On brain and nerve exhaustion (neurasthenia) and on the exhaustions of influenza / by Thomas Stretch Dowse.

On BRAIN EXHAUSTION

AND

the Exhaustions of INFLUENZA

T. STRETCH DOWSE

ON

BRAIN AND NERVE EXHAUSTION (NEURASTHENIA),

AND ON

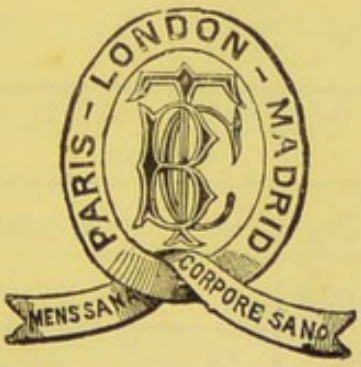
THE EXHAUSTIONS OF INFLUENZA.

BY

THOMAS STRETCH DOWSE, M.D.,

FELLOW ROYAL COLLEGE OF PHYSICIANS, EDIN.;
LATE PHYSICIAN SUPERINTENDENT CENTRAL LONDON SICK ASYLUM; AND ASSOCIATE MEMBER OF THE NEUROLOGICAL SOCIETY OF NEW YORK.

[3rd] ed



LONDON:
BAILLIÈRE, TINDALL AND COX,
20 & 21, KING WILLIAM STREET STRAND.
1892.

PREFACE.

My object in bringing out another edition of this book is to notice some of the troublesome nervous affections accompanying and following influenza.

THOMAS STRETCH DOWSE.

14, Welbeck Street, Cavendish Square.
April, 1892.

ON NEURASTHENIA;

OR,

BRAIN AND NERVE EXHAUSTION;

Its Nature and Treatment.

THE more one studies the laws of nature, as exemplified in the mysterious and wonderful processes of life, the more one feels how inadequate is the mind of man to comprehend even the most primitive laws which govern his material being. Scarcely a year rolls round that the world is not surprised by the revelation of some new discovery, which is looked upon as the outcome of the inventive genius of man, and which shows that the forces of nature have been either so elaborated, or correlated, that a hitherto unknown factor has been produced which, in itself, throws all other novelties into the shade; and so it is in the world of scientific and practical medicine. Theories, are constantly springing up concerning the nature and treatment of disease, some simple, others elaborate and complex, which have a period of renown, and then fall into disuse and are forgotten; and so far forgotten, in fact, that at some remote period they are reintroduced as something new.

There can be no doubt, however, that the solid advance which is daily being made in the material sphere of science will aid the biologist in unravelling many vexed problems with regard to what we know concerning the special

functions of man's body, and which knowledge will have another important bearing, namely, to convince the man of science what a wide gulf must ever exist between the finite and the infinite. In the consideration of the asthenic or exhausted state of the nervous system we are naturally led to make some inquiry in reference to its cause, and we have to find out whether the vital arrest of nervous energy is general, or whether it is local or circumscribed. As an instance of general vital exhaustion of the nervous system we will take the man who dies from what is called 'General Paralysis of the Insane,' and, as an instance of local or circumscribed vital exhaustion, the man who, during an attack of diphtheria, dies from exhaustion of the nervous centres, which give motor power to the walls of the heart. However we meet with ordinary examples of nervous exhaustion every day of our lives in some form, and it is only these kinds of nervous exhaustion we shall consider somewhat fully ; although the question is far too comprehensive to be treated in a short paper of this kind in any other but a superficial way. Dr. Geo. M. Beard, of New York City, was the first physician who drew the especial attention of the profession to the signs and symptoms of this disease, and he subdivides the term *Neurasthenia* into *Cerebrasthenia* (exhaustion of the brain) and Myelasthenia (exhaustion of the spinal cord), Erb, in Ziemssen's, 'Cyclopedia of Medicine,' vol. xiii., devotes a short special chapter to what he calls Neurasthenia of the Spinal Cord. I assure you, gentlemen, that for many years I discarded the term Neurasthenia or nervous exhaustion, for when I was in the midst of pathological work I thought the term vague and unscientific, and I expected the scalpel and the microscope to reveal to me the cause of any arrest of nervous function. I am happy to say, that as I have grown older so have I grown wiser in this respect : and I am therefore now very glad to have recourse to a term, which is in every way most applicable to a number of nervous derangements. When we speak of

the exhaustion of a nerve, or of a nervous centre, or of the exhaustion of the brain, or of the spinal cord, or of the exhaustion of the whole nervous system, we refer to what must be understood as a diseased condition, although it is, in the strict sense of the word, merely an arrest of function and something more, the precise nature of which *something more*, however, it is ofttimes a difficult matter to determine. Healthful sleep is due to nervous exhaustion, consequent upon an arrest of function in the hemisphere of the brain ; and during this temporary arrest of function, the trophic or nutritive elements are still actively employed, and the brain-cells are being recharged with nutritive pabulum in the form of bioplasm. The arrest of function alone would not restore energy to an exhausted nervous centre, and, if nutrition were not going on during sleep, the person would not wake up invigorated and refreshed. In the cases of exhaustion of the brain, caused by excessive pain, which we find associated, for instance, with cancer, or in the exhaustion of the brain which we find frequently accompanies persons suffering from consumption, we see our patients completely exhausted from want of sleep, which is also due to arrest of function in the hemispheres of the brain. Function in this instance, however, is not only not perfectly carried out, but the laws of nutrition are so inactive that the very effort at repair of the exhausted brain cells produces an irritability of function incompatible either with rest or with repair of the exhausted state. In my wards for consumption at the Central London Sick Asylum, at Highgate, I used frequently to observe to the nurse that such a patient was suffering, or apparently suffering, more from an exhausted brain, than from disease of the lungs, and the signs of that condition are well known. The eye will be bright, the countenance distrustful and anxious, the temper irritable, delusions and hallucinations not uncommon, and in some cases even self-control will be lost, insomuch that the patient may become violent.

