gouty subjects, many consumptives, in a given generation, while the men of genius are few and far between. Why so? In answer to this, it can only be said that the physical conditions from which genius results are highly complex, and that the chances of a member of a neuropathic family uniting in himself all those conditions are exceedingly small. They may be compared to the chances of an unmusical person being able to strike by accident on the key-board of a piano a succession of harmonies. Given the sensory endowment requisite for a painter or a poet, there may be a lack of executive power or *vice versâ*, and the disability may be of all degrees. The colour sense, for example, without making a man a painter may dispose him merely to a fondness for the concrete in life and a repugnance to abstractions; combined with the literary faculty it may make him merely a writer upon art.

*Note*

Side by side with undoubted geniuses, there ought, on this showing, to be a multitude of imperfect or fractional geniuses—men possessing some of the elements of greatness but not all. This is, in fact, what we find. Many persons are to be met with, extraordinarily gifted, but just falling short in some particular of true genius—the genius which not only conceives but executes, and which has persistence enough not

to grow weary in well-doing whatever obstacles may lie in its path. The imperfect genius does not make his mark in the world unless, like Blake or George Burges, he happens to err on the side of insane whims or extravagance. Nevertheless he is on record. To such a type belonged Bulwer Lytton's grandfather, Richard Warburton Lytton, who had an extraordinary faculty for acquiring languages, and was a profound student of science and metaphysics, but who imparted none of his wisdom to the world. Bulwer Lytton says of this not very distant ancestor:—

ex. 'He loved learning for learning's sake. He disentangled himself from the world—from pleasure, from ambition, from all the usual aspirations of a man who unites knowledge and talent to wealth and station.' The image of his life was like a statue, cold in its complete repose, and shattered into fragments on his tomb. Nothing remains of it—nothing but a few notes and comments, scattered here and there, through remote regions and down recesses of that silent world in which he lived unseen. . . . To me, amid the hum and buzz that accompany the feeblest fame, the most fleeting celebrity, there is something unspeakably impressive in the oblivion to which this solitary scholar was carried, with all the spoils and trophies of his vast research.'

Another example of the imperfect genius is that of the gifted W. M. Praed, whose bright and varied talents obtained him an enviable position at the University, but who died at thirty-seven of consumption, without achieving anything of note. He swept away prizes and scholarships, was the readiest and most forcible debater in the Union, was matchless in dancing, never missing a ball, though it were on the eve of an examination. He excited at the University the same kind of haunting personal interest that Byron was then exciting in the world, and speculation was freely indulged in as to his future—as to whether he would be most renowned as poet or wit, essayist or orator. But he lived as long a life as Byron, Mendelssohn, or Raphael, and left only a collection of pretty but feeble poems, which the world has made haste to forget.

Within the limits of true genius many varieties of faculty

and temperament are to be observed. Vanity is generally supposed to be the characteristic of little minds, and to be incompatible with true greatness, but this is not so. It is to be found on both sides of the account. There have been many great men who thought little of themselves. Shakespeare took no care of his writings, nor did Swift. Walter Scott had an extreme simplicity of manners. 'It was impossible,' says Robert Chambers, 'ever to detect in his conversation a symptom of his grounding the slightest title to consideration upon his literary fame, or of his being even conscious of it.' On the other hand, Milton had a curious vein of egotism and unbashful self-assertion. 'In his later years,' says Masson, 'he evidently believed himself to be, if not the greatest man in England, at least the greatest writer. All that he said and wrote was backed, in his own consciousness, by a sense of the independent importance of the fact that it was he, Milton, who said or wrote it.' Wordsworth, again, was excessively vain, as Carlyle shows in the following amusing passage of his 'Reminiscences':—

'One evening I got him (Wordsworth) upon the subject of great poets, which I thought might be admirable equally to us both, but was rather mistaken as I gradually found. Pope's partial failure I was prepared for; less for the narrowish limits visible in Milton and others. I tried him with Burns, of whom he had a singularly tender recognition, but Burns also turned out to be a limited, inferior, creature; even Shakespeare himself had his blind sides, his limitations. Gradually it became apparent to me that of transcendent and unlimited genius there was to this critic but one specimen known—Wordsworth himself. He by no means said so or hinted so in words, but his pride in himself was so quiet, so fixed, so unappealing—like a dun, old lichened crag on the wayside.' And not poets alone, but all men of eminence suffered the same depreciation at Wordsworth's hands. 'One saw the great Wilberforce and his existence visible in all their lineaments, but only as through a reversed telescope, and reduced to the size of a mouse and its nest, or a little more! This was in all cases the result brought out—one's self and telescope of natural, or perhaps, preternatural size, but the



object, so great to vulgar eyes, reduced amazingly with all its lineaments recognisable.'

Byron was similarly filled with an inordinate vanity. He was vain of his personal appearance, and it was for this reason he dreaded corpulency, and found his club foot such a source of vexation—vain also of his aristocratic birth, and a passion for celebrity seems to have been the motive of his actions through life. Shakespeare's fame excited his mortification and jealousy. He told Lady Blessington that Shakespeare owed half his popularity to his low origin, and the other half to the distance of time which separated him from the nineteenth century. Except Pope, and of course himself, he regarded the English poets as barbarians. Goethe's writings and recorded conversations betray a great deal of the self-consciousness which is not far removed from vanity; and the existence of this element in his nature is further proved by the readiness with which he was able to break off detrimental attachments. Chatham was full of affectation. Walpole described him as a comedian even in his dress, and in fact the crutch upon which he hobbled about when in mourning for the King of France was covered with black velvet.

Equally marked are the differences exhibited in the sexual passions of great men. It is by no means true, as many suppose, that the poet is necessarily a flighty person. From his earliest youth a solemn and austere demeanour of mind was the characteristic of Milton. Wordsworth, Southey, and Scott were strait-laced in their domestic relations. Despite appearances, it may be doubted whether Goethe was a man of strong passions, seeing that at twenty-five he was able to give up a beautiful and innocent girl from the philosophical conviction that it was better to do so. Licentiousness, on the other hand, was the characteristic of Byron and Shelley, as it has been perhaps of the majority of poets and artists. Shakespeare does not seem to have been exempt from this weakness. There is evidence that while in the prime of his intellectual powers he was the abject slave of a dark-complexioned woman who was faithless to him and whom he cursed in his heart.

Apart from vanity and amativeness, which are perhaps the most strikingly varied characteristics of great men, many inequalities of character or faculty accompany genius. Milton and Wordsworth were wholly destitute of humour. Pitt and Fox, resembling each other in their wonderful powers of debate, were otherwise as opposite as the poles, the one being lanky, slender, cold and ascetic, except in the matter of port wine, the other corpulent, slovenly, and given to all manner of sensual indulgence. Byron was niggardly in small things, and lavish in great. His memory for scenes and events was extraordinarily retentive, but he could never acquire a competent knowledge of arithmetic. Both Wordsworth and Scott were wanting in the sense of smell. In the senses of taste and hearing, too, Scott was curiously deficient. Lockhart says he was unable to tell madeira from sherry, while the incurable defects of his ear rendered it impossible for him to acquire a knowledge of music. To the last, complicated harmonies seemed to the author of 'Waverley' a 'babble of confused though pleasing sounds,' and this although his father was musical and a performer on the violin. // N.

The metamorphosis of faculty and character is necessarily as varied as that of nerve disorder. Where a general soundness of the brain and nervous system exists, there is perhaps a tolerably equable transmission of mental and moral endowments; but given in the parent those inequalities from which genius arises, we may expect in the offspring great uncertainty or capriciousness of function. In the re-shuffling of the cards, so to speak, it is impossible to predict which member of the family, if any, will hold the trumps. The Darwin family exemplifies in a striking degree this inequality of faculty. Great in some directions, Charles Darwin's powers were in others curiously limited. His want of ear was such that he could not distinguish the commonest tunes. 'I have no great quickness of apprehension or wit,' he wrote in his latter years. 'I am therefore a poor critic; a paper or book when first read generally excites my admiration, and it is only after considerable reflection that I perceive its weak points. My power to follow a long and abstract train of thought is very limited, and therefore I

( could never have succeeded with metaphysics or mathematics. My memory is extensive, yet hazy ; it suffices to make me cautious by telling me that I have heard or read something opposed to the conclusion which I am drawing, or on the other hand in favour of it, and after a time I can generally recollect where to search for my authority. So poor in one sense is my memory that I have never been able to remember for more than a few days a single date or a line of poetry.' A memory for dates was, however, the special gift of Charles Darwin's father, Robert. 'My father,' says the author of the 'Origin of Species,' 'knew the day of the birth, marriage, and death of a multitude of persons in Shropshire, and he once told me that this power annoyed him, for if he once heard a date he could not forget it, and thus the deaths of many friends were often recalled to his mind.' With this was combined an excessive sensibility. 'I once asked him,' says Charles Darwin, 'when he was old and could not walk, why he did not drive out for exercise, and he answered, "Every road out of Shrewsbury is associated in my mind with some painful event."' The uncle, Erasmus Darwin, the younger, who committed suicide, had for his part a peculiar taste for statistics. 'When a boy, he counted all the houses in the city of Lichfield and found out the number of inhabitants in as many as he could, and when a real census was first made his estimate was found to be nearly accurate.'

Although the only trace of the poetic faculty in the Darwin family was in the ill-fated Charles, who died in his youth, the gift of poetry is not incompatible with scientific genius. Humphry Davy was fond of poetry and romance. According to his brother and biographer, he was 'sanguine, with an excess of sensibility and irritability, and of vital action combined with corresponding activity of mind, and a certain warmth and impetuosity of temper.' He was a many-sided man. Besides poetry he dabbled in religious and metaphysical speculation, before engaging in the chemical studies which brought him fame. Yet he had not the wit to perceive, or the fairness to acknowledge, the equally brilliant genius of his assistant, Faraday, whose election to the Royal Society he opposed. The younger Herschell wrote poetry ;

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mania.

the sons of Arago, the mathematician and astronomer, displayed literary and artistic gifts, and the Bernoulli family, distinguished for mathematics and science, comprised an orator of exceptional powers. It has already been remarked that philosophy and the business faculty were combined with music in the family of Mendelssohn, and the business faculty with poetry in that of Heine. A great variety of faculty is presented by the Meyerbeer (or Beer) family. The father was a successful banker, the mother was noted for her philanthropy. One of the sons, William Beer, devoted himself successfully to scientific studies; another, Michael Beer, became a dramatist and poet of distinction, although he died at thirty-three; Jacob or Giacomo Meyerbeer, always remarkably sensitive and irritable, was from childhood a musician, and of the gifted members of his family he alone attained to old age.

A natural bent asserts itself in the face of all obstacles. The poet lisps in numbers. Burns was a local celebrity at sixteen, Campbell published his 'Pleasures of Hope' at twenty, and Schiller his 'Brigands' at twenty-three; Byron awoke and found himself famous at one and twenty; and Keats was dead at twenty-five, the age at which most men are only buckling on their armour for the battle of life. The poet, the painter, and the musician, employ their innate faculty as naturally as a cat uses its claws, or a bull its horns. There were no artists in Michel Angelo's family, and no musicians in Handel's, and the parents of both tried in vain to thrash them out of their predilections. Claude Lorraine began life as a poor uneducated boy apprenticed to a pastry-cook. Reynolds as a lad eagerly copied all prints that came in his way, and was a good artist as Handel was a good musician before he received a single lesson. Hogarth's school exercises were more remarkable for their ornament than for their matter; apprenticed afterwards to a silversmith, he was nobody's pupil in art, but painted life as he saw it. To some extent the statesman and the military commander may be creatures of circumstance. There may be a Clive or a Warren Hastings now languishing at his desk in the Indian Civil Service of to-day; there may be a Napoleon in the

village bully. But as in letters and art, so in science and philosophy, genius insists upon making itself felt. Faraday was not lost because he began life as an errand boy, nor did Carlyle find the world unwilling to listen to a voice from Craigenputtock. The natural endowment for some one or other of the great spheres of human activity is the all-important point. With this, minor and non-essential details of character may be combined in infinite variety. Hogarth, for example, was gross and unpolished in his manners, Reynolds was suave and miserly, Lawrence was a dandy and a spendthrift; but all three were born artists. As regards education, it is vain to expect boys by means of a system of hot-house forcing to excel or even to attain proficiency in studies for which they have no natural aptitude.

If it is impossible to say exactly upon what plan the variations of heredity proceed, it may confidently be affirmed that genius implies some inequality of brain and nerve function tending to be morbid, if not actually so. Probably a dead level of capacity is impossible, for we have all our strong and our weak points. The soundest man is he who most nearly approaches the mean. He will assuredly not be a genius, but having the power to do many things well, though none superlatively, he may be—indeed, must be—a good citizen. Such a man, we may take it, exerting all his powers in a given direction, will achieve those respectable results in life commonly ascribed to talent. Benjamin West must have been a painter of this stamp. At all events it is curious and suggestive, that he who was accused of a lack of imagination and a want of fire and poetry,<sup>1</sup> should at the same time have been a most amiable and upright man, enjoying good health and a long life. Conceivably there might be soundness in a general levelling up of faculty to the highest point, but this is a phenomenon we are never likely to meet with, since the man who was gifted in that degree would be a Shakespeare in literature, a Reynolds in painting, a Mozart in music, a Kean in acting, a Chatham in oratory, a Pitt in politics, a Napoleon in war, and a Newton in science. The respectable, law-abiding, healthy, long-lived

<sup>1</sup> Allan Cunningham.

family is not that into which the man of great genius may be expected to be born. In his parentage there will be symptoms of the insane temperament, or of its allied functional disorders; he will stand side by side with the ne'er-do-well, the paralytic, and the consumptive, and his offspring, for the most part, will be puny, ailing, unintelligent, and generally ill-equipped in body and mind. || 9.

This being so, the stud-book theory of genius, which seems to possess most attraction for the public mind, must be definitively abandoned. It is to some extent true, as Galton says, that 'ability is not distributed at haphazard, but clings to certain families.' This does not imply, however, that genius is *per se* hereditary. What runs in the blood is nerve-disorder, of which genius is the occasional outcome. Genius is not to be compared with the physical perfections of the Derby winner; it is an accident of the cerebral and nervous organisation, and one which different races estimate differently. Among a hardy tribe of savages, the sensibility which we esteem in the musician or the painter would be a positive drawback; half our men of genius indeed, with their feeble frames and their indifferent health, would be merely so many despised camp-followers, unable to take a scalp or to capture a buffalo. )) 11.

There is no evidence that sexual selection plays any considerable part in obviating such unions as are likely to prove disastrous from the physical point of view. Insanity or deformity renders its victims unattractive no doubt to the opposite sex, but neuropaths, who suffer from more disguised though equally serious forms of nerve-disorder, do not instinctively avoid each other. On the contrary, they seem to be drawn to each other's society. Southey and Coleridge made most unfortunate matches, seeing that there was insanity in the Fricker family into which they married, but the former at least was much attached to his wife, and his second marriage, with Miss Catherine Bowles, a poetess and a confirmed neuropath, was from the physical point of view no better. De Quincey says Coleridge assured him that his marriage was not his own deliberate act, but was 'in a manner forced upon his sense of honour by the scrupulous |

Southey, who insisted that he had gone too far in his attentions to Miss Fricker for any honourable retreat.' De Quincey, however, adds: 'A neutral spectator of the parties protested to me, "that if ever in his life he had seen a man under deep fascination, and what he would have called desperately in love, Coleridge in relation to Miss F. was that man."' The neutral spectator's opinion is supported by the evidence of Coleridge's poems, from which it may be gathered that for the first two or three years at least his marriage was a happy one.

Among Byron's many 'loves,' again, none could have been less suited to him, as a partner, than Lady Caroline Lamb. More than half crazy, this woman had a touch of genius in her composition. 'There was a wild originality in her talk,' says Bulwer Lytton, 'combining great and sudden contrasts from deep bathos to infantine drollery; now sentimental, now shrewd, it sparkled with anecdotes of the great world, and of the eminent personages with whom she had been brought up or been familiarly intimate; and ten minutes after, it became gravely eloquent with religious enthusiasm, or shot off into metaphysical speculations—sometimes absurd, sometimes profound, generally suggestive and interesting. A creature of caprice, and impulse, and whim, her manner, her talk, and her character shifted their colours as rapidly as a chameleon.' At forty-three, Lady Caroline Lamb lapsed into a state of 'partial insanity,' and died of an epileptic attack. She was, therefore, as unsoundly constituted as Byron himself. Nevertheless, Byron and she fell in love with each other almost at first sight, and their attachment while it lasted was strong. The poet said Lady Caroline was the only woman who never bored him. Among other notable attachments in which there have been strong neuropathic tendencies on both sides, may be reckoned those of Sara Coleridge and her cousin, H. N. Coleridge, Flaxman and his wife, Scott and his wife, Campbell and his wife, and Charles Darwin and his cousin, Miss Wedgwood.

Elsewhere I have suggested that our growing knowledge of the danger of neuropathic unions may gradually create an

more things here

instinctive dislike to them,<sup>1</sup> but this is necessarily a mere speculation with respect to the distant future. In the face of the examples quoted and the common experience of life, it is unsafe to assume that sexual selection necessarily tends to the immediate and physical improvement of the species; and although errors of the sexual instinct may be supposed to be corrected by natural selection or the principle of the survival of the fittest, this in its turn has serious, nay, insuperable difficulties to encounter when it comes to be applied to man. Darwin was latterly constrained to enlarge the scope of natural selection so as to include the preservation of variations beneficial to the community, although not to the individual,<sup>2</sup> and under this head he reckoned the scientific and artistic faculties to which is mainly to be attributed the advance of the race from barbarism to civilisation. But now that the exact genesis of those faculties has been studied, such an argument is seen to be open to grave suspicion.

‘If in each grade of society,’ says the author of the ‘Descent of Man,’ ‘the members were divided into two equal bodies, the one including the intellectually superior, and the other the inferior, there can be little doubt that the former would succeed best in all occupations and rear the greatest number of children.’ Considering the excessive mortality and the general unfitness that attend upon genius, this does not by any means follow. ‘At the present day,’ continues Darwin, ‘civilised nations are everywhere supplanting barbarous nations, and they succeed mainly, though not exclusively, through their arts, which are the product of the intellect. It is therefore highly probable that with mankind the intellectual faculties have been gradually perfected through natural selection. Again, this is an absolute *non sequitur*, as even Darwin seems to feel from the admission he is constrained to make in another passage, namely, that, allowing for natural selection, ‘an unexplained residuum of change, perhaps a large one, must be left to the action of unknown agencies.’

Weismann, whose investigation of the germ-plasm has been so fruitful in suggestion, adopts the Darwinian view.

<sup>1</sup> *Op. cit.*

<sup>2</sup> Darwin: *The Descent of Man.*



‘Human intelligence in general,’ he observes, ‘is the chief means, and the chief weapon which has served, and still serves, the human species in the struggle for existence. Even in the present state of civilisation, disturbed as it is by numerous artificial encroachments and unnatural conditions, the degree of intelligence possessed by the individual chiefly decides between destruction and life; and in a natural state, or still better in a state of low civilisation, this result is even more striking.’ All this is undeniable. Intelligence, under which are included the inventive and the mechanical faculties, is the great means of advancement for the human race. The savage may have greater muscular strength and greater powers of endurance than the European, yet the superior mental capacity of the latter ensures him in every field an easy victory. ‘Here again, therefore,’ continues Weismann, ‘we encounter the effects of natural selection.’ Why ‘therefore?’ Weismann’s easy acceptance of this conclusion prepares us for his next remark, which is that chance alone determines in what direction a man’s faculties shall be developed, and incidentally he adds that ‘at the present day there are many men of science, who, had they lived in the time of Bürger, Uhland, or Schelling, would probably have been poets and philosophers,’ also that ‘Raphael might have been as great a musician as he was a painter if, instead of living during the historical high-water mark of painting, he had lived under favourable personal conditions at a period of highly developed and widespread musical genius.’<sup>1</sup> When Weismann ventures upon such a speculation as this, it is plain that he has given no attention to the subject of mental faculty at all.

That human intellect is progressive there can be no question. The fact is shown by the greater development of the brain among civilised as compared with savage races. But the causes of this advance in intellectual capacity cannot yet be said to be determined. For many years past, natural selection has been a phrase to conjure with; it has been glibly used to explain everything. But its insufficiency as applied to man latterly began to dawn upon Darwin himself. ‘In one of my latest conversations with Darwin,’ says Alfred

<sup>1</sup> Weismann: *Biological Memoirs*, 1889.

Russel Wallace, 'he expressed himself very gloomily as to the future of humanity, on the ground that in our modern civilisation natural selection had no play and the fittest did not survive.'<sup>1</sup> As if the human race could abrogate or suspend any great law that truly underlay its existence! Wallace himself also circumscribes considerably the principle of which he was the co-discoverer, confessing himself wholly unable to explain by natural selection the growth of the mathematical and artistic faculties in man, and taking refuge in the hypothesis of 'an unseen universe—a world of spirit to which the world of matter is altogether subordinate.'<sup>2</sup> Other evolutionists, while accepting natural selection up to a certain point, hold that the intellectual gap between man and brute is too great to be bridged over by Darwinian principles alone.

The kernel of the question is clearly the origin of the so-called 'spontaneous variations' upon which the principle of natural selection is based, and concerning which Darwin has remarked: 'We know not what produces the numberless slight differences between the individuals of each species, for reversion only carries the problem a few steps backward, but each peculiarity must have its own efficient cause.'<sup>3</sup> It seems to be established by the study of morbid heredity in man that variations in structure including the brain, and consequently the intellectual capacity, have their origin in a molecular instability of the cerebro-spinal system which follows a law of alternation in heredity and is little affected by environment. These variations Darwin has never professed to explain, his system of natural selection starting from the point where they appear, and being essentially 'restrictive, directive, conservative, or destructive of something already created.' What an investigation of the physical basis of genius seems to disclose is that human progress through the practice of the arts and sciences is mainly due to the molecular instability of the nervous system above referred to, operating not only without aid from sexual selection or natural selection, but in direct opposition to those principles.

<sup>1</sup> Wallace: 'Human Selection,' *Fortnightly Review*, September, 1890.

<sup>2</sup> Wallace: *Darwinism*, 1889.

<sup>3</sup> Darwin: *Op. cit.*

By the use of clothes and fire man renders himself independent of climate; his weapons give him a power for offence and defence far transcending that of beak or claw; and the inventive faculty which thus extends his dominion in nature is not the attribute of a race, but only the apparently accidental endowment of a few individuals in each generation who, in the Darwinian sense, are to be classed with the 'unfit'—a category to which Darwin himself, with his forty years of persistent and disabling ill-health, might not improperly be assigned. Victorious generalship and skilful administration, again, both important factors in determining supremacy of race, are likewise the outcome of a cerebral organisation which is wholly personal to individuals and not necessarily transmissible by heredity or otherwise amenable to the Darwinian law.

These considerations appear to me to be of great importance, lending as they do an unexpected support to the view of the small but not uninfluential group of evolutionists above referred to, and favouring the still more heterodox speculations of the new American school of biologists, who, upon different grounds, believe in the existence of a special developmental force in nature which they term 'bathmism,' or growth-force, and which they conceive to act by means of 'retardation and acceleration' and 'without reference to fitness at all.'<sup>1</sup> Cope rightly observes that the theory of the survival of the fittest leaves the origin of the fittest entirely untouched. Growth-force, in his view, is the vital principle which supplies material for selection; its direction is determined in part by effort and use, but from its automatic action it may also tend to the production of useless characters.

*Note!* The grounds upon which the American biologists seek to establish this theory of the origin of the fittest may not be conclusive, but in the molecular variations of heredity, as illustrated in genius, we certainly seem to come upon some such agency as the so-called growth-force—an agency no longer subject to natural selection, but eluding it and deter-

<sup>1</sup> Cope: *The Origin of the Fittest: Essays on Evolution*. New York, 1887.

mining human advancement by independent means. To growth-force may be attributed small racial differences like those which exist between Celt and Saxon and which are not explicable by the Darwinian law. It does not follow that man is to be regarded as a special creation—a type apart in the animal kingdom. His close anatomical resemblance to the higher apes—not merely in body, but in brain—forbids such a supposition; and if growth-force be accepted as a factor in human development, it must also be allowed for in the case of the lower animals, though possibly the shaping influence of natural selection may be all-powerful until the higher intellectual processes come into play. After all, growth-force is only another name for ‘spontaneous variations,’ and the true point at issue is how far it is governed by outside conditions favourable or unfavourable. In man it appears to be largely independent of such conditions.

To discuss the new aspect of evolution thus opened up would, however, carry me far beyond my present purpose. This I have fulfilled if, in availing myself of the latest acquisitions of knowledge in more than one field of research, I have succeeded in reducing to a law those higher manifestations of the intellect which have so long perplexed, while they have stirred the admiration of, mankind. Some prejudices may have been hurt in the process. It is the facts, however, which speak rather than I, who merely group them so that they may be mutually explanatory of each other; and as to the wisdom of Nature’s courses it behoves us to be dumb.



# INDEX

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## ACQ

ACQUISITIONS, mental, 11-15, 17-23  
 Acting faculty, the, 187-192, 290-3, 308  
 Agraphia, 6, 20  
 Alcohol, 25-6, 45  
 Alexander the Great, 193  
 Alfieri, 108  
 Ampère, 230  
 Aphasia, 6  
 Apoplexy, 40-9  
   — in relation to genius, 87, 106, 107, 115, 125, 128, 135, 140, 141, 143, 145, 165, 168, 170, 172, 180, 211, 215, 221, 229, 230  
 Arc, Joan of, 203  
 Arithmetical faculty, 60-2, 231, 232, 308  
 Associated perceptions, 9-17, 254-7, 270-2  
 Associations of words, 273-5  
 Asthma, 39-49  
   — in relation to genius, 130, 135, 179, 190, 220  
 Auditory centre, localisation of, 6  
   — — action of, 13, 18, 21-2  
   — — in relation to music, 283-7  
 Automatic action of the brain, 11-28, 254-300  
 Avarice, 47, 240-2, 298  
   — in relation to genius, 90, 176, 185, 190, 206, 239-242

BACHS, the, 163  
 Bacon, 217  
 Balfe, 173  
 Balzac, 135, 268-9

## CAN

Beaconsfield, 215  
 Beethoven, 167, 283  
 Bellini, 172  
 Bent, the natural, 323-4  
 Berlioz, 173  
 Blake, 76-80  
 Blindness, experiences of, 13, 14, 21  
 Booth, Junius Brutus, 189  
 Bossuet, 143  
 Botticelli, 175  
 Brahe, Tycho, 221  
 Brain, the structure of, 3, 4, 28-9  
   — localisation of the functions of, 5-7  
   — nerve-cells and fibres of, 3, 7-14, 17-24, 26, 34, 254-5, 273-5  
   — convolutions of, in relation to mental faculty, 34-6, 300, 303-14  
   — organic functions of, 37-8  
   — excess and deficiency of the functions of, 33, 36, 60, 62, 193, 239, 318-25  
   — automatic action of, 11-28, 254-300  
   — size and weight of, 310-14  
 Bridgman, Laura, 21  
 Brohan, Augustine, 192  
 Brontës, the, 130-1, 266  
 Brougham, 213  
 Browning, 135  
 Bunyan, 245  
 Burke, Edmund, 214  
 Burns, 122-3  
 Byron, 92-7, 267, 320-6

CAMPBELL, 97-9  
 Candolle, A. de, 230

## CAN

Cannings, the, 215  
 Cardan, 230  
 Carlyle, 220-1  
 Caution, 27, 297  
 Cavour, 215  
 Cellini, Benvenuto, 175  
 Cerebellum, functions of, 16  
 — affected by alcohol, 26  
 — smallness of, in Swift, 83, 307  
 Cerebral organisation in relation to feelings and opinions, 28, 32  
 Charles V., 205  
 — XII., 201  
 Chateaubriand, 106  
 Chatham, 210-12, 294-5  
 Chatterton, 104  
 Chéri, Rose, 192  
 Chess-playing faculty, 232  
 Childlessness, 40, 41  
 — in relation to genius, 80, 98, 111, 116, 126, 136, 174, 177, 182, 184, 200, 205, 209, 210, 212, 218, 229, 316-17  
 Chloroform, 26  
 Chopin, 173, 287  
 Claude Lorraine, 175, 323  
 Clive, 195  
 Colburn, Zerah, 231-2  
 Coleridge family, the, 115-19, 267, 325-6  
 Collins, Wilkie, 135  
 Colour sense, the, 8, 60, 185, 288  
 Common-sense, 32  
 Comparison, faculty of, 8, 28, 276, 278  
 Comte, Auguste, 219  
 Conception, process of, 49-52  
 Condé family, the, 215  
 Conscience, 63  
 Consciousness, 31  
 Constructiveness, mechanical and poetical, 309  
 Consumption, 40-9  
 — in relation to genius, 108, 112, 115, 118, 120, 122, 126-8, 130, 131, 134, 144, 149, 172-3, 175, 190-91, 199, 200, 214, 220, 229, 232  
 Conversion, religious, 246-51  
 Convolutions of the brain in relation to mental faculty 34-6, 300-14

## EPI

Copernicus, 221  
 Corneille, 144  
 Cosway, 215  
 Courage, 251  
 Creative faculty, the, 262-4  
 Criminality, hereditary character of, 47, 252, 300, 305-6  
 Cromwell, 207  
 Cuvier, 230

DANTE, 143  
 Darwin, Erasmus, 232  
 — Charles, 238, 321-2, 330  
 Davy, Humphry, 229, 322  
 De Foe, 144  
 Delacroix, 285  
 Demidoff family, the, 242  
 De Musset, 137-9  
 De Quincey, 134  
 Descartes, 219  
 Desclée, 192  
 Diabetes, 40  
 Dickens, 131-3, 269-70  
 Diderot, 108  
 Donizetti, 170-1  
 Doré, 180  
 Dreams, 25, 258-60  
 Drugs, effects of, 25  
 Drunkenness, 25-6, 45  
 — in relation to genius, 99, 101, 104, 107, 110, 112-14, 118, 122, 125, 131, 144, 177, 188, 190-3, 212  
 Dryden, 144  
 Dumas, 140  
 Dürer, 175

ECCENTRICITY, 39-49  
 — in relation to genius, 82, 88, 90, 93, 97, 98, 104, 113, 114, 115, 120-1, 128, 131, 133-5, 137, 140, 142, 167, 171, 172, 177, 182, 190, 201, 206, 212, 214, 216, 221, 228, 230, 316  
 Eliot, George, 133  
 Ellis, John, 243  
 Epilepsy, 40-9  
 — in relation to genius, 66, 97, 114, 132, 135-6, 139, 141, 143-4, 166,

## EPI

- 168, 170, 191, 194, 198-9, 200, 202, 204-6, 218, 293-4, 316
- Epilepsy the cause of mental activity, 66, 139
- Eugene, Prince, 200
- FACULTY, diversity of, 32-6, 59, 60, 62, 193, 239, 318-25
- Fanatical views, 28
- Faraday, 229
- Feelings, painful and pleasurable, 55
- Fielding, 144
- Flaubert, 139, 271
- Flaxman, 176
- Fox, Charles James, 215
- George, 246, 299
- Frederick the Great, 206
- Frontal lobes, functions of the, 6, 7, 16, 35, 303-8, 310
- Fuseli, 177
- GALILEO, 221
- Gautier, Théophile, 145
- Genius, 36, 56, 254-6, 275
- as distinguished from talent, 263-5
- morbid character of, 264, 316-17, 324-5
- stud-book theory of, untenable, 325-31
- imperfect development of, 74, 317-18
- occurrence of, rare, 317
- in relation to insanity, 56, 66-108, 117, 120, 133, 142, 165, 170, 175, 180, 184, 192, 204, 205, 208, 210, 211, 215, 217, 218, 219, 222, 224, 230, 232, 233, 234, 275-7
- in relation to idiocy, 60-2, 112, 143, 164, 172, 184-7, 194, 204, 215, 236

## GEN

- Genius in relation to apoplexy, 45, 87, 106, 107, 115, 125, 128, 135, 140, 141, 143, 145, 165, 168, 170, 172, 180, 211, 215, 221, 229, 230
- in relation to asthma, 87, 113, 130, 135, 173, 179, 190, 220
- in relation to avarice, 90, 176, 185, 190, 206, 239-41
- in relation to consumption, 108, 112, 115, 118, 120, 122, 126, 127, 128, 130, 131, 134, 144, 149, 172, 173, 175, 190, 191, 199, 200, 214, 220, 229, 232
- in relation to criminality, 251, 306
- in relation to childlessness, 80, 98, 111, 116, 126, 174, 177, 182, 184, 200, 205, 209, 210, 212, 218, 229, 316-17
- in relation to habits of drinking, 99, 101, 104, 107, 110, 112, 113, 114, 118, 122, 125, 131, 144, 168, 177, 188, 190, 192, 193, 212, 236
- in relation to eccentricity, 82, 88, 90, 93, 97, 98, 104, 113, 114, 115, 120-1, 128, 131, 133-5, 137-8, 140, 142, 167, 171, 172, 177, 182, 190, 201, 206, 212, 214, 216, 221, 228, 230, 316
- in relation to epilepsy, 66, 97, 114, 132, 135, 136, 139, 141, 143, 144, 166, 168, 170, 191, 194, 198, 199, 200, 202, 204, 205, 206, 218, 293-4, 316
- in relation to fits of giddiness, 81, 83, 132, 173, 213, 215, 220, 226, 230, 238
- in relation to gout and rheumatism, 99, 102, 109, 111, 112, 116, 123, 127, 128, 132, 133, 134,



## GEN

- 135, 138, 140, 144, 166, 175, 182, 192, 195, 208, 209, 210, 212, 215, 217, 219, 221, 225, 226, 229, 230, 231, 237, 316
- Genius in relation to hallucinations, 76-80, 83, 84, 91, 96, 104, 106, 107, 117, 118, 126, 131, 138, 141, 144, 170, 175, 181, 191, 192, 193, 197, 198, 202, 203, 204, 213, 216, 218, 219, 226-7, 230, 260-2, 287
- in relation to heart disease, 115, 134, 135, 136, 138, 172, 179
- in relation to hypochondria and melancholia, 83, 84, 87, 89, 96, 98, 104, 106, 108, 113, 118, 122, 127, 129, 170, 172, 173, 175, 179, 180, 195, 220, 230, 238, 239
- in relation to the insane temperament, 82, 93, 94, 101, 104, 113, 135, 136, 173, 182, 196, 201, 206, 215, 229, 236, 316
- in relation to imbecility, 82, 89, 100, 113, 121, 141, 149, 151, 175, 213, 221, 230
- in relation to ill-health, 115, 118, 124, 126, 127, 133, 135, 149, 155, 179, 180, 199, 221, 226, 228, 230, 234, 236, 238-9, 325, 330
- in relation to irregularities of growth, 89, 94, 95, 101, 111, 113, 119, 127, 131, 134, 135, 144, 167, 169, 170, 176, 177, 179, 184, 190, 192, 199, 200, 205, 213, 214, 215, 217, 222, 230, 232, 233, 235
- in relation to the linguistic faculty, 74, 102, 130, 134, 169
- in relation to length of life 89, 98, 104, 108, 112, 115, 127, 134, 148, 169, 171, 172, 174, 199, 200, 225, 226, 228, 229, 234, 316

## GEN

- Genius in relation to memory, 87, 110, 127, 130, 136, 138, 142, 144, 151, 180, 214, 221, 228, 229, 230, 254, 285
- in relation to mortality and unfitness of offspring, 104, 111, 115, 117, 123, 127, 141, 144, 147, 154, 155, 165, 166, 174, 178, 205, 207, 222, 225, 228, 316-17
- in relation to ne'er-do-wellism, 89, 93, 98, 99, 104, 109, 113, 124, 128, 132, 137, 150, 175, 177, 178, 187, 190, 213, 225, 226, 236, 238, 246, 252-3
- in relation to neuralgic affections, 101, 104, 106, 110, 119, 122, 129, 130, 131, 132, 133, 168, 170, 173, 228, 234, 237, 244
- in relation to opium-eating, 90, 116, 131, 134, 135, 143, 195, 237
- in relation to paralysis, 81, 83, 87, 98, 100, 104, 107, 112, 113, 115, 121, 123, 124, 125, 126, 132, 135, 144, 145, 158, 159, 162, 165, 166, 168, 169, 175, 177, 179, 181, 199, 213, 221, 225, 229, 230, 231, 237, 316
- in relation to physical energy, 87, 88, 118, 121, 129, 130, 135, 136, 140, 142, 144, 176, 178, 233, 239, 240, 256, 264
- in relation to piety, 87, 108, 123, 144, 173, 174, 176, 192, 203, 214, 225, 230, 232, 244-51
- in relation to defects of the senses, 81, 89, 109, 122, 128, 131, 134, 143, 144, 164, 165, 166, 167, 168, 169, 173, 175, 178, 182, 190, 192, 199, 214, 215, 226, 229, 230, 231, 236, 237, 246, 321
- in relation to prodigality, 93, 112, 178, 207, 239-42, 297

## GEN

- Genius in relation to scrofula, 83, 117, 205, 214, 249
- in relation to sexual passion, 89, 96, 104, 107, 110, 123, 127, 137, 140, 225, 252, 320
- in relation to defects of speech, 101, 119, 120, 168, 200, 204, 233, 234, 238
- in relation to the shape of the skull, 82, 135, 143, 167, 172, 175, 230, 310-14
- in relation to sudden death, 115, 123, 135, 143, 144, 168, 170, 221, 234
- in relation to suicidal tendencies, 85, 86, 104, 106, 107, 108, 137, 145, 170, 183, 188, 189, 196, 203, 215, 219, 234, 236-7, 244, 293-4, 319
- in relation to temper, 81, 89, 90, 94, 98, 100, 104, 122, 123, 124, 127, 128, 129, 130, 131, 132, 133, 166, 168, 169, 172, 173, 177, 178, 184, 191, 193, 195, 196, 199, 206, 208, 214, 220, 221, 232-4, 256, 322-3
- in relation to unsuitable unions, 90, 114, 115, 117, 128, 141, 226, 227, 229, 234, 235, 237, 325-30
- in relation to vanity, 318-20
- Giddiness, 16
- in relation to genius, 81, 83, 132, 173, 213, 215, 220, 226, 230, 238
- Giorgione, 175
- Gluck, 172
- Goethe, 141-2
- Goldsmith, 99-100
- Gout and rheumatism, 48-9
- in relation to genius, 99, 102, 109, 111-12, 116, 123, 127-8, 132-3, 134-5, 138, 140, 144, 166, 175, 182, 192, 195, 208-10, 212, 215,

## HON

- 217, 219, 221, 225-6, 229-31, 237, 316
- Graphic writing, 280-1
- Graphology, 149, 197
- Growth-force, evidence of the existence of a, 330-1
- Gustavus Adolphus, 200
- HABIT tending to instinct, 12
- force of, 31
- Hallam, 144
- Haller, Albert von, 230
- Hallucinations, 28, 33, 39, 40, 57, 90, 247-8
- Blake's, 76, 80, 201
- Bostock's, 257
- Bunyan's, 245
- George Fox's, 246
- Joan of Arc's, 203
- Mahommed's, 202
- Nicolai's, 57-8, 257
- Schumann's, 287
- Swedenborg's, 218
- in relation to genius, 83-4, 91, 96, 104, 106-7, 117-8, 126, 131, 138, 141, 144, 170, 175, 181, 191, 192-3, 197-8, 202, 203, 204, 213, 216, 218-19, 236, 260-2, 299
- Handel, 165, 323
- Handkerchief, tying a knot on, 14
- Haschish, 26, 247
- Hastings, Warren, 213
- Hauff, 108
- Haydon, 182
- Heads, size and shape of, 300, 304-5, 310-14
- Hegel, 219
- Heine, 144, 242
- Heiresses, sterility of, 241
- Heredity, metamorphoses of, 39-49, 54, 109, 225, 238-51, 321-9
- Héroid, 172
- Herschell, William, 225
- Sir John, 226-8
- Hogarth, 176, 288, 323
- Hölderlin, 107
- Homer, 143
- Honesty no guarantee of wisdom, 98

## HOO

- Hood, Thomas, 134  
 Howard, 242  
 Hugo, Victor, 142-3  
 Hypnotism, 24-6, 30, 66  
 Hypochondria and melancholia, 40-9, 55  
 — — in relation to genius, 83, 84, 87, 89, 96, 98, 104, 106, 108, 113, 118, 122, 127, 129, 170, 172, 173, 175, 179, 180, 195, 220, 230, 238, 239
- IDEAS, formation of, 12-15, 254  
 Identifying faculty, the, 8, 28, 279, 281, 295-9  
 Idiocy, mental power in, 60-62  
 — in relation to genius, 112, 143, 164, 172, 184, 187, 194, 204, 215, 236  
 Ill-health, 38-9, 40  
 — in relation to genius, 115, 118, 124, 126-7, 133, 135, 149, 155, 179, 180, 199, 221, 226, 228, 230, 234, 236, 238-9  
 Imbecility, 42-8  
 — in relation to genius, 82, 89, 100, 113, 121, 141, 149, 151, 175, 213, 221, 230  
 Insane temperament, the, 63-5  
 — — in relation to genius, 82, 93, 94, 101, 104, 113, 135-6, 173, 182, 196, 201, 206, 215, 229, 236  
 Insanity, causes of, 33  
 — conducive to mental activity, 56, 67-80  
 — in relation to genius, 81, 108, 117, 120, 133, 142, 165, 170, 175, 180, 184, 192, 204-5, 208, 210-11, 215, 217-19, 224, 230-4  
 — moral, 63-5  
 Inspiration, 256-71  
 Instinct, 11  
 Irregularities of growth, 41  
 — — in relation to genius, 89, 94-5, 101, 111, 113, 119, 127, 131, 134, 135, 144, 167, 169, 170, 176-7, 179, 184, 190, 192-9, 200, 205, 213-5, 217, 222, 230, 232-3, 235

## MAC

- JOHNSON, Dr., 83  
 Jonson, Ben, 144  
 Joule, 230  
 Judgment, 29  
 Jukes family, the, 47, 252  
 Jussieu, De, 230
- KANT, 219  
 Kean, Edmund, 187  
 — Charles, 192  
 Keats, 126  
 Kembles, the, 190  
 Kepler, 221  
 Kerner, 108
- LA BRUYÈRE, 144  
 Lamarck, 230  
 Lamb, Charles, 119  
 — Lady Caroline, 326  
 Landor, Walter Savage, 101, 256  
 Landseer, 182  
 Language, basis of, 18-19, 21  
 — in relation to genius, 74, 102, 130, 134, 169  
 — as a support to thought, 21  
 — command of, 273-4  
 — Shakespeare's fluency of, 276  
 Lawrence, Sir T., 178  
 Leibnitz, 219  
 Lemaître, Frédérick, 192  
 Lenau, 107  
 Leonardo da Vinci, 175, 288  
 Lesage, 143  
 Life, long and short, 40-1  
 — — — in relation to genius, 89, 98, 108, 112, 115, 127, 134, 148, 169, 171-2, 174, 199, 200, 225-6, 228-9, 234, 323  
 Linné, 230  
 Literary faculty, the, 254-82  
 Liverseege, 179  
 Louise Latour, 38  
 Lucretius, 108  
 Luther, 244  
 Lyell, Sir C., 231  
 Lytton, Bulwer, 128
- MACAULAY, 130

## MAC

Maclise, 179  
 Macready, 293  
 Mahommed, 211  
 Marlborough, 194  
 Mars, Mdle., 191  
 Martin, Sarah, 243  
 Meissonier, 180, 309  
 Memory, physical basis of, 9-16, 22  
 — in idiots, 60-2  
 — as an element of genius, 255  
 Mendelssohn, 168, 242, 286-7  
 Meyerbeer, 242, 323  
 Michel Angelo, 173, 323  
 Military genius, 193-201  
 — — in relation to epilepsy, 293-4  
 Mill, James, 220  
 — J. S., 220  
 Milton, 109-12, 263, 319  
 Mind, 2, 7-12, 15, 26, 32-4  
 Modes of feeling, 32  
 Molière, 143  
 Money-making faculty, the, 239,  
 297-8  
 Monrose, 191  
 Montesquieu, 143  
 Moore, Thomas, 127  
 — George, 243  
 Morality, 11, 28  
 — affected in insanity, 63-5  
 — current notions of, erroneous, 48  
 Morland, 177  
 Morphy, Paul, 232  
 Mortality in connection with genius,  
 104, 111, 115, 123, 127, 141, 144,  
 147, 159-62, 165, 200, 209, 316-17  
 Mozart, 166, 284-6  
 Musical faculty, the, 22, 60, 62, 163-  
 73, 282-7

NAPOLEON, 196, 294  
 Natural selection, inapplicable to  
 man, 327-31  
 Ne'er-do-wellism, 46-7  
 — in relation to genius, 89, 93, 98-9,  
 104, 109, 113, 124, 128, 132, 137,  
 150, 175, 177-8, 187, 190, 213,  
 225-6, 236, 238, 246, 252-3, 298  
 Nerval, Gérard de, 145  
 Nerve cells and fibres of the brain,

## POE

3, 11-15, 17-23, 26, 34, 254-5,  
 274  
 Neuralgic affections, 40-9  
 — — in relation to genius, 101, 104,  
 106, 110, 119, 122, 129, 130-3, 163,  
 170, 173, 228, 234, 237, 244  
 Neurotic diseases, 39-49  
 Newman, Cardinal, 246  
 Newton, Isaac, 222  
 Nield, 243  
 North family, the; 240

OBSTINACY, 28, 42  
 Opinions, no man responsible for  
 his, 28  
 Opium-eating, 26, 259, 262  
 — in relation to genius, 90, 116,  
 131, 134-5, 143, 195, 237  
 Originality of thought, 32, 264

PAGANINI, 172, 283  
 Painting faculty, the, 173-87, 283,  
 288-90  
 Palmerston, 215  
 Paralysis, 40-9  
 — in relation to genius, 81, 83, 87,  
 98, 100, 104, 107, 112-13, 115, 121,  
 123-6, 132, 135, 144-5, 158-9, 162,  
 165-6, 168-9, 175, 177, 179, 181,  
 199, 213, 221, 225, 229, 230-1,  
 237, 316  
 Pascal, 106  
 Pellico, Silvio, 107  
 Peter the Great, 204  
 Petrarch, 144  
 Philanthropy, 28, 47, 242-4, 298, 310  
 Phrenology, the old, 4-6  
 — the new, 301-14  
 Physical energy, 40, 253  
 — — in relation to genius, 87-8,  
 118, 129, 130-6, 140, 142, 144,  
 176, 178, 233, 239, 240, 256, 264  
 Piety, physical basis of, 47-8, 298  
 — in relation to genius, 87, 108,  
 123, 144, 173-4, 176, 192, 203,  
 214, 225, 230, 232, 244-51  
 Pitt, William, 212  
 Poe, Edgar Allan, 107

## POE

- Poetry, visual effects in, 279-80  
 — difficulties of translating, 271  
 Pope, 144  
 Porson, 144  
 Praed, 318  
 Prévost Paradol, 145  
 Prodigality, 46-7, 297  
 — in relation to genius, 93, 112, 178, 207, 239-42  
 Punning, 281-2
- RACHEL, 191  
 Racine, 144  
 Raphael, 175  
 Rashness, 27, 297  
 Reynolds, 175, 323  
 Rhythm, sensibility to, 278-9  
 Richelieu, 214  
 Roberts, David, 180  
 Rogers, 144  
 Romilly, Sir S., 215  
 Romney, 180  
 Rossini, 172  
 Rousseau, 104  
 Rubens, 175
- SALVATOR ROSA, 175  
 Sand, George, 106  
 Savage, 144  
 Schiller, 144  
 Schubert, 172  
 Schumann, 171  
 Scientific faculty, 295-7, 322  
 Scott, Sir Walter, 123, 270  
 Scrofula, 39  
 — in relation to genius, 83, 117, 205, 214, 249  
 Selfishness, 28, 47-8  
 Senses, defects of the, 18, 56  
 — in relation to genius, 81, 89, 109, 128, 131-4, 143-4, 164-9, 173-8, 182, 190, 192, 199, 214-5, 226, 229, 230, 236-7, 246, 321  
 Sensory and motor areas, 5-9  
 — — — action of, 12-5, 17-24, 34, 254-5, 305-6, 313  
 — — — in relation to the literary faculty, 256, 258-63, 268-82

## SUD

- Sensory and motor areas in relation to art, 283-93, 309  
 — — — in relation to military genius, 293-4  
 — — — in relation to oratory and statesmanship, 295  
 — — — in relation to the scientific faculty, 295-7; business, 297-8; philanthropy, 298; piety, 298-9; crime, 300  
 Sexual passion, 16, 17, 45, 248  
 — — in relation to genius, 89, 96, 104, 107, 110, 123, 127, 137, 140, 225, 252, 320  
 Sexual selection, 325  
 Shakespeare, 146  
 — mortality of the family of, 147, 154  
 — probable cause of the death of, 153-7  
 — signatures of, as evidence of paralysis, 157  
 — paralysis of grand-daughter of, 162  
 — creative power of, 271-3, 276  
 Sheridans, the, 113  
 Siddons, Mrs., 190  
 Skull, shape of the, 82, 135, 143, 167, 172, 175, 230, 300, 304-5, 310-14  
 Sleep-walking, 25, 47, 90, 108  
 Smeaton, 231  
 Smell, 6, 15, 321  
 Smith, Sydney, 133  
 Socrates, 216  
 Sophocles, 143  
 Southey, 87, 320-5  
 Speech centre, 6, 18, 21, 25, 48  
 — — in relation to genius, 101, 119, 120, 168, 200, 204, 233, 234, 238  
 Staël, Madame de, 143  
 Stanhope, Lady Hester, 212  
 Steele, Sir Richard, 112  
 Stephenson, George, 231  
 Stuttering, 48  
 — in relation to genius, 61, 119, 120, 168, 200, 204, 233, 234, 238  
 Style, literary, 273-5  
 Sudden death, 115, 123, 135, 143, 144, 168, 170, 221, 234

## SUI

- Suicidal tendencies, 41-9  
 — — in relation to genius, 85-6,  
 104, 106-7, 108, 137, 145, 170,  
 183, 188-9, 196, 203, 215, 219,  
 234, 236-7, 244, 293-4, 319  
 Swammerdam, 230  
 Swedenborg, 218, 299  
 Swift, 81, 306  
 Szechenyi, 214
- TALENT, as distinguished from  
 genius, 263-4  
 Talma, 192  
 Tannahill, 107  
 Tasso, 107  
 Taste, 6, 15, 321  
 Telford, 231  
 Temper, 41, 49  
 — in relation to genius, 81, 89, 90,  
 94, 98, 100, 104, 122-3, 124, 127,  
 128, 129, 130-3, 166, 168-9, 172,  
 173, 177, 178, 184, 191, 193, 195,  
 196, 199, 206, 208, 214, 220-1,  
 232, 234, 256  
 Thackeray, 134  
 Tintoretto, 175  
 Touch, 6, 13, 15, 17  
 Turenne, 200  
 Turner, 184  
 Twins, the conception of, 52  
 — physical and mental resemblances  
 of, 29, 53-4
- UNCHASTITY, 199, 252  
 Unfitness of offspring of men of  
 genius, 104, 111, 115, 117, 123,  
 124, 126, 147, 159-62, 165, 200,  
 209, 316-17  
 Unsuitable unions, 40-1  
 — — in relation to genius, 90, 114-

## ZIM

- 15, 117, 128, 141, 226-7, 229,  
 234-5, 237, 325-30
- VANDYCK, 175  
 Vanity, 28, 47, 310  
 — in relation to genius, 318-20  
 Veronese, Paul, 175  
 Visions, religious, 245-8  
 Visual centre, 5-8, 13, 14, 19, 20, 28,  
 268, 308  
 Volta, 230  
 Voltaire, 143
- WAGNER, 171, 283  
 Washington, 214  
 Watt, James, 228  
 Watteau, 175  
 Weathercock, analogy of, with the  
 will, 27, 31  
 Weber, 172  
 Wedgwood, Josiah, 235  
 — Thomas, 237  
 Wedlock, selection of partners in,  
 40, 325-30  
 Weismann's theories, 51, 52, 328  
 West, Benjamin, 324  
 White, Henry Kirke, 144  
 Wilberforce, 244  
 Wilkie, David, 179  
 Will, the illusory character of, 26,  
 262  
 — in twins, 29  
 — in hypnotism, 30  
 Wit, 281-2, 306  
 Woffington, Peg, 191  
 Wordsworth, 119, 268, 280, 319-20  
 Writers' cramp, 48
- ZIMMERMANN, 230











