

a patient would have been lost. Some apparently desperate cases have recovered; and this has been the justification for operating in cases equally desperate. But it has led to several deaths which might have been delayed for some few weeks by thinking more of the reputation of surgery than of the prayers of the patient. It may be imprudent to operate in desperate cases; but the surgeon, if he fail, is not so much blamed as when he operates upon a person in tolerable health; and, if he succeed, the success is more brilliant. I think, however, we must look higher than this. We must remember that it is our duty to relieve suffering and save life, if we can; and, if we see a patient who must die soon—whose few remaining days or weeks must be days of suffering and sorrow—who (fully understanding that the effort to relieve her may hasten on her end) is anxious to be relieved—who may possibly feel that even death would be a relief—and who calls upon a surgeon for help—I believe, and act up to my belief, that it is the bounden duty of the surgeon to do his best, unless he is convinced that no help he can afford can be of any avail. If the result be unhappy, as it often must be in such cases, he will bear the disappointment with fortitude, knowing that he has done what he believed to be the best for his patient. But when, almost contrary to his expectations, almost beyond his hopes, he finds a poor, weary, worn-out creature, fast sinking helplessly into the grave, restored in a few weeks to the full enjoyment of perfect health—she who was a burden to her family again the helpmate of her husband, the active mother of her children—the surgeon reaps that rich reward which you well know is so dear to all whose noble mission it is to relieve suffering—"the blessing of her who was ready to perish".

Original Communications.

MEDICAL PSYCHOLOGY.

By ROBERT DUNN, F.R.C.S.E.

II. (concluded.) *Nervous Apparatus of the Intellectual Consciousness.*

To perceive and to think are distinct mental acts, but are inseparably connected; for the perceptive intuitions furnish the materials of thought, and without ideas there could be no thinking; while at the same time an intuitive reasoning process underlies nearly the whole of our mental operations. No sooner, indeed, are we able to perceive and to look upon objects which are in striking contrast with each other, than we intuitively begin to compare them; and every act of comparison involves in its result the agency of the cogitative or reasoning faculties. Still it is, physiologically as well as psychologically, important to bear in mind that to *feel*, to *perceive*, and to *think*—in other words, that sensation, perception, and intellection, are different and distinct mental acts or states of consciousness; and as such, that they must each severally have a distinct nervous organic instrumentality for the manifestation of their respective phenomena, though all in due co-ordination with each other, as these mental acts are all so inseparably connected. And thus, while perception, on the one hand, as intermediate between sensation and intellection, requires, as we have seen, an augmentation and elaboration of the nervous system beyond the mere sensory apparatus, in the evolution and development of a series of longitudinal cerebral convolutions, in order that *sensations* may be converted into *ideas*, and become the pabulum of thought; so again, on the other hand, intellection requires new increments of vesicular matter, a further augmentation and integration, and the agency of a still higher ganglionic instrumentality, to the end that the

perceptive intuitions may become subservient to the processes of thought and reflection, and for offices and purposes the noblest and most exalted in the economy of man; for, as Mr. Herbert Spencer has justly argued, "No physiologist who calmly considers the question in connexion with the general truths of the science can long resist the conviction that different parts of the cerebrum subserve different kinds of mental action. Localisation of function is the law of all organisation whatever; separateness of duty is universally accompanied with separateness of structure; and it would be marvellous were an exception to exist in the cerebral hemispheres. Let it be granted that the cerebral hemispheres are the seat of the higher psychological activities; let it be granted that among these higher psychological activities there are distinctions of kind, which, though not definite, are yet practically recognisable; and it cannot be denied, without going in direct opposition to established physiological principles, that these more or less different kinds of psychical activity must be carried on in more or less distinct parts of the cerebral hemispheres. To question this is not only to ignore the truths of physiology as a whole, but especially those of the physiology of the nervous system. Now, either there is some arrangement, some organisation in the cerebrum, or there is none. If there is no organisation, the cerebrum is a chaotic mass of fibres incapable of performing any orderly action. If there is some organisation, it must consist in that same physiological division of labour in which all organisation consists; and there is no division of labour, physiological or other, of which we have any example or can form any conception, but what involves the concentration of *special kinds of activity in special places.*" (Spencer's *Principles of Psychology*, p. 607, 1855.)

Now it is indisputable that the hemispherical ganglia, in their totality, are the centres of intellectual action; this is universally admitted. But, since special functions require special instruments, and as *perceiving* and *thinking* are different and distinct mental acts or states of consciousness, in this division of their labour I cannot resist the conviction, for the reasons already adduced, that the entire series of longitudinal convolutions have a unifying action as a whole, and constitute the nervous apparatus of the perceptive consciousness. And, after further observation and reflection, I have been led to another generalisation, for the establishment or refutation of which I would appeal to the observations of the naturalist, as well as to the anatomical researches of the comparative anatomist. My own mind, at present, rests in the conviction that the vesicular matter of the transverse convolutions on the surface of the hemispheres furnishes the material conditions, the substratum, for the manifestation of the highest psychological activities: in other words, that the transverse series, as an aggregate or whole, is the nervous apparatus of the intellectual consciousness.

It cannot be denied that the transverse are anatomically a distinct series of convolutions. They do not spring from the same central part as the longitudinal; they have not a common origin, nor any direct connexion with the *locus perforatus*, though the two series are most intimately connected and closely associated by a third, the commissural or anastomosing, through the instrumentality of which a co-ordinating and unifying action is maintained throughout the whole of the hemispherical ganglia. They are almost exclusively human, but not altogether and entirely so; still, wherever they do exist, as they manifestly do in the horse and the elephant, there we have unmistakable evidence of the manifestation of *reasoning processes* being at times carried on. Now, as the longitudinal convolutions of the hemispheres increase in number, volume, and complexity of structure, in the same ratio as the perceptive activities of the animal increase in number, and as the

range of their action is widened, so do I hold and believe that, on an appeal to nature, it will be found that the transverse convolutions, from their first appearance on the surface of the hemispheres, become more distinct and numerous as the animal rises in the scale of intellectual being, and as phenomena of the intellectual consciousness become more unequivocally manifested by it. In man, the transverse convolutions are the largest, the deepest, but at the same time the least symmetrical of all the convolutions of the brain, justifying the inference of Dr. Carpenter, who says: "When the cerebral hemispheres are fully developed, they offer innumerable diversities of form and size among various individuals; and *there are as many diversities of character*, for it may be doubted if two individuals were ever exactly alike in this respect" (Carpenter's *Human Physiology*.) They are the last in the order of time to be developed; the sensory ganglia are the first; and the perceptive apparatus is intermediate. This is in strict accordance, and harmonises well with the order and succession of the development of their functional endowments; for we feel before we can perceive, and we perceive before we can think. And, while sensation is the earliest and lowest, so is ratiocination the latest and the highest of our mental manifestations. Thus the phenomena of the intellectual consciousness are the last to be evolved, and the latest to reach their maturity.

Now man, in regard to sensational and perceptive experience, stands on the same platform with the lower animals; for the mental process is alike intuitive in all, and the difference is one of *degree*, and not of *kind*. In some respects, indeed, they greatly outstrip him; for he has neither the far-seeing eye of the eagle, nor the scent-smell of the hound. But the difference between him and them rests specifically and fundamentally in the *greater number and higher order* of his psychical activities—in his intellectual, moral, and religious endowments, his reasoning and reflecting powers; for the lower animals are alike destitute of the highest plane of perceptive development—of the frontal, towering, and backwardly extending convolutions—the seat of the moral and religious intuitions—the *sole prerogatives of man*; and, through the whole series, with some rare exceptions among the highest mammalia, of those characteristically large and deep, but unsymmetrical transverse convolutions on the surface of the hemispheres, "adorning the human brow as with a diadem," and which, as I believe, are the seat of the faculties of the intellectual consciousness—of imitation, imagination, ratiocination, and reflection—in fine, of the faculties of calculation, of order or arrangement, of comparison and causality, of ideality and wonder, "through the instrumentality of which he can number the stars, and, with instruments furnished by the higher mathematics, can weigh and measure the planets, assign their courses and times, mark out the path and anticipate the coming of comets, calculate the distances of the most distant nebula, and only terminate his investigations in the inaccessible depths of infinitude. Through them he arranges every object that comes within his cognisance, whether material or mental; he perceives resemblances and differences, abstracts and generalises, analyses and combines, compares and infers, and ascends 'from Nature up to Nature's God'. From *ideality*, the imaginative faculty, the vivifying soul of music, poetry, and eloquence, refining, exalting, and dignifying every object susceptible of improvement, springs his sense of the *beautiful*; and from *wonder*, that of the *sublime*." (*Essay on Physiological Psychology*, p. 55.)

Now, among some of the feathered tribe we recognise the exhibition of the *imitative* faculty, and we detect traces of the *ratiocinative* among some of the higher mammalia. The varying strains of the mocking-bird, and the articulatory exhibitions of the parrot, present as conclusive evidence of the presence of the *imitative*

faculty as any that we can have of the *ratiocinative* in the elephant or the horse from multiplied observations. Now, are there no transverse markings, no peculiarities in the folding of the convolutions in the brain of the parrot or the mocking-bird? As to the case of the horse or the elephant, the existence of certain transverse convolutions on the surface of the hemispheres can no more be disputed than can their *reasoning* at times be denied. Still, to determine the functions of the primitive convolutions, longitudinal and transverse is the great problem of physiological psychology, and it yet virtually remains unsolved. As to my own generalisations, they have not been made hastily, and I am open to conviction. I shall feel as grateful for being convinced of an error as I feel happy in embracing truth.

Dr. Carpenter, in restricting the functions of the hemispherical ganglia solely to perceptive or ideational activities, and to intellectual operations, to the total exclusion of sensation or feeling, was the first physiologically to establish the composite nature of the animal propensities and affections, and of the emotional, moral, and religious feelings, and to point out that, in the exercise of each and of all, there was brought into play, perceptive or ideational element, as well as sensorial feeling. Mr. James Mill had, indeed, many years previously, in his able exposition of mental phenomena apart from all physiological considerations, arrived at the same conclusion as to their composite nature. And surely it must be admitted, that this separation and localisation, within the encephalon, of the nervous centres of sensation and ideation, of feeling, and of thought is a real and an important step in advance in physiological and medical psychology. But it is one, which I am strongly inclined to think, remains yet to be fully appreciated in all its practical importance, and in all the variety of its bearings, in relative psychological medicine. But, be that as it may, it is abundantly manifest that the perceptive consciousness in full play of its action, in relation to all that appertains to the active powers of man, as a social, moral, and religious being involves both the organic instrumentalities of the hemispherical ganglia, and of the nervous centres of the emotional sensibilities or feelings. Now, the seat of the latter of these—the emotional sensibilities—I believe, with Dr. Carpenter, to be in the thalami optici and corpora quadrigemina; but for the grounds of this belief, I must refer to my *Essay on Physiological Psychology*. And I would only observe, in conclusion, that these two great centres of emotional sensibility—the thalamic optici and corpora quadrigemina, being placed, as they are, midway between the hemispherical ganglia and the external organs of sense, may be played upon and roused into action through either, from below or from above: upwards from the outer world, by the appropriate stimulus upon the nervous vesicular expansion of each of the external organs of sense; downwards from the hemispheres, from the inner or psychical world, by the flow of our thoughts, and the workings of ideodynamical, emotional, or moral activities in the cerebral organs.

Moreover, bearing in mind their anatomical and physiological relations, their connections upwards with the hemispherical ganglia, backwards with the cerebellum, and downwards from the corpora striata, through the cerebro-spinal axis with the nerves both of sensation and of motion, we need be at no loss to comprehend what we are so often called upon to witness, a highly disturbed state of these nervous centres, finding vent in a disruptive discharge of the nervous force, deranging all the sensitive as well as all the motor phenomena of the body, and even those of the intellect itself.

I have not alluded to Dr. Wigan's hypothesis that the mind itself is dual—in other words, that consciousness is double; and that, because we have two brains, a right

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and a left brain, so have we two minds, each performing its own functions, but in perfect accordance so long as the two brains harmonise in quality, structure, and action, with each other; for all the information furnished to us by the senses, tells of a mind "one and indivisible"; and in every instance in which there is a lateral doubling of the nervous centres, there we find a commissural band, like the corpus callosum, the office of which is manifestly that of a bond of union, associating the two sides of the cerebrum into one harmonious action.

The fact itself of the duality of the brain is indisputable. The brain is a double organ, and the symmetrical disposition of the parts of the encephalon on each side of the median line must be admitted. But, at the same time, this doubleness of the brain is in harmonious accordance with the doubleness of all the organs of sense; and, indeed, is just what *à priori* reasoning would lead us to expect as necessary to the functions of the special senses, as double inlets to knowledge. But the work of Dr. Wigan, *On the Duality of the Mind*, is highly suggestive; and, when fairly interpreted, by the physiological psychologist, is calculated to throw much light upon alternating states of consciousness, delusions, and irregular volitions, as well as upon other obscurities, connected with the phenomena of mind.

Sir H. Holland, in his valuable *Chapters on Mental Physiology*, has an admirable essay on the Brain as a Double Organ, showing its compatibility as such with the unity of consciousness.

Transactions of Branches.

READING BRANCH.

RETROSPECTIVE ADDRESS OF THE READING PATHOLOGICAL SOCIETY.

By O. C. MAURICE, Esq., House-Surgeon to the Royal Berkshire Hospital.

[Read July 24th.]

VARIOUS CASES. (Concluded from p. 660.)

Endocarditis. Dr. Cowan exhibited the heart of a patient of his, who died in the Hospital from endocarditis.

J. P., aged 34, was admitted February 26, 1861, suffering from symptoms of endocarditis with a regurgitant action of the aortic orifice, and probable pericardial adhesions with cardiac enlargement. He had suffered from a severe attack of rheumatic fever prior to his admission. He died from exhaustion consequent on the efforts of the heart to carry on the circulation; and although no permanent dyspnoea or blueness existed, about half an hour before his death they both came on to a frightful degree. The countenance was perfectly livid; and the dyspnoea was fearful to witness, from the struggles of the heart to overcome the obstruction to the circulation. On *post mortem* examination, the valves of the aorta were found thickened and corrugated, from inflammation and deposit of lymph.

The case narrated presents a specimen of the most formidable cases of this kind. Endocarditis may affect either the true membrane or the valves, the latter being exemplified in the present case; and, since the true endocardium consists of a serous nonvascular membrane, when, in examining it, we find redness and injection, and attribute it to inflammation of that membrane, we err; it being, in reality, dependent on its being infiltrated with hematine, the result of exudation from the inflammation of the subjacent cellular tissue, which is largely supplied with blood-vessels; and, from the same reason, the thickening of the valves is caused by infiltration of the tissue lying between the two lamellæ of the

membrane which fold over to form the valve. As the inflammatory process goes on, exudation on to the free surface takes place, much of which may be taken up, causing secondary mischief in other organs; but often so excessive becomes the inflammation that coagulability is increased to an abnormal degree. The exudation remains deposited on the valves in the form of a shaggy mass of coagulum, giving rise to the so-called vegetation-growths, which are a characteristic *post mortem* mark of an acute attack of endocarditis.

Starvation Case. The last case, which, however, is not the least in importance, that I propose bringing before you to-night, is the case of a servant girl of a retired naval surgeon of Henley, who was supposed to have been starved to death in his service; I say supposed, as, he having been acquitted (at which, for the credit of our profession, we should all rejoice), we have no right to suppose otherwise than that he was innocent. This case was brought forward by Mr. Jeston. The girl was described as having been healthy up to the time of entering this surgeon's service. She was admitted into the workhouse of the hospital at Henley the first week in January last; and is stated to have presented all the appearances of an idiot in a state of emaciation and most filthy dirt. Her eyes and cheeks were deeply sunken; her cheek-bones and nose very prominent. The arms, legs, and trunk were emaciated to a frightful degree. The pulse was natural, but very feeble; tongue clean; no cough, no diarrhoea. She stated that she had no pain, but felt excessively weak, and further stated that she had suffered from no illness until the previous Sunday week, when she had a fit, which was stated by her master to be epileptic. The tops of her toes were black, and there were several black blisters on the soles of the feet. There was a contused wound on the left temple, as from a fall; and her whole appearance presented that of one who had long suffered from a want of nourishment and exposure to cold. On her admission to the workhouse, she was supplied with five ounces of bread and butter, and a pint of tea, which she is stated to have eaten ravenously, and an hour afterwards to have asked for more. During the night she drank freely of toast and water, and in the morning had for her breakfast five ounces of bread and butter and a pint of tea, which she enjoyed. Mutton broth, arrowroot, gruel, and two ounces of wine, were added to her dietary by Mr. Jeston, and continued till the 8th, when she was ordered four ounces of wine in arrowroot. In the night she became delirious, got out of her bed, and began to sweep the room. The remainder of the night was restless; till she gradually sank and died the next morning at 6.30 A.M., the fifth day after her admission.

At the autopsy, forty-four hours after death, the body was found to weigh but fifty pounds, and was extremely emaciated. The bruise on the forehead had not injured either the pericranium or the bone. The arms were covered with bruises; and there was gangrene of the toes and feet. The brain was healthy and firm; the heart was firm, and contained but little blood. There was a clot resembling greenish fibrine in the left ventricle, extending about two inches up the aorta. The lungs were healthy, the right being partially adherent to the pleura of the ribs and diaphragm. The liver was dark and congested. The gall-bladder was moderately full of bile, which coloured the surrounding parts. The stomach and duodenum were velvety and slightly pink, with no trace of ulceration. The kidneys and suprarenal capsules were healthy. The bladder contained three-quarters of a pint of urine, loaded with sugar and albumen. The uterus and ovaries were much atrophied. The whole of the small intestine was very thin and transparent; the large one was contracted and empty. The omentum was transparent; the mesentery free from every deposit of fat. The spleen and pancreas were normal.