If questioned as to his health, he will say that he is quite well, and wants to get up and go for a walk, although, in fact, he is scarcely able to move. Yet see how rapidly the whole being of this patient becomes changed if we but treat him in such a way as to effect a complete arrest of function in his cerebral centres. Let him take half-a-dram of the hydrate of chloral,* and note the effect; if it induce sleep, we shall find that when he awakes he is a different creature. The brain-cells have been at rest, and they have been endowed with normal potential energy; they have become changed from a condition of irritability and instability to a state of normal molecular activity. He still feels his weakness and incapacity, but the brain is the least exhausted part of his body. Now let us, please, just consider what is meant by this arrest of function, this molecular inertia, which gives rise to exhaustion in the nerve-cell and the nervous centre. Physicists tell us, that, in the inorganic world, matter and energy are indissolubly associated; that we know of matter, only through the transformation of energy, and that we recognise energy, only through its affections of matter. But the especial properties, possessed by matter, will depend upon the circumstances, under which such matter is placed. We know that gold, which is usually opaque, may be made sufficiently thin to be transparent; that iron may be rendered soft and plastic by heat. These changes are called molecular changes, and may perhaps be better demonstrated by the volatilization of æther. Energy, as existing in a material form, may be illustrated by the following experiment. If we pass a strong electric current through water, the electric force or energy is used up, in decomposing the molecules of water, and in dividing these molecules into their component molecules of hydrogen and oxygen. If these gases so evolved are col-

* The late Dr. Anstie proved that chloral excited a toning influence on the arterial web.

lected and mixed, we may by heating the mixture recover the electric energy in the sound and heat of an explosion.

The physicists say that matter and energy are more or less strongly united according to their power of resistance, which power the chemist will designate as the forces of affinity and cohesion existing between the atoms and molecules of matter. Now these varying conditions of matter can be proved to have a definite existence. We will follow this subject a little further, because my object is to lead you to the consideration of the highest attributes of energy in the inorganic world, in order that it may be the more readily comprehended how these automatic or mere dynamic changes are influenced by the existence of organized media.

In spectrum analysis it is seen that a free molecule has definite fundamental modes of vibration, which give definite wave-lengths of light just as a tuning-fork gives musical vibrations of a definite pitch, and molecules of different kinds of matter have different periods of vibration, which are distinguished by their characteristic rays. We know that heat is the agent, which, in the inorganic world, starts these vibrations and supports their existence.* The inertia of a body is, I conclude, in direct ratio with its resisting power.

* Maxwell, in his observations on the 'Theory of Heat,' says that the energy of a body may be defined as the capacity which it has of doing work, and is measured by the quantity of work which it can do. ('Theory of Heat,' by J. Clarke Maxwell, 1875, p. 90.) I venture to think that we, as biologists and physicians, can, after a manner, account for exhaustion of nervous energy in very much the same way that the physicist explains the energy of an atom or molecule according to its power of resistance in relation to the medium which surrounds it. Dr. Ralph Richardson, in his exceedingly valuable and instructive work on 'The Nature of Life,' ('The Nature of Life,' by Ralph Richardson, M.A., M.D., 1879, p. 13) says: 'To speak of change s of energy or force, and that force shows itself in motion, is decidedly illogical and unscientific. A force, or power, can produce no effect, unless in co-operation with some matter having a susceptibility adapted to such force, and by its reaction giving to our minds the nature of force.'

We pass on now, by way of comparison, to the organic world, and what do we find ? We find there a building up of the same elements as in the inorganic world, and these are, in like manner, composed of ultimate atoms, or molecules; and these atoms are, in fact, as I have stated, nothing more nor less than a material form of energy, but in addition to this form of energy we have a power peculiar to itself, which Sir William Gull calls a correlation of forces. This power we know as life or vitality. Sir William Gull, in his Harveian oration at the College of Physicians, 1870, in speaking of vitality, said: 'I cannot forbear for one moment asking you to consider again this organization of our bodies in relation to the earth we inhabit, and then say if it be otherwise conceivable but as the expression of the highest correlation of these external conditions.' I shall perhaps explain my meaning more practically by calling your attention to the wonderful swimming exploits of Captain Webb, which indicate to my mind the immense conservative energy, which his nervous system is capable of storing up, and also of expending in a rhythmical and automatic manner; but this is not all, for Captain Webb has to thank his excellent physique, and his well-organized and evenly-balanced nervous system, which give him the power, or energy, or capacity to resist fatigue in a manner quite unique. I lay special stress upon this point of resistance, or as some may term it, the power of endurance. If all men were built after the manner of Captain Webb, we should hear very little of nervous exhaustion or epilepsy. The brain, and consequently every individual cell of which the brain is composed, is a factor as well as a nidus for the conservation of energy. Molecular displacement in the nerve-cells means the exercise of disruptive energy, which leads to a failure in the power of resistance, a diminution of vitality, a lowering of tension, a decrease of tone, and an exhaustion of the nervous system ; in fact, an arrest of function and

molecular inertia.* The energy or force with which a nerve-cell is specially endowed may be said to consist of (1) the active, floating or automatic; (2) the complementary; and (3) the residual, or latent energy, just as in the lungs we have the tidal, the complementary, and the residual air. The one is, in a measure, as much a form of energy as the other, and there can be little doubt that most functional troubles of the nervous system are due to the want of an equable development of stable energy; and this results from abnormal molecular interchange inducing defective correlative integrity of individual cells, or groups of cells. How far, this nervous energy or force is essentially the vital force, is a question of conjecture, but whatever may be the precise nature of nervous energy, it is, I think, apparent, that it governs and controls all other forces, whether these forces be formative or correlative, and that it is only by the united and harmonious action of these forces that health and even life itself are preserved. I may note here, that the late Dr. Bence Jones ('Lectures on some of the Applications of Chemistry and Mechanics to Pathology and Therapeutics') held the view, that death consisted in the stoppage of the conversion of latent force into active force, caused by some arrest of action in the heart, lungs, or brain. This view of Dr. Jones's appears, to my mind, to be a correct one; and we often note what a wonderful conservation of energy there is in the automatic nervous system, and I might almost go so far as to say in the medulla oblongata itself in some aged people, even at their period of dying, although the hand of death can be seen to be indelibly fixed upon them, yet it will take days before the nervous system becomes finally exhausted, and the last spark of vitality becomes for ever extinguished.

I find in the *British Medical Journal* for April 10, the following letter from Mr. Henson of Manchester, headed—

* It is a general principle in physics that energy in performing work is expended and finally exhausted.

'*Persistent Vitality.*

'SIR,—I have a case under my care at the present time, few particulars concerning which I think may be of interest. It is that of a female in her seventy-first year, who was seized with paralysis on the 20th of January last, since which date she has taken no nourishment whatever, and yet at the time of my writing she is still alive and conscious. She was of a spare habit of body before the attack, but is now positively nothing but skin and bone.

'SYDNEY HENSON.

Here we have a remarkable instance of conservation of energy, as Mr. Henson's patient had absolutely taken no nourishment for nearly three months. Well, now, gentlemen, I think we have seen that heat and energy are the result of molecular motion, that vitality is coexistent, and absolutely dependent upon motion, and that the energy dependent upon either physical or vital motion becomes expended and finally exhausted. The great problem then, which we have to solve, appears to me to be this: In what manner can we best determine that amount of conservative energy in our bodies, which shall at all times render the supply of nerve force adequate to the demand made upon it? I think we have also seen, that man's resisting power to overcome the exhausting influences, which surround him in almost every sphere of life, is due, and in proportion to, the inherent power, possessed by his nervous centres, to conserve those forces which correlatively make up vitality. In other and plainer words, the soundness of a man's constitution is in direct ratio with his inherent vital capacity to combat the natural tendency to death, and to resist the ravages of disease which undermine and destroy his conservation of energy. If we but investigate the question of latent force, or reserve of

nervous energy a little farther, we shall then frequently find, that, if a continuous demand be made upon man's reserved store of energy, no matter how strong the man may be, his vital powers and force of resistance become unavoidably enfeebled, and in some way or the other, if life itself be not shortened, he becomes prematurely old. I have had many patients under my care who suffered from changes in the brain and spinal cord, such as we meet with in progressive muscular atrophy, and the general paralysis of the insane, where the patients have been at one time of their lives notably athletic, and exceptionally strong. Now these diseases, I maintain, arise from too great a demand having been made upon the reserve forces of such patients as these. We have, however, to bear in mind that there are two reservoirs of nerve force, or conservative energy, in our bodies, which, although immediately connected, nevertheless act more or less independently of each other. I refer now to the automatic forces as distinct from volitional force. The consideration of this question leads me into a field of inquiry which is almost inexhaustible, and I must therefore lay my deductions before you in a simple practical way. My experience leads me to the conclusion that automatic muscular exertion rarely, if ever of itself, produces such a drain upon the reserve forces of the individual as to lead to any serious or vital consequences, provided the individual in question be leading in other respects a healthful and invigorating life free from any kind of debauchery, worry, or mental strain, and, moreover, provided he has a stable and well-organised nervous system to work upon. On the other hand, we meet with professional and business men, as well as men of pleasure, such as the gambler, and the *débauché*, who reach the zenith of manhood with a splendid physique, but who, probably, from circumstances, are impelled to lead a life of overstrain, and in consequence of this their reserve forces are constantly being overtaxed, brain function becomes disturbed, and rapid

exhaustion of the nervous system is frequently the inevitable sequence. I will now pass on to consider the

Diagnosis.

The diagnosis of the neurasthenic conditions of the brain or spinal cord in acute disease I shall not here refer to, for they are well known to all practitioners of medicine; but I will endeavour, as far as possible, to draw out a differential diagnosis between a neurasthenia of the nervous system—which for years remains a mere functional affection, and ultimately the patient recovers—and a neurasthenia of the brain and nervous system, which rapidly leads on to defective nutrition of the nervous centres, and which is usually followed by incurable organic disease—such, for instance, as we find associated with some forms of mental derangement, and many forms of paralysis. I have no hesitation in asserting it to be my firm belief that many of the incurable cases of insanity, locomotor ataxy, progressive muscular atrophy, and many other diseases of the brain and nervous system, commence as a neurasthenia of the nervous centres; and when in this state they are quite amenable to treatment. I am extremely doubtful whether it is possible for a neurasthenia of the brain to exist quite independently of a neurasthenia of the spinal cord, although the relative condition of functional impairment may be merely one of degree. For instance, in a case of exhaustion of the spinal cord, we are sure to find some deviation from the normal in the attributes of the mind; and in the case of cerebral exhaustion, we find a train of symptoms referable to derangement of the functions of the spinal cord. There are, however, some distinctive differences which may be noticed. I would rather first draw your attention to the symptoms of a neurasthenic or exhaustive condition of the nervous centres as a whole, and we shall then be in a better position to compare local exhaustions

with organic disease. We are quite willing to admit, and we have endeavoured to make it clear, that there are certain people in existence who come under the term nervous; and however much such people may try to make others believe that they are not nervous, yet to the skilful eye of the practical physician, the more the effort is made on the part of the patient to dissimulate, the more evident does it become that his absolutely nervous state cannot be disguised. Just as the braggart who is admitted to be a coward, so it is with the nervous who are inherently weak, but who endeavour to make themselves appear to be endowed with extraordinary courage and braveness.

Whenever patients walk into my consulting-room in a peculiarly elastic jaunty style, and with an air of diffidence say that there is not much the matter, and when after putting several questions to such patients they suddenly collapse and complain of a whole category of evils, I then begin to conclude that they are suffering from nervous exhaustion or neurasthenia. Then what are the usual characteristics of such patients as these? Can they be described as looking pale, haggard, and careworn? Certainly not; for they may be robust, stout, plethoric, and apparently cheerful. Yet, whether they be pale and thin on the one hand, or stout and even robust on the other, we find one marked peculiarity—namely, an evident desire to know why you ask them such and such questions, and whether we are perfectly sure that they are not suffering from disease of the heart or of the lungs, which may rapidly terminate their existence.

These are the kind of patients who not unfrequently fall into the hands of quack practitioners of medicine, and the quack can for the time being make them believe anything he chooses to tell them. Notwithstanding even this gentleman, we must not forget that we are dealing with patients who are morbidly sensitive, and who require great moral and even physical help to enable them to overcome and

subordinate a condition which in many cases is tantamount to the borderland of insanity. The time at my disposal will not allow me to add cases to my paper, otherwise I could give you instances which at first sight appear somewhat incredible, and cases which have rapidly yielded to appropriate treatment. In exhaustion of the brain we find :

1. An irritability and instability of the functions of the mind. Thought, memory, and perception are not correlated, so as to give rise to the engenderment of the true co-ordination of ideas. Words will be misplaced in a sentence, and words or even sentences will be uttered or written which are totally foreign to the patient's real meaning, as in aphasia or agraphia. 'The same thing has occurred to myself, and after going round my wards at the asylum, I have become so tired, and my brain so exhausted that I have turned to the nurse when leaving her ward, and instead of saying good-morning, I have said to her, "Put out your tongue." This has been a temporary arrest of function, which food and rest have immediately rectified.'
2. There will be a marked want of steadfastness of purpose. A character which was notably strong and resolute will become, under the influence of exhaustion of the brain, weak and vacillating.
3. The ego will become intensely exaggerated, and although the patients will be, in a measure, shy, yet they seem to labour under the idea that whether they are at church, in the street, or at any place of amusement, they are the observed of all observers.
4. Application to work for any given time is altogether out of the question. Patients suffering from this disease have told me, that when in health they could add up three or four columns of figures at one time with the greatest ease, but that they were now

unable to do anything of the kind ; they soon became confused, and ultimately became so stupid that they had to give up the task altogether.

5. The memory will be markedly defective, yet at times and for a short while it may be brilliant; but throughout the whole course of this disease we find this especial mark of feebleness and instability to be one of its most prominent features.
6. All the special senses are frequently perverted. They may be morbidly acute, or they may be morbidly inactive, and they can scarcely ever be said to be quite normal.*
7. Headache and neuralgic pains are of frequent occurrence. The headache is not usually relieved by the recumbent posture. The head pains are usually situated at the top and back of the head ; they are rarely to be found over the forehead.
8. The patient's manner will be set down by the public, or by his or her friends, as strange. They will be either irritable, moody, or particularly cheerful and good tempered, and they are not unfrequently beset by imaginary dangers and difficulties which have no possible existence. No class of people are so anxious about the future as neurasthenics.
9. It is a sad misfortune, and yet it is a very common occurrence for persons suffering from nervous exhaustion of the brain to give way to some morbid craving, until it becomes a vicious and intractable habit. Many dipsomaniacs can assign their mania to have taken its origin from an exhausted brain, and many a man has committed suicide from the same cause.
10. In reference to sleep, we find that patients will be,

* Some of my patients have complained of the greatest intolerance to light and sound.

as a rule, extremely wakeful. They tell us that they awake about two or three o'clock in the morning, and after this they are unable to sleep at all; or, on the other hand—but this in my own experience is certainly the exception—there is a morbid tendency to sleep, and especially after eating. I believe that many severe cases of exhaustion of the brain are brought about by not paying sufficient attention to sleep and to rest. Excessive fatigue, overwork, worry, sensuality, mental anxiety, shock, grief, are among some of its most important causes.

11. Giddiness, specks floating before the eyes, momentary loss of consciousness, abstractedness, sudden fits of excitement and passion, ringing noises in the ears, sudden outbursts of profuse perspiration of the body generally, or of the hands and feet alone, are frequent signs and symptoms of exhaustion of the nervous system.

12. Dryness of the mouth and throat, oppression about the chest, inability to take a deep breath, palpitation of the heart, and even a feeling of creeping and formication over the skin in the left mammary region, are not unfrequent; and so we find similar abnormalities of function in association with the vagus, spinal, and sympathetic nerves. Atonic dyspepsia, loss of appetite, or an inordinate craving for food or drink, irregular action of the bowels, as well as an arrest of the ovarian and uterine functions*—all these conditions are unquestionably associated with the disease which we have under our consideration.

The symptoms and signs of neurasthenia of the spinal cord alone are made evident to us by weakness and failure of function in the lower parts of the body, and not unfrequently in the upper as well as the lower limbs; but as I

* Coldness and blueness of the extremities, and numbness.

before stated, I question very much if exhaustion of the spinal cord ever exists (excepting in some very acute cases) without an exhaustion of the brain existing at the same time, although the symptoms of an exhaustion of the brain will require great care in order to effect their elucidation ; and again I would say, that the signs and symptoms which are indicative of an exhaustion of the spinal cord require the most searching investigation on the part of the physician in order that he may if possible make himself quite sure that these signs and symptoms are not due to some commencing organic disease of the spinal cord, and that they are not alone due to mere functional derangement. A sensation of burning down the spine, with coldness, numbness, and heaviness of the extremities, accompanied with rapid exhaustion and fatigue after slight exertion, followed by stiffness in the muscles, pain, tremor, and cramps, would, if taken alone, be the best evidence to lead us to the conclusion that an ordinary exhaustion of the spinal cord did exist, and the more especially if these signs and symptoms were accompanied with a feeling of general *malaise*, sleeplessness, and extreme sensitiveness to cold ; and perhaps even a slight ataxy in locomotion may be experienced, the more especially if the will be brought forcibly to bear in the performance of some special co-ordinate movement. But I feel sure that we cannot (otherwise than in the purely hysterical state) add to the above any more serious signs and symptoms without running the risk of making a most grave and unjustifiable error in diagnosis. There are some physicians, amongst whom is Dr. Beard, of New York, who state that the lightning-like and darting pains which we find to be diagnostic of degeneration of the posterior columns of the cord, as well as muscular fibrillations which are so frequently associated with progressive muscular atrophy, are often connected with spinal exhaustion—pure and simple. For my own part my practice leads me to an entirely different conclusion,

and I would caution all those who have not had large experience in diseases of the nervous system not to follow any such doctrine as this diagnostic unless they wish to run serious risk of losing their reputation. I have at the present moment an officer under my care who returned from India about three years ago, suffering from all the symptoms of spinal exhaustion plus the electric-like pains of locomotor ataxy. He consulted one of the leading nerve doctors, who assured him he was suffering from suppressed gout. However, in a few weeks after this he found that he reeled about his club as if drunk. He then consulted a well-known gout doctor, who told him, greatly to his horror, that he was suffering from locomotor ataxy; and so it proved, for he is now bedridden, and hopelessly incurable. Then I would say, gentlemen, and I have had some experience to warrant my making the assertion, that should a patient be suffering from the symptoms of spinal exhaustion as I have described them, plus lightning-like, plunging, and darting pains, although there be no other signs of locomotor ataxy present, let your prognosis be given with the greatest caution, for I feel sure that in such cases as these sclerosis of the spinal cord is commencing.

There are some physicians who attribute the signs and symptoms of neurasthenia to a bloodless condition of the brain, or of the spinal cord. I am quite sure that this opinion is in a large number of cases incorrect, and cannot be supported by any trustworthy doctrine.

Neurasthenia of the nervous system is an entity, which is quite distinct from those affections arising from a bloodless condition of the brain and spinal cord.

THE HEREDITY OF NERVOUS CONSTITUTIONS WHICH ARE ESPECIALLY LIABLE TO EXHAUSTION AND FATIGUE.

WERE it possible for us to take a glance at the constitution of man, as man was originally made, we should in all probability find that, in relation to mere anatomical details, there was no essential difference between him and the man existing in the nineteenth century.

We might even go farther than this, and, by the most able chemical investigation, analyse tissue after tissue without finding the slightest variation or change. We might bring the most powerful and most modern appliances to our aid, and yet as far as human research is concerned, we should be unable to reveal any ultimate difference, which could enable us to arrive at a conclusive estimate as to the reason, why we should suffer from diseases which never existed in the body of primitive man. Schlegel speaking of the unanimous testimony of ancient tradition respecting the longevity of men in the first ages of the world, says:—

'By a simpler course of life and diet than the very artificial, unnatural, and over-refined modes we follow, there are, even at the present day, instances of longevity far beyond the ordinary duration of human life. In India it is by no means uncommon to meet with men, especially in the Brahminical caste, more than a hundred years of age, and in the enjoyment of a robust and even generative vigour of constitution. In the labouring classes of Russia,

whose mode of living is so simple, there are examples of men living to more than a hundred or a hundred and twenty, and even a hundred and fifty years of age. And although these instances form but rare exceptions, they are less uncommon there, than in other European countries. There are even remarkable cases of old men, who after the entire loss of their teeth, have gained a complete new set, as if their constitution had received a new sap of life, and a principle of second growth. What in the present physical degeneracy of mankind forms but a rare exception, may originally have been the ordinary measure of human life.' *

And it would seem natural enough by inference to conclude, that in the earliest ages it was rather the rule than the exception, that man should leave this world by no other means, than by what is universally known as decay of nature or by violence.

If it be so—and this we see no reason to doubt—it behoves us to look into and inquire in what consist those changes which, we must admit, are in the majority of instances inappreciable, but which have subjected us to premature death and disease. Is it possible that the modes of living which have raised us, so to speak, to the heights of civilization, have carried with them those aids to early degenerative changes which we meet with in everyday life, and which, it is only fair to assume, have resulted from an hereditary transmission, which has taken its origin from some cause, and at some period in the history of man, of which we are bound to confess our ignorance, but which makes itself manifest in many ways in those multifarious conditions of disease and decline which assail us on all hands? In his address to the members of the Medical Association, August 9, 1873, the late Dr. Parkes said :

'During this time we have learnt partly to know the great class of degenerations with its two divisions, viz. :

* Schlegel's 'Philosophy of History.'

Degenerations which are simply the result of age, *i. e.*, of the loss of the peculiar formative force which first builds up, then maintains, and then finally dies, and leaves behind it a tissue, worn out, effete, and useless; and degenerations which are the slow result of some excessively slight but constant failure in nutrition, fibroid, fatty and atheromatous changes and wastings, especially of muscular fibres, but also of gland-cells and mucous membrane, and nerves come in to complicate the acuter maladies, and largely to increase their mortality. It must be confessed, that while they account oftentimes for failure in treatment, the chance of degeneration being present in middle-aged patients is a source of great embarrassment in prognosis; except when attacking the kidneys and muscular tissue they are diagnosed with great difficulty, and slow degenerations of the alimentary mucous membrane, or of the nervous system, are among the most puzzling of maladies. In the means of detecting the presence, and estimating the amount of these degenerations, we have still much to learn, and no greater benefit could be conferred on the human race than a perfect analysis of these causes, and a recognition of how they may be avoided.' *

However, let this be as it may, we must not ignore the fact, that, from the earliest writers on medicine, we find certain conditions of both mind and body alien to what might be called the standard of health, and which might be rightly termed disease. Therefore, it must be taken for granted, that however rude and uncultivated were the means placed at their disposal to aid in diagnosis, and however simple may have been the primitive type of disease, still it did exist independently of mere senile change. Then it comes to be a question in what manner, and in what way, either in origin, type, or formation, these alterations have been brought about, which make the classes of disease to differ, both in character and nature,

* Professor Parkes 'On Degeneration.'

from those incidental to our forefathers. It is, nevertheless, true that a simple pyrexia, or fever, is made manifest by the same signs and symptoms which were laid down by Galen; yet the treatment then applicable is now rightly decried, for he supposed that diseases depended on similar qualities, and were to be counteracted by opposite medication, as, for example, we were to meet a hot disease by a cold remedy. This, we must admit, is somewhat different to the treatment now usually adopted; and for what reason? Because, we say, that disease is altered in type. Yet upon investigation, we are much inclined to doubt that this is really the fact. On the contrary, we are led to believe that some alteration has taken place, either by hereditary development, or through surrounding influences, which has produced a molecular alteration in the fluids or tissues of the body, resulting in a change of diathesis or constitution which makes an inflammation to differ in degree and in intensity. This leads us at once to consider, whether we are not right in talking of constitution in reference to disease, and whether the *vox populi* has not some show of reason when the family doctor is preferred, because he is said to know the constitution. It is not more than some thirty years ago, when men of the highest eminence considered it all-important in diagnosis to find out what is called the hereditary tendency or constitutional diathesis, and to base their plan of treatment upon the information elicited. But of late years this has in some degree fallen into disuse, and the so-called nutritive, or stimulant treatment has become the fashion. Dr. Alison recognised the increased necessity for stimulants, as a consequence of the changes he observed in the character of diseases. Dr. Todd on the other hand, who practised the stimulant treatment to a great extent, did so as a matter of routine, rather than admitting its necessity on account of the altered type of disease; and it would therefore appear that Dr. Todd had an idea similar to the foregoing statements of the author in regarding the

change as being one rather of constitution than of type.*

That the stimulant treatment has its advantages, no one can doubt, and in the main perhaps one might say, that it is correct, the more specially where we deal with those forms of disease, which have to be treated upon what is called the expectant plan. If, for instance, we have under our care a fever, which we know runs a definite course, we can, by careful and almost hourly examination, support the patient under the degenerative changes, which must necessarily arise. And in such a case as this, it will not perhaps benefit our patient much to ascertain whether or not he is, either by hereditary transmission or by acquisition, the subject of gout or scrofula. But at the same time it might be all-important, to be made acquainted with what we understand to be his peculiar constitutional habit of body.

For instance, he may not be the subject directly of any hereditary taint, yet at the same time he may be deficient in that tonicity of mind and body, which is so often the result of the too frequent use of stimulants, of over-mental work, or of some other vitiating cause. Here, then, we have open to us two different constitutional conditions—the one acquired, the other hereditary; without an acquaintance with which, it is to be maintained that the physician is powerless to combat the ravages of disease. And a thorough knowledge of this condition will be found so all-important, in the treatment of those forms of disease to which this paper especially refers, that it would be useless attempting to make the subject thoroughly clear, unless we explain, with some degree of accuracy and precision, what is generally understood, from a medical point of view, by the term 'constitution.'

Dr. Aitken says, in his 'Practice of Medicine,' that it appears evident that the human body is capable, from

* Dr. Todd, 'Clinical Medicine,' 1862.

causes known as well as unknown to us, of undergoing various alterations, as regards not only its physical, but also what has been termed its medical constitution. The following lucid account of hereditary constitutional disease, given by Sir James Paget in the discussion on cancer, at the Pathological Society, will here be read with interest :

'The transmission of cancer accords with the transmission of all other hereditary constitutional diseases—with gout, with syphilis, with tuberculosis, with scrofula ; for here I may mention that I think it will be well, if we study the whole matter of the pathology of cancer, not by its accordance with certain verbal definitions of our own, but in its relations with those diseases which we are all of us ready to admit to be either constitutional or local. And I assume that we are all of us quite ready to admit that gout and syphilis, and tuberculosis and scrofula, are constitutional diseases. I say, then, the transmission of cancer by inheritance accords perfectly with what we see in them, not with what we see in local diseases. The gout of the parent may appear in all the possible various textures of his offspring, never, it may be, in the great toe of one of them, but in the joint of one, in the skin of another, the bronchial tubes of another, the pulmonary texture of another. Of all the variety of diseases which we class under the general name of gout, the whole may be derived from one parent who may have gout in what we regard as its typical form. And I need not here speak of the varieties of form in which tuberculosis is propagated by inheritance, or scrofula, or any of those other which we regard as constitutional diseases ; and this fact I repeat in regard to the transmission of a disease by inheritance is so all-important in respect of what we call its origin, that I think it is to be regretted if we deviate in the least from holding that the constitutional element of the origin of cancer is one of the most important and considerable things that we have to study. . . . When after an injury there is a deviation from ordinary changes, we seldom or never entertain a question

but that the deviation is due to some constitutional defect in the person in whom it occurs. We see a wrenched knee-joint which does not recover after the ordinary fashion, which swells and remains hot, with thickening of the synovial membranes, perhaps with the formation of abscess. We are as sure as of anything in pathology that that is because the person is scrofulous. We see an injury of a bone, and it becomes the seat of tuberculous deposit. We understand that that is because the person to whom the injury has happened, is one with a constitutional tuberculosis. We see an injury done to a foot, and it becomes the seat of a gouty inflammation; of another done to joint or bone, and it becomes the seat of syphilitic disease. In all of these cases our pathology is as sure as any piece of pathology we have; it may be erroneous, but at least it is as certain as any other knowledge that we have, that deviation from the ordinary method of change after injury is because of some constitutional peculiarity in the person upon whom the injury has been inflicted.'*

It will be seen from what has just been stated, that we each individually possess a something transmitted from our parents, which can receive with all truthfulness the term hereditary constitution. By this must be understood, that diathetic habitude or cachexy, which is included under one of the four conditions—tubercle, scrofula, gout, or cancer. Yet even here it must not be forgotten, that what one understands by the term 'delicate constitution,' and which does not come under any special dyscrasy or ill-habit of body, can be inherited by transmission. Again, the parents, either one or both, might be of ill-habit of body from intemperate or vicious courses, and the offspring might be delicate or ill-nurtured, without any special dyscrasy. But yet, more important still, we must not forget the possibility, which amounts to a conceivable reality, that the present generation does suffer from a constitutional ill-habit of body, which

* 'Discussion on Cancer,' *Lancet*, March 21st, 1876.

has never yet received a definition—the result in all probability of the com-mingling of constitutional cachexies existing in the bloods of our progenitors.

To make this clear, we will take by way of example a man of mature years, apparently healthy. All the organs, secretive and eliminative, shall be doing their normal amount of work. He shall not be suffering from any mental anxiety or external depressing agency. Yet he will come to the physician complaining of great weariness upon slight exertion—of palpitation of the heart with disordered bowels upon the slightest mental emotion—headache on rising in the morning, and a feeling of tiredness unrelieved by the night's rest. There may or may not be want of appetite as well as distaste for society, yet there is a total incapability of application to any especial object—in fact a general want of 'tone' throughout the body. Now upon the most minute and careful investigation, it is often found that the man may be sound in every sense of the word. Still, upon examination into his family history, we shall in all probability discover, that he has descended from an unhealthy stock. The hereditary taint on the father's side might have been that of gout, and on the mother's that of tubercle. And we have in the son a condition of constitution, by hereditary transmission, partaking of the characteristics of the father on the one hand, and of the mother on the other, but which in him is nothing more than what is generally understood to be a weak state of health. The more one studies what might justly be called the natural laws, which govern the transmission of diseased states from generation to generation, the less likely one is to look upon the foregoing as a mere visionary conclusion.

Then in hereditary transmission, we have to consider what evidence is afforded to us, by which we are assured, that constitutional genesis of an essentially congenital type is an established fact. A moment's consideration will without difficulty solve the problem. Granted that the ovum

becomes impregnated with the spermatic fluid, by which process of fecundation it does not lose its original condition, it yet, however, takes to itself a diseased life which in process of time differentiates into the several organs of the fœtal body. That this is really the case is an undeniable fact, and it is brought about by a vital agency whose power is made manifest, but of whose modes of working we must plead ignorance.

It is surprising to find, with what method and mathematical precision, this outcome of heterologous growth is maintained and carried on, until maturity becomes complete. And it would be absurd incredulity to question the fact, that the primary sperm-cell of the male, and also the ovular cell of the female, did not each carry with them their own inherent and distinguishing constitutional characteristics. This is fully exemplified in every possible way. That 'like engenders like' is an admitted axiom, and demonstrated no less in race than in species, both in mental attributes and in bodily conformation; even more than this, we find it in mere habit and character.

Dr. Carpenter, in his work on 'Mental Physiology,' says:

'In particular, it is to be noted that while the more general characters are shared by both parents, the more special commonly belong to one only.'*

He further says:

'A great deal of discussion has taken place as to whether the male or the female parent exerts the greater influence over the character of the offspring; and while experience does not yet justify any definite conclusion on the point, the question seems to have been entirely ignored, whether the union of two different natures may not produce —as in the combination of an acid and a base—a resultant dissimilar to either of them.

* Carpenter's 'Mental Physiology.'

This much, however, may be confidently affirmed, that where *general constitutional taints*, that is to say *abnormal* habitudes of nutrition, have been acquired, these tend to propagate themselves hereditarily; and that they do so with the most certainty when *both* parents partake of them. It may also be affirmed, that every repetition of such transmission tends to increase the mischief; so that by 'breeding in and in,' the injurious external conditions remaining the same, a very slight original departure from healthy nutrition may become intensified, in successive generations, into a most serious abnormality.'

Thus it seems indisputable, that we are the subjects of hereditary physical and mental conformations. There are also hereditary conditions, which cannot be called constitutional. For instance, the father might have a clubbed foot, or a webbed hand, and this might be transmitted to the offspring. Or, whilst bearing child, the mother might be so influenced by some external object, producing such shock to the nervous system, that the visual effect is not only impressed upon the mind, but is transferred to the fœtus in utero. This is an inherited abnormality in the offspring, which cannot be called constitutional.*

The line can, and must be drawn between transmission by inheritance of mere abnormalities on the one hand, and of disease on the other; and the latter alone can claim to be considered, as a constitutional condition.

At all events this is the accepted fact, and yet upon consideration we do not feel inclined to rest here, and the common phrase in reference to constitution must not be lost sight of. For instance, it is often said, 'What a good robust constituion so and so has.' 'Yes,' is the answer, 'and so had his father before him.' Surely this is also inherited, and quite as much so, as the constitution of so and so, who is dying of consumption, of which disease his father died before him, and the one is as equally due to a blood

* Watson's 'Practice of Medicine,' p. 117.

state as the other. Although we do not wish to enter into a lengthened detail of hereditary pschyoses, or conditions of mind, either natural or abnormal, still the idea presents itself with a practical bearing, which warrants the conclusion, that 'constitution,' whatever it may mean, is made up not merely of blood or tissue elements, but that also these must be taken in relation with those mental states and nerve forces, which play so important and vital a part in man's entity and being.

If the morbid condition which is known as gout, consumption, or cancer, exists by transmission in the blood, it is quite possible that it should, and it often does, remain quiescent throughout the lifetime of a whole generation, but it develops itself with tenfold violence in the succeeding descendants. Here we naturally ask ourselves the question: 'What agency can be at work to prevent the development of so rapidly destroying and fatal a disease as consumption—the seeds of which we feel assured exist in the constitution. It is only by a knowledge of the working of the laws, which govern the formative processes of nutrition, and maintain the standard tonicity of health, that we can explain this problem. How often does it come within our daily practice, to be called in by the parent to treat a child dying of consumption, when the parents themselves have always enjoyed robust health, but upon enquiry it is found, that one or both of the grand-parents have died comparatively young from the same disease!

Again, how often do we find persons come to us for treatment, whose condition previously has been that of perfect health, but whom we now find to be suffering from rapidly spreading tubercle, and whose children have died young, and whose family history shows conclusive evidence of consumptive taint. There are instances on record where the parents have lived to a ripe old age, though all of their children have died from cancer—not of the same, but of different localizations. Perhaps, however, with cancer, as

differing from gout and tubercle, we are right in affirming that it does not as a rule remain latent in the constitution through a generation, but rather develops itself in a most marked manner in succeeding offspring. We quote again from Sir James Paget :

'A lady died with cancer of the stomach; one of her daughters died with cancer of the stomach; another died with cancer of the breast; and, of her grandchildren, two died with cancer of the breast, two of cancer of the uterus, one of cancer of the bladder, one of cancer of the axillary glands, one of cancer of the stomach, and one of cancer of the rectus.'*

We thus feel, that our knowledge of the nature and propagation of these morbid products is, to say the least of it, attended with some amount of obscurity; and more than this, the manner of their transmission and seat of location, is at the same time to a certain degree matter for conjecture.

For a definite morbid material to be constitutional, it must exist not only in the blood, but in the tissues and the fluids throughout the body; and although, as before stated, gout, cancer, and scrofula are blood diseases, it would be wrong to conclude from this, that the materies morbi existed in the blood, and in it alone. If we did so, we should be less likely to account for hereditary transmission, because both the spermatic fluid and ovum must be said to be free from blood; still, in the primordial germ, it must be allowed, does exist that inconceivable something, which grows as tissue grows, and pervades all. Apart from any absolutely recognized dyscrasy, there is yet another constitutional condition, in which appear to be signally manifest those properties or qualities, which go to make up by hereditary descent the nervous temperament, and in which we, in the majority of instances, find that, which is commonly called

* 'Discussion on Cancer,' *Lancet*, March 21st, 1876.

an 'ill-conditioned habit of body.' And here the mind does, to a certain extent, most undoubtedly participate in the diseased state, in a direct ratio with the bodily conformation or physical development.

Dr. Carpenter truly affirms, that 'breeding in and in' leads in successive generations to a most serious abnormality, as exemplified in cretinism and idiocy. Also in those ill-assorted marriages where there is great disparity of age, we see the evil results in the ill-nurtured offspring, deficient alike in mental as in physical power. I look upon the constitutional condition here, in the same light as I do upon that, which is engendered from parent to offspring, when the former have been given to the excessive use of alcoholic liquors. In each case, there is exhibited the transmission of that imperfection of nutrition, which fails to give to the germ its true formative capacity, and the result of this is exemplified in all classes of society, from the street-arab of St. Giles to the noble of St. James.

From an analysis of a very large number of cases, I am perfectly sure, we can find a cause for the majority of illnesses in that class of disease, which is especially marked out as nervous or neurotic. And I am much inclined to think, that in an ill-assorted marriage—say where the husband has passed the years of maturity, and the wife is still in the prime of womanhood—there will be the union in the offspring of an ill-balanced nervous temperament, not only physically but mentally. And here I will set aside, for the time, all consideration of what might be the especial constitutional attributes of either of the parents. Take it for granted, that at the time of marriage, they were both in what goes by the name of good health, yet there can be no doubt, when we consider the laws of senile degeneration, that the male germs, which partake of the father, will carry with them to the formation of the embryo, and thence to the child, a constitutional condition, which will develop, if not into actual disease, at least into a state of nervous weakness, as

evidenced in that want of healthy vigour so strikingly delineated in the epileptic, the hysteric, the morose, the melancholic, and the imbecile. Mr. Galton tells us that:

'The bodily and mental condition of every man are, in part, the result of his own voluntary and bygone acts; but experience teaches us that they are also shaped by two other agencies, for neither of which he is responsible; the one, the constitutional peculiarities transmitted to him by inheritance, and the other, the various circumstances to which he has been perforce subjected, especially in early life.'*

Dr. Laycock's words, in his 'Lectures on Diseases of Organs and Tissues as influenced by the Nervous System,' bear directly upon this subject of ill-assorted or unadvisable marriages. He says:

'The hereditary tendencies to diathetic diseases and degenerations defined and fixed on an anatomical basis, are more easily comprehended when we remember that it is the regulative principle, as *vis nervosa*, which in animals endowed with a nervous system, must be operative on the sperm and germ cells. Now a regulative energy manifested as the "nisus formaturis" is the special property of these minute portions of matter, and consequently it must be by a concentration of that energy, as *vis nervosa* on the genetic glands, that the peculiar property is supplied. If, therefore, the innervation be defective in regard to these glands, the regulative or evolutional power will be defective. It is thus I explain how degenerations of structure and defects of function and form take place from deficient *vis nervosa* in the parents; for in these sperm-cells and germ-cells as in other tissues, the law of degeneration is retrocession to a lower type. The nature and results of that defect in brain nutrition upon which hereditary insanity depends, is a striking illustration of this law of hereditary disease and

* 'Hereditary Improvement,' *Fraser*, Jan., 1873.

defect ; it is the lower or animal appetites and