

The Mental Aspects of Ordinary Disease. By J. MILNER FOTHERGILL, M.D. Edin., M.R.C.P. Junior Physician to the West London Hospital.

The relations of body and mind are becoming not only much more comprehensible, but even much better understood, since science has shaken off the incubus of theological teaching as to the severance of soul and body. As long as the mind was something separated from the body, or only united to it by slack and loosely fitting ties, mental phenomena could have nothing to do with bodily conditions—insanity was a disease of the soul; and the monk, standing over a miserable lunatic chained to a staple in a wall, and flogging him in order to make him cast his devil out, was a logical outcome of this hypothesis, however repugnant to more recent and correcter views. The baneful psychology of theologians is now thoroughly undermined, and the erroneous and mischievous superstructure is cracking and gaping on every side, and ere long the ground occupied by a crumbling ruin will be covered by a gradually growing erection based on a foundation of facts, and reared by an expanding intelligence. The union of psychology and physiology is the closing of the circuit, in one direction, of the pursuit after knowledge, and forms the initiation of a rational and intelligible comprehension of the mind and of its relation to corporeal conditions. How such mistaken and false ideas of the word *melancholia*, as those entertained by the monk as an alienist physician, could have attained their sway in the face of such maxim as *mens sana in corpore sano*, only becomes intelligible when we remember the ignorance, the superstitious prejudices, the contempt for the knowledge of the natural man, which ever characterise the theological mind, and which found their highest expression during the monkish supremacy of the dark ages—that interval of black ignorance which intervened betwixt the decadence of Latin civilisation and that intellectual evolution, the *Renaissance*, which indicated the advent of the reign of human intelligence. Slowly but surely was the emancipation of the intellect from the fetters of priestly tyranny achieved, as death thinned the ranks of its opponents, and the grim despotism of Torquemada and his coadjutors waned into the pettier and less terrible persecution of more recent ecclesiastics, and the tremendous grip of hierarchical supremacy gradually merged into the palsied, nerveless grasp of a doting and dying theology, the mere spectre of its former

self. Curious men were the Church's leaders of the middle ages. In their cathedrals the light of day was only permitted to enter to a limited extent, and that too through the medium of coloured glass, so as to produce the "dim religious light," while artificial lights burnt up before their altars; so were their minds closed to the natural light of the human understanding, and artificially illumined by the creations of their diseased imaginations, amidst whose coloured rays the white light of truth was always obscured, if not rarely utterly lost. But in the mortality of man lies the hope, the salvation of truth.

The days of the minor Trinity—the soul, the mind, and the body—are numbered; and the sounds of the advent of a physiological psychology are no longer audible only to the finest trained ears of those prepared to listen for them. The ringing notes of conscious truth are now distinct enough to all but those who are voluntarily deaf, who have closed their ears wilfully with the stuffing of preconceived opinion, of confirmed and domineering prejudice: that insanity, which was regarded as the indication of some disease of the soul, in whose production the body had no share, is now found to be linked with appreciable pathological changes, and in many instances is actually amenable to physical remedial agents.

Thought is the product of the cells of the grey matter of the brain—the result of a change of form in organic matter, taken into the system as food, of which acids and other products of oxidation, of retrograde tissue-metamorphosis, are the waste. These waste products of the brain are very similar to those which are found in muscles after much functional activity; the essential product evolved being a form of force, a variety merely—the one being muscular power, the other nerve energy. That nerve energy may go to the calling out of muscular effort, an athletic feat, a brisk row, or it may take the direction of the composition of a song or an essay. In either case the result is the product of the combustion of what was originally food, which is evolved again in the form of force and waste by means of the potent alchemy of the nervous system. In that marvellous crucible the brain, fed by the assimilative processes, matter changes its form, and in the case of Robbie Burns transmuted his oatmeal porridge into Tam O'Shanter.

Such being the case, it is obvious then that bodily conditions will affect the nutrition of the brain, or rather of the cerebral cells, and so modify their products. It is not neces-

sary to go into the more pronounced conditions called insanity for the evidences of such influence ; they are to be found in the varying mental attitudes of common life. It is, however, certain that the study of the more marked cases furnished by insanity, with their deeper shadows and clearer definitions, is the best and most fitting preparation for the proper recognition and discrimination of the finer shades, the slighter changes which exist among the sane. It is only by becoming familiar with well marked cases of disease that we learn to recognise the fainter and less distinct cases of such disease—take small-pox, for instance—and so it is with the study of mental variations. More especially is this the case in attempting to dissect and analyse the varying emotions which sway us like reeds in the wind. At one time all looks bright, cheerful, and encouraging ; at another time, not far distant, the same identical prospect looks cheerless, gloomy, and tinted with despair. This change depends upon physical conditions, and a more pronounced physical state can make a deeper impression, not only involving the emotional centres, but even implicating the intellectual processes. Thus a slight amount of bile in the blood, or an excess of renal products, may depress a man with hopeless despair, or drive him into paroxysms of violent passion. A profound condition of simple anæmia may induce such grave disturbance that the intellect may be influenced and affected. The delirium of acute pyretic disease is a familiar instance of the influence exercised by passing bodily conditions upon the brain and its product—thought.

When there exists a condition of good nutrition of the encephalic centres we experience a pleasant, agreeable sense of well being, *bien etre*, which shows itself very distinctly in after dinner geniality, cordiality, and generosity. When the nutrition is imperfect, or the arterial blood is of abnormal composition, the consequences are a mixture of irritability and bad temper, blended with depression. This is seen in common life, and we are all familiar with the crossness of the hungry man ; when fasting, crossness is interchangeable with hunger, and is often its substitute, and forms a contrast to the amiability of repletion. Especially is this irritability seen in those whose digestive powers are somewhat feeble, and only capable of taking up at once such an amount of nutrition as shall serve the system but for a brief period ; when that store is exhausted and other food is not forthcoming, there comes on irritability, tinted with depression, and if the desired food be longer withheld or delayed, more

marked evidences of the craving for nutrition on the part of the cerebral cells are furnished. A similar irritability is the ordinary mental attitude of convalescence from acute disease, and either precedes or runs into and co-exists with the keen appetite usually found at that time. They are linked together by something more positive than mere coincidence.

The dependence of modifications of the functional activity of the cerebral cells upon other corporeal conditions than mere changes in the blood, upon general plethora or anæmia, or passing conditions of the presence or absence of nutritive plasma in the circulating fluid, is now well recognised. There are communicating fibres, electric wires as it were, by which the brain receives impressions of varying character from different organs. An impression coming in from some far away peripheral point may stimulate or inhibit the action of the cerebral cells. So strong may be the impression that actual insanity may be produced, as in the case of a lady, related by Schroeder van der Kolk, who became insane whenever her womb became displaced, and sane again as soon as it was returned into its place. Such changes as constitute insanity are the more pronounced of those reflex consequences of certain systemic influences upon the working of the brain. There are the conditions known as *melancholia* and the *spes phthisica*. They are only two of the best known instances of the modification of the mental processes depending upon morbid conditions of different viscera. The effect of several morbid states is to stimulate the brain into greater activity, to evoke higher manifestations of its power. A non-medical, but most acute observer and able writer,* says: "It seems even that bodily pain and disease are not only compatible with, but may directly contribute to, the loftiest efforts of the intellect. They sometimes positively enhance its powers. The effects of some disorders and of certain sorts of pain upon the nerves is to produce a cerebral excitation; and the stimulus thus communicated to the material organ of thought renders it for the time capable of unusual effort. Men under the stirring influence of severe pain are capable of a degree of imagination and ratiocinative brilliancy which astonishes themselves and all who have known them only in ordinary moods of comfort. Extinct faculties come back to them. Torpid faculties become vigorous and sparkling. Forgotten knowledge is recovered. Marvellous gleams of

* "The Enigmas of Life," by W. B. Greg.

insight are vouchsafed to them. The wonderful eloquence of Robert Hall was doubtless greatly owing to the stimulating influence of a terrible spinal malady. Dr. Conolly mentions a gentleman whose mental faculties never reached their full power except under the irritation of a blister. Abnormal and unsound conditions of the bodily organs sometimes give us glimpses of mental powers and possibilities far exceeding anything of which ordinary health is capable. The phenomena of some nervous disorders are positive revelations, and most startling ones, of what the human intellect disengaged from matter, or under favourable material conditions, might achieve and learn."

Greg is led away into poetical metaphor when he talks of intellect disengaged from matter, which is, however, permissible and allowable in one who is not a professed physiologist. We are all familiar with the effects of alcohol upon the intellectual powers, especially when combined with others, as in wine. Two cases illustrating the effect of paroxysms of mania upon the intellectual powers are given by Abercrombie.* A gentleman mentioned by Dr. Willis, who was liable to periodical attacks of insanity, said that he expected the paroxysms with impatience, because he enjoyed during them a high degree of pleasure. "Everything appeared easy to me. No obstacles presented themselves, either in theory or practice. My memory, all of a sudden, acquired a singular degree of perfection. Long passages of Latin authors occurred to my mind. In general I have great difficulty in finding rhythmical terminations, but then I could write verses with as great facility as prose." "I have often," says Pinel, "stopped at the chamber-door of a literary gentleman, who, during his paroxysms, appears to soar above the mediocrity of intellect that was familiar to him, solely to admire his newly-acquired powers of eloquence. He declaimed upon the subject of the Revolution with all the force, the dignity, and the purity of language that this very interesting subject would admit of. At other times he was a man of very ordinary abilities." Had these manifestations of intellectual power stood alone, these maniacal paroxysms would have formed intervals of inspiration, of prophetic ecstasy.

There are two distinct physical conditions under which the intellect seems to possess a power and a brilliancy much exceeding the ordinary and normal standard. These two conditions are (1) the initial or pre-tubercular stage of pulmonary

* Intellectual Powers. Section IV. Insanity.

phthisis, and (2) the condition of chronic gout. Whatever difference of opinion may exist as to the explanation of the causation of this high state of mental activity, there can be none as to the actual fact. There is, as it were, almost an aureole of intellectual light around the heads of those who are just about to enter the fated pathway of pulmonary tuberculosis. To what it is due, it is difficult to say. One factor may be some accession of arterial blood to the cerebral cells in excess of the normal flow. We know that there are usually an accelerated pulse rate and a heightened temperature in such cases. There may be some nerve communication betwixt the lungs and the vasomotor nerves of the cerebral vessels, of which we are as yet but dimly conscious, which may some day explain the matter to us. As to the intellectual power of the gouty, there is less difficulty in explaining it. In the first place the blood of the gouty is highly charged with nitrogenized matter—the waste of tissue, or of peptones which have never been converted into tissue, but which have at once proceeded on a retrograde career. Carpenter has pointed out (“Human Physiology,” sec. 62) how desirable a nitrogenized diet is for the evolution of nerve force, while Liebig dilates upon the effect of food upon the disposition, in his well known “Letters on Chemistry,” and gives distinct utterance to his views. M. Metz, of Mattray, found the value of a liberal dietary in giving strength of will to irresolute boys in his reformatory. An excess of nitrogen in the system, and especially in the blood, acts as a stimulant to the brain cells in the case of the gouty. This, however, is but half of the matter; there is an equally or even more important factor in the condition of the circulation.

Careful microscopical investigation, sphygmographic observation, and minute registering of physical signs, together with their elucidation by the light of recent physiology, are demonstrating to us in unmistakable accents the state of the circulation in chronic renal inadequacy. There is usually decided hypertrophy of the left ventricle, and a high arterial tension, originating in a contracted condition of the terminal arterioles. As a consequence of the high arterial tension the blood pressure on the brain, the highest point of the organism, is well sustained; and a free supply of arterial blood, rendered perhaps more than ordinarily stimulating by the presence of nitrogen in it in excess, evokes a heightened activity of the cerebral cells. Schroeder van der Kolk

states, "that persons who suffer from hypertrophy of the heart with enlargement of the carotids, and in whom more blood flows to the brain, are for the most part excitable, and come easily into ebullition." Certainly simple hypertrophy of the heart is mostly found in the subjects of chronic renal changes. That there is a certain explosiveness in the gouty together with much mental activity, is simply a clinical fact. The excess of nitrogen in the blood stands in a suggestive relationship to the explosive irritability, while the high blood pressure is evidently causally related to the heightened mental activity. In fact, the two factors requisite for the rapid evolution and discharge of force by the cerebral cells are found together under the above named combination. If the changes in the circulation are imperfect, and the blood pressure is but low or even normal, the gouty person is not mentally inactive, but is despondent.

Bichat observed that the length of the neck exercises an influence over the mental activity of the individual. Persons with short necks have a better sustained power of work than those who have long necks, or in other words, *cæteris paribus*, the brain which is superimposed on a short neck has an advantage over the brain which is fed by a long carotid. Van der Kolk is in agreement with Bichat upon this point. There seems, indeed, to be a good deal of truth in the assertion, and a pretty extensive series of observations inclines me to agree with them.

Van der Kolk also quotes from Haller the observation that rachitic children have generally large heads and possess quick perceptive faculties; also that the blood vessels of their heads are distinguished for their large calibre. Certainly such children are commonly very precocious. There is a point, however, in relation to this matter which must not be overlooked. Rachitic children are usually of the strumous diathesis, and in the strumous there is usually an excess of lithates in the blood, which will not be without the ordinary effect exercised by nitrogen upon the brain. The great Dutchman also states, "It is a known fact that deformed hunchbacked individuals, in whom the blood flows more quickly and strongly towards the brain, are remarkable for vivacity of spirit." Now it will not do in the consideration of this matter to leave out of the question the possibility of a mental factor, viz.: that the physical deformity turns the mind of the individual towards mental cultivation as a compensation for bodily defects, and inspires the hunchback to

redeem by mental power what he loses by bodily deformity. Granting this at once, readily and cheerfully, we must also remember that mere will and perseverance, though possessing much effect, no doubt, will only exercise a certain amount of influence, and will only permit a brain to make the most of itself. What is there potentially it may draw out into actual manifested existence; but there its power ceases. An effort of will may and does dilate the blood vessels of the brain, and permits of larger circulation through it; but the general blood pressure in the systemic vessels is an important matter in sustaining the intracranial flow. If the general blood pressure in the vessels of the head and neck is high and well maintained, then a brain can work up to a much higher power, just as a steam engine may be worked up to a higher pressure, and so become actually more powerful. The power varies with the pressure on the square inch, either in brain blood vessels or engine boilers.

There is a curious anatomical explanation of the ability of the hunchback. Rokitsansky has pointed out the existence of cardiac hypertrophy in cases of distorted thorax. The distortion and consequent curvature of the aorta occur after the cerebral vessels are given off, and so an obstruction to the blood flow below that point will increase the blood pressure in the parts above the obstruction. The result then is that we have an hypertrophied heart and an obstruction in the descending aorta, and a large and free blood supply to the brain; a condition, as we well know, productive of heightened brain activity.

But while we recognise the fact that mental conditions are causally associated with the amount of the blood supply, indeed to a great extent rest upon it, it must not be supposed for one moment that I wish to overlook or under-estimate the importance of the condition of the cerebral cells themselves; either as to their inherited peculiarities, or as to the conditions produced by the experience of the individuals. Such consideration is, however, without the sphere of the present paper, which deals with cerebral manifestations in relation to ordinary disease, and not with those ailments which belong to the province of the alienist physician. To one form of disorder of the cerebral cells alone may reference be made here, and that is to the effects of mental over-strain. Brain tissue can be developed by exercise and worn out by over-work. When this latter condition has been induced there exists that irritability which precedes, or rather forms part of

the early stage of the exhaustion of nerve matter. In all over-tried brains there is much irritability and tendency to manifest what we term temper. This fact we learn in time about the individual, but we are somewhat slow to recognise it in the abstract. It is socially desirable and important that such recognition be more general.

In the consideration of the associations existing betwixt cerebral manifestations and certain conditions of the organism, and the effect exercised by the latter upon the former, it is not unimportant to bear in mind that the brain is divided into two vascular areas, (1) the anterior, fed by the internal carotids, and (2) the posterior, fed by the basilar artery, the union of the two vertebral arteries. The existence of the Circle of Willis has done much to give us false impressions as to the amount of inosculation in the intracranial circulation. The existence of necrosis after embolism tells us very clearly of the slight character of the inosculations of the terminal vessels in the substance of the brain; while the occurrence of hemiplegia after ligature of one carotid reveals the inadequacy of the circulation through the Circle of Willis to maintain the functional activity of the half-hemisphere whose direct blood supply has been interfered with. These two vascular areas contain brain-cells with different properties and functions. There is much reason to believe, as Schroeder van der Kolk and Laycock have pointed out, that the emotions and systemic sensations lie on the posterior area; and that the intellectual and motor powers, together with general peripheral sensations, lie on the anterior area. In other words, the posterior area is associated with the organic processes of the system; the anterior with the animal life, with the relation of the organism to its surroundings. This view is not in any way invalidated by the fact that this emotional area is the last to be developed. The vaso-motor nerves of these two areas are differently derived, and justify Bickat's prevision that the emotions and passions are located in the organic processes; if the arrow did not hit the bullseye, it certainly did not miss the target. The vaso-motor nerves of the cerebral arteries spring from the inferior cervical ganglion, into which run the fibres ascending from the abdomen by the greater splanchnic. Indeed, Cyon and Aladoff have traced nerve fibres from the liver up the vertebral arteries by the route described. On the other hand the carotids derive their vaso-motor supply from the middle and superior cervical ganglia. Thus we can see how the emotions sympathise with the organic processes,

especially those located in the abdomen, and so can see melancholia in a new light; and can comprehend how mental depression may accompany, or wait upon, and depart with abdominal disturbance, as for instance brought on immediately by a displaced uterus, and vanishing at once upon its replacement; or its co-existence with a mass of scybalæ in the rectum. The disturbance does not extend to the intellectual processes; the emotions alone are involved. The sense of well being, or of discomfort, depending upon systemic conditions, tells of the relation existing betwixt the emotions and the organic processes, and the nerve tracks just described enable us to comprehend the subject more clearly.

There is an interesting point associated with this division of the cerebral hemispheres, and the functions of each division, to which we may advert. It is the association existing betwixt states of emotional depression and abdominal disease; and the comparative absence of such depression in affections of the thoracic viscera, and especially of the lungs. Marshall Hall (Art. Symptomatology, "Cyclopædia of Practical Medicine") writes—"The temper of the patient is singularly modified by different disorders and diseases. The state of despondency in cases of indigestion forms a remarkable contrast with that of hopefulness in phthisis pulmonalis and other serious organic disease." Not, however, that a melancholic condition is incompatible with pulmonary phthisis, as Dr. Clouston has shown. The relations of heart disease to the thoughts and feelings are complex; there are not only the nerve connections, but there is the distinct effect produced upon the brain and its outcomes by the modification of the circulation.

As to diseases of the lungs, the condition of depression is rarely present, and, when so present, is possibly due to some abdominal complication; though, of course, some of the existing depression may often be fairly attributed to the gravity of the situation, and the anxiety naturally associated with an intelligent comprehension of the danger impending. A portion of the depression may fairly be regarded as mental, and not merely the effect of distant systemic irritation. In tuberculosis of the lung there is commonly such an emotional attitude in the patient as has earned for itself the designation of the *spes phthisica*. Here the hopefulness is as irrational as is the depression of some other affections. The consumptive patient, just dropping into the grave, will commonly enough indulge in plans stretching away far into the future, ignoring alike his real condition, and the impro-

bability, nay, even impossibility of any such survival as he is calculating upon. It is a curious condition, yet, nevertheless, a familiar state. It suggests some effect upon the emotional centres, for it is apparently a state of too high hopefulness, depending upon an exalted condition of the emotional centres, an escape from the control of the intellectual centres indeed. Hope seems to rise above the intelligence; just as in certain abdominal diseases there is a depression which successfully defies the corrections of the intelligence. The intellect does not seem equal to finding the true bearings, or of correcting the exalted emotional centres. In curious relation to these conditions stands the well known difference of the pulse in thoracic and abdominal disease. In thoracic disease the pulse is usually full and sometimes bounding; in abdominal disease it is small, and not rarely thready. The pulse of pneumonia and the pulse of peritonitis are distinctly dissimilar, and contrast with each other. It is well-known that there is much more tendency to collapse in abdominal than in thoracic disease. Dr. Lauder Brunton assures me that even under chloroform, and deeply under too, collapse is common in animals when the stomach is opened. Taking the question of the relation of the pulse to abdominal and thoracic disease, together with the emotional attitudes of these different affections, the synthesis is unavoidable that some effect is produced by the tubercular disease in the lungs upon the emotional centres, as opposite to the effect of abdominal disease as are the varied effects upon the pulse; and, further, that the result is probably produced through the circulation. The explanation which seems shadowed out, for it does not really amount to more, is that abdominal disease induces an anæmic state of the emotional centres—for depression is the outward indication of anæmia of the brain—while phthisis leads to a hyperæmic state, associated with exalted emotional conditions. In either case the intellectual and volitional centres appear unequal to the task of correcting the emotional disturbance, of maintaining that balance which normally exists. That our emotions are closely intertwined with our systemic conditions is evidenced by our everyday experience. The world and all in it looks bright or dark, rosy or gray, hopeful or gloomy, very much according to the functional activity of our organic processes, the state of our assimilation, of our secretions and excretions.

As a matter of fact, there are certain mental attitudes found in some diseases which are so regularly present, so

well marked and pronounced, characteristic indeed, that they may fairly be included as a part of the rational symptoms, and so be utilized in the construction of the diagnosis. So commonly is mental depression found along with biliary disturbance that the name *melancholia* was given to these conditions of mental gloom; and modern observation is but establishing the propriety of the term. Similar depression and mental disturbance are associated with inaction in the colon, and especially with any accumulation in that hollow viscus. Schroeder van der Kolk narrates several cases which illustrate this blending of physical and psychical conditions; the mental disturbance coming on and passing away with the corporeal condition on which it causally rests. Not only so, but he notices a very curious fact about the nature of the melancholy arising from physical conditions, and contrasts the melancholy induced by disturbance of the colon, or intestines generally, with that which takes its origin in some abnormal conditions associated with the reproductive system. He delivers himself thus—"The psychical basis of this form (connected with the generative organs) of melancholy is sorrow, dejection, self-accusings, as in the form proceeding from the colon sinistrum, but with it there is something peculiar. The patient, melancholic from the large intestine, has to do with imaginary misdeeds—he is a wicked man who has squandered everything, or who shall appear before the judge; the other, on the contrary, considers himself sinful—'he is forsaken by God, who can never forgive him his misdeeds; he is lost eternally.' In a word, the depressed tone of mind here passes over into religious melancholy—all afflictions have a religious colour." The association betwixt the reproductive organs and the future is curious and suggestive. It is the physical side of the question, whilst the psychical side of it is that we find that all religions have engaged and concerned themselves with the sexual passion. From the times of phallic worship, through Romish celibacy and Mohammed's sensual paradise, down to the times of Mormonism and "free love," theology has linked itself with man's reproductive instincts.*

Allied in essence to melancholia is the panphobia or "low spirits" of the anæmic brain, common to females generally, but especially found in the habitués of our out-patients' rooms. It is the cry of the suffering encephalic centres for better

* The creed of Mormonism is this—that it is the primary duty of existing spirits to find tabernacles of flesh for immortal spirits waiting to be born.

nutrition, for a more liberal supply of arterial blood. There is much emotional mobility, and the patient is easily moved to a flood of tears by the slightest exciting cause. Under different circumstances, and with women of different psychical diatheses, the depression takes the direction of the relief afforded by alcohol—and this is the most depraved, the most hopeless, and the deadliest of all forms of habitual intoxication—the more hopeless every alienist physician knows from its being based on a physical condition; or it stimulates the spinster and the widow to a pseudo-religious existence, where the religious fervour is the measure of the cravings of the ungratified physiological aspirations.

We do not consider, perhaps because the subject is repugnant to us, how much of each one's psychical attitude, even to the highest of all thought, viz., religious thought, the relations of the created to their Creator, is really based upon conditions of the body; that body which the religious denominate vile, which they would trample under foot, nay, even ignore, yet which is reigning supreme and dominating and directing them in their highest aspirations. What a terrible revelation this is of the psychological attitude of the monk, who, by scourgings, fastings, sleeplessness, and religious exercises, thought to subdue the inborn passions, which, bursting the imposed barriers, were crowding his mental horizon with gloomy or sensual images, and presenting a future of everlasting damnation to his superstitious vision. If that celibate but knew how all the time the passions he would subvert were yet ruling and coercing him, the scourge and the breviary would drop from his palsied grasp. And yet, the startling accents of truth he would probably interpret into the screech of some demon! Poor souls! how determinedly they bent themselves to their Sisyphean task; happily unconscious of the futility of their efforts.

Another form of psychical disturbance is that furnished by the perturbations which are termed hysterical attacks, and which usually occur under circumstances of repressed passion. There is an excitability and mobility about the person which tells how the emotional centres are quivering and vibrating under the tension to which they are subjected; and the emotional oscillations, from weeping to laughing, indicate that the emotions are no longer under the control of the volitional centres. This loss of equilibrium becomes more marked when any disturbance of the bodily health leaves the organism undefended and at the mercy of these

emotional storms. Hysterical attacks are general explosive discharges of the emotional centres—as epilepsy is of the motor, or mania transitoria (demoniacal possession) is of the volitional centres. They all resemble the “blowing of the engine” when it has stood still some time and the steam pressure is becoming dangerously high.

Allied to the emotional mobility of hysteria is the mental condition found along with, or perhaps rather a part of, that complex condition known as Exophthalmic Goitre, or Grave's disease. Here there are three distinct physical elements—protruding eyeballs, an enlarged thyroid, and a tumultuously acting heart. They stand in an interesting relationship to each other, and Trousseau denominates the general condition a neurosis of the sympathetic. There seems some good grounds for such view of the pathology of this state, for the emotional centres are certainly the ones chiefly implicated, and this being the case it is but probable that there is a psychical state induced; so adding a psychical factor to the physical elements for the formation of a diagnosis. The sufferers from this disease are chiefly women, and often very nice women too. Commonly, and especially if still young, there is a neatness of apparel and a style of behaviour which indicate an æsthetic taste above the average. Mentally, too, they are attractive. But there is a mobility of feeling, a diathetic sensitiveness especially to psychical perturbation, which is even more characteristic of the malady. Passing ebullitions of feeling are very common with them; and the singular thing is that the special object of their effervescent wrath is usually the person of whom they are fondest, to whom they are most attached—upon whose head the storm of their discharging emotional centres bursts. The husbands of these agreeable but emotionally mobile creatures are commonly the objects at whom the explosion is directed; at other times, especially in the unmarried who have no husbands, or the uncourted who have no lover, as the centre piece of their emotional foreground, at whom to direct their exploding centres, it is the favourite brother or member of the family who comes in for the violence of the outburst, the brunt of the storm. As a rule they are very pleasant women, but their moods are not always altogether agreeable.

Another well known relationship is that of goitre and mental imbecility, of imperfect cerebral development along with enlargement of the thyroid gland. Various theories have been broached as to this association; from that of its

being due to the presence of lime salts which affect the thyroid while closing up the fontanelles prematurely, and so arresting the further development of the brain—for the Cretin's imbecility is that of arrested development, the mind remaining permanently at that stage which is normal in childhood—to that of Van der Kolk's, that it is the derivation of the blood away from the head by the enlarged thyroid branches of the carotids which occasions arrested brain-development. Unfortunately, however, the last ingenious hypothesis does not accommodate itself to the fact that the enlarged thyroid glands and the Cretin skull are not always found together in the same individual.

Much mental instability is commonly found amongst the sufferers from chronic heart disease. I am afraid that I may have written, as many may think, *ad nauseam* on this subject; still the matter cannot be entirely omitted from our present consideration. If the reader be conversant with my views he may omit the following section and proceed onward.

Many and pronounced are the mental modifications induced by disease of the heart. In one case, I remember well, a very old patient, who was the subject of aortic obstruction, became remarkably polite when the results of the cardiac lesion became very marked; a mental attitude far removed from any that he had hitherto assumed. Usually a totally opposite character of change is produced, and the effect is to cause the mental operations to be imperfect, unsustained, and unequal; while there are present suspicion, doubtfulness, vacillation and caprice. Indeed the mental change is usually for the worse; and along with intellectual enfeeblement there is that alteration of the emotional products which we have seen to be allied with cerebral anæmia. The false and morbid feelings which are the products of imperfectly nourished cerebral centres bear that relation to normal thought that Emerson said that evil did to good, viz., that it was good in the making; and more perfect elaboration of the outcomes of the emotional centres would give us healthy and not morbid feeling. The mental attitude of sufferers from heart disease is usually one of caprice, unsustained volition, together with suspiciousness and panphobia—imperfect emotional products.

Another marked mental attitude is furnished by those who suffer from gout in any of its forms, for suppressed gout is the most Protean of all diseases. We have already seen how gout poison stimulates the intellect in the earlier stages of

granular kidney; what we may now consider is the mental modification produced by advanced disease. There is a mixture of explosiveness, the gouty temper, with suspicion and depression, the consequences of spasm of the intra-cranial arterioles. That is, instead of the well-sustained blood pressure of the early stages with the stimulant gout poison irritating the cerebral cells into activity, we have the stimulant quality of the blood together with an impaired and insufficient blood supply from the hypertrophy of the muscular walls of the cerebral vessels, so commonly found (Bucknill and Tuke, ed. 1874), while the hypertrophy of the left ventricle is being undermined by structural degeneration. Consequently the resultant product is a blended compound of irritability and suspicion, bad temper and anxiety, the latter all the more aggravating from a consciousness that it is not a mere illusion but an emotional hallucination.

Such individuals are the terror of their dependents and the *bêtes noires* of their domestics. There is such a villanous state of temper, at times ascending to ferocity, that the person becomes simply intolerable; the unfortunate sufferers themselves being still further tortured by the haunting impression that they are utterly unreasonable, and that their particular attitude does not arise from any provocation from without, but that it takes its origin in some abnormal condition existing within. In one case well known to me the sufferer sought relief in religious exercises, in resort to her Bible and to prayer—it is needless to say without the desired result. What she needed was not spiritual discipline, not correction of the mind through the soul's portals, for she was a truly good and high-minded woman, but a remedying of the bodily condition on which the mental state causally depended. As a matter of fact, a well directed therapeutics produced what all the spiritual exercises had signally failed to achieve, viz., a restoration of the normal feelings and emotions.

Another peculiar and fairly pronounced mental attitude is that furnished by the victim of cancer. The form assumed here is that of sullen and defiant submission to the inevitable. There is rarely any active and positive attempt made by the sufferers themselves to avert their doom; and the welfare of cancer curers is much more dependent upon the anxious friends of the patient than upon any great earnestness upon the part of the patients themselves to escape the fate before them. There is, as it were, a volitional control exercised over

the impulses, which volitional control is something marked, and the sufferer submits to a grip he sees no chance of eluding; but it must not be supposed that there is any abolition of the instinct of self-preservation, this is merely subordinated to the curious volitional control. That this is the actual attitude is shown by the fact that when the mind is wandering at the last, especially in gastric cancer, which interferes so much with nutrition, the patients in their delirium commonly ask for a knife in order to excise the hostile malignant growth which is involving their existence.

The mental attitude of pyæmia again is quite distinct from any of the foregoing. It is that of absolute indifference. From the first long shivering fit which marks the initiation of the fateful disease, the mental attitude is usually that of imperturbable indifference. Utter unconcern as to the future and its prospects, as to the course of their disease, is the psychical *pose* of the victim of pyæmia. It contrasts very strikingly with the ill-founded hopefulness of hectic, and especially of pulmonary phthisis. The indifferent, careless, emotionless, pyæmic, patient and the sanguine, hopeful sufferer from hectic, side by side in a hospital ward, rivet the attention of all observant beholders. Of course there is no attempt made to assert that these mental attitudes described are invariable and ever present in the different diseases, only that they are common—strikingly common; so frequent, indeed, that they cannot be regarded as mere coincidences. This pyæmic indifference, for instance, is not always found. “Occasionally the patient is depressed; he anticipates from the outset of the disease a fatal issue.” (Pyæmia—Astley Cooper’s Prize—Braidwood.)

In diabetes mellitus, too, there is a condition of mental languor and depression, which is as marked as the muscular lethargy and lassitude manifested by sufferers from that affection, and which often precede those physical symptoms which we are too much inclined to regard as the indications *par excellence* of that disease.

The condition of the mind in the delirium of fever is a subject of much interest, albeit it is surrounded by many difficulties. The great one is that people at large are too much inclined and accustomed to regard delirium as aimless, objectiveless mental action—a chaos of broken ideas and unconnected thoughts, or an uncovering of the sewers of the mind, the revealing of the secrets not always innocent. The first is the way they regard it in others, the latter is the form

they apprehend it in themselves, so that there is not given to it that intelligent attention the subject deserves; neither, again, are those immediately and constantly around the delirious patient those who are likely to possess a calm, dispassionate, and, withal, competent capacity to attend to what is going on in the patient's mind, so far, at least, as it finds expression in words. The anxious relations, or the overworked paid nurse, do not possess the qualities requisite for the correct observation of this complex condition, even if they could be induced to make the nature of the delirium the object of their attention. The impressions remaining on my own mind of my thoughts during a pretty sharp and well sustained delirium, due to a grave attack of scarlatina, are that there were two leading ideas dominant in my mind: the one in relation to my surroundings, the other in relation to my aims and my occupation. The first, though less predominant, were distinctly the more vivid impressions, and they were not only very unpleasant, but their remembrance is ineffaceable. They arose chiefly through the weakened senses, especially the sense of sight. The room—the bedroom I had occupied for years—had been rearranged to adapt it to the necessities of a sick room, and on waking the eye did not immediately recognise the room under the altered circumstances. This at once gave a direction to the wandering thoughts, and the leading idea was to get home. Conscious enough to feel very ill and dangerously sick, the predominant ruling wish was the very natural one to get home, and to occupy my own bed and bedroom. The opposition offered to my attempts to escape from the room seemed to me so unnatural, so unjust and improper, that violence must be resorted to in order to overcome it, and then followed a wild, delirious struggle, terminating in complete exhaustion.

The opposition so offered engendered a strong feeling of personal dislike, blended with suspicion, towards those around me, and their kind attentions were interpreted by the reeling brain as unjustifiable interference with natural and intelligible wishes, as well as impertinent interference with the liberty of the subject, and especially objectionable to a man in his own house where he was accustomed to be obeyed. The remembrance of the feeling of dislike thus originated remains sufficiently strong to occasionally tint the thought yet; in fact, the residua remaining in the cerebral cells exercise an influence on the thought currents when passing over them. By a little volitional aid an impression can now

be called up in distinct imitation of the primitive mental attitude.

The other source of disturbance was the influence of the lines of thought which were predominant in the mind ordinarily. These formed the chief subject of my wanderings during the delirious period. The duties of my profession and the calls of my practice were intermingled with broken glimpses and imperfect snatches of my ordinary topics of thought, and I would be for hours apparently engaged in professional duties, or engrossed in thought on medical subjects. At times the impression that certain patients ought to be seen would become so vivid that I desired to be dressed in order to pay the requisite visits. Opposition to this, of course, aroused indignation and resentment, and strengthened the suspicions already excited by the restraint exercised to prevent me, as I imagined, returning home.

The remembrance of the condition is still sufficiently vivid to explain and render comprehensible the mental attitude of those whose intellect is waning, either from dotage or from a like condition of brain failure inaugurated by acute disease. Why their relatives, who attempt to contradict, to command, or to control them—not always with the best of taste or the happiest of tact—are the objects of dislike and suspicion, is intelligible enough. Also why certain attendants who assume an opposite attitude, viz., that of humouring and cajoling them, should be preferred, and thereby endowed with a potential undue influence, is also explicable. The brain becoming less and less functionally capable, is more and more unequal to the correction of its ill-founded or unjust dislike, of its morbid emotional attitudes, and the impressions once established in the mind, no longer evenly balanced, can not be eradicated or even rectified, by reason of the growing brain enfeeblement.

There is nothing heteromorphic in the mental products, there is just that deviation from the rule that might be anticipated when the functional activity is modified by structural changes. There is not a new line of thought instituted leading in opposite directions to the normal thought, but a misdirection of the ordinary mental processes. There is, however, a certain amount of illusion, which when pronounced; or when the effect upon the brain cells is such as to cause an evolution of distinctly erroneous thought, or in others actual hallucinations, indicates that the frontier of sanity is crossed, and the territory of insanity entered.

Such considerations will enable us to comprehend, and, perhaps, even to observe, that initiatory stage of mental impairment which precedes obvious and well marked dotage. The earlier stages, the lighter shades of mental failure, of waning brain power, are distinct enough to the trained eye, educated to observe and note, long before those coarser and more obvious changes are reached and arrived at which are recognizable by the uneducated observer as unmistakable. Such mental changes are commonly found in those undergoing degenerative physical changes, not only in the very aged, but in those passing into premature decay; in fact, the mental impairment and decay are but the evidences or out-comes of the implication of the brain-tissue in the general degeneration. We are, of course, most familiar with such changes in the very old, in whom we regard more or less of dotage as almost normal, just as muscular atrophy and tremulousness seem a part of the condition of extreme senility. The mental grasp is very imperfect and illusive; petulance and caprice are the mental characteristics, especially of those in whom the intellect was never very strong. Their mental eye is no longer evenly adjusted, and their intellectual vision is deceptive and untrustworthy. A dim consciousness of some such change obtains in the minds of these individuals themselves, which makes them deeply suspicious of others, and extremely susceptible and ready to take offence at the slightest indication by others of any knowledge of their growing incapacity. Nor can we feel surprised at the sensitive suspiciousness on the part of waning power. Mental decay cannot be a pleasant matter for those undergoing it, and no wonder they are excessively jealous of any alteration of manner or attitude in others with whom they are brought into contact.

A similar mental condition of enfeeblement, combined with excessive jealousy and deep-rooted suspicion, is furnished by those who have expedited and anticipated the normal time of senile decay by habits of drunkenness, often associated with other exhausting practices. The man who is beginning to yield under the persistent alcoholisation to which he subjects himself, and who feels that his powers are giving way, is generally suspicious and jealous, if not actually malicious. The intellect undergoing premature degeneracy is more readily and easily provoked than is that of a person entering normal dotage; while there is often co-existent a certain amount of spasmodic vigour, of temporary active irritability. Such persons are simply dangerous to those dependent upon them,

and are not to be trusted further than is unavoidable; their mischievousness being only restrained by their incapacity to execute or put in force their malicious designs. There is a distinct approach to that maliciousness which exists in bad-tempered animals, and is called viciousness. The only ray of comfort for those about them is the improbability of their carrying out any of their wicked and ill-natured intentions.

There are two other mental attitudes which are not directly associated with bodily disease, but which exercise so distinct an influence over physical conditions, especially in sickness, that they may not improperly be considered here, though not quite falling under the heading of this paper. One is that condition of mental impairment in which the intellect is rather servile or terrorized over, and which is usually found amidst elderly people who are utterly dependent on the bounty, and therefore on the will and caprice, of others. That such a condition of helpless submission should obtain under these circumstances, and especially in women, is only what we can readily conceive. The utter helplessness and entire abolition of self-confidence so induced have a most pernicious and destructive action upon the mental processes; the intellect becomes restricted, and solely directed towards observing and accommodating themselves to the varying moods and passing caprices of those upon whom they depend. Chameleon-like, they change colour with every new shade of opinion with which they find themselves in contact, until at last they lose their individuality of colour altogether. Such shadow-like changes cannot of course be entirely concealed from the vision of those to whom they wish to accommodate themselves, and their helpless submission is revealed; and the recognition of it by those to whom they so convulsively cling induces them to be still more exacting, and even actually indifferent to their feelings. The mental conditions of these unhappy beings is pitiable in the extreme; there is a paresis of all volition, and they are metaphorically as backboneless as a jelly fish. "Everywhere and ever, to be weak is to be miserable," and cunning is the only refuge of the feeble. This mental attitude becomes a matter of moment, and needs recognition when such persons are the subject of any physical change calling for medical care, and must be included in the formation of a prognosis, and in the design of the line of treatment to be adopted; the mental instability and tendency to oscillate being very troublesome, and interfering with the working of every systematic plan.

There is in such persons a state of self-induced brain enfeeblement for which they are not altogether responsible; it has been forced upon them by the irresistible pressure of their surroundings.

A similar brain starvation is manifested under a totally different series of circumstances, viz.: that of its deliberate voluntary production in persons of a serious mental diathesis, the naturally religio-melancholic. Here the first step is a species of selected ambition, the aspirations being originally directed by their surroundings, and ultimately guided by an artificial substitute for the will which they in time develop. It is commonly seen in dissenters who have acquired some means in retail commerce, and most markedly in the spinster daughters of retired tradesmen. It is the psychical side of the question, of which the physical side has been discussed before. The intellectual imbecility ultimately reached under these circumstances is something pitiable. The intellect is prostrated before an irritable conscience, rendered morbidly sensitive by persistent self-introspection fostered by vigils, developed by fasting, and mis-directed by a cramped and imperfect education. "How fearfully omnipotent is excessive religiosity of temperament in blinding the understanding! To such an extent has this gone that the antagonism of faith and reason has been erected into an axiom, and the subordination of the understanding to the imagination—of the intellectual to the spiritual faculties—has been preached by the pious as the first of duties." The influence exercised by this condition of intellectual enfeeblement becomes practically important when any line of treatment has to be pursued, and especially so in that complex combination of dyspepsia and constipation to which such persons as are described in the last two paragraphs are so subject. With such persons, and most so with the latter division, the plainest and simplest truths of the natural man seem to take on the aspect of the most abstruse and difficult problems, and the fullest explanations and the clearest directions are insufficient to enable their enfeebled intellects to grasp the subject matter. The palsy of debasing credulity, falsely characterised as religion, has spread over them its enervating clutch, and the mind crumbles down into detritus and ruin, on which superstition takes up its abode and reigns with undisputed sway, against whose tyranny it is simply impossible to inspire or institute an intellectual revolution. Mental emasculation at the bidding

of religious sentiment is as certainly and deliberately self-induced here as was the spontaneous mutilation of Origen.

In those who are exhausted and worn out by toil, either mental or physical, or both combined, but usually by strenuous bodily labour united with petty mental anxieties and fretting, wearing thought, a condition of brain-degeneration is produced which exercises much effect upon the progress of any ailment requiring medical treatment.

The class of cases just described above occupy a sort of disputable ground, a border territory which scarcely permits of their being included in handbooks of insanity, nor yet in the ordinary systems of medicine. They are considered here amongst the aspects of ordinary disease, not as outcomes of the disease, as are the mental attitudes described in the earlier division of the paper, but rather as mental conditions, not normal nor yet insane, which exercise much influence over the progress and course of ordinary disease, when it manifests itself in the persons just described.

Finally, there is a condition of temporary evanescent brain-impairment which is produced by severe acute disease, and especially by severe attacks of fever. The mental faculties are usually somewhat impaired by severe attacks of typhoid fever, and soldiers after this fever are not put on sentry duty for months, as they are pretty certain to forget the watchword and countersign. At other times more marked impressions are made by pyretic disease, and certain acquirements are entirely lost, or the mind may even become a *tabula rasa*. Many curious instances of such effects are furnished by Abercrombie in his well-known work—"The Intellectual Powers," and by Carpenter in his recent work on "Mental Physiology." Commonly enough this passing condition of brain-impairment is followed by an accession of mental vigour, and a condition of intellectual activity which remains permanently, and exercises an excellent influence over the after life of the individual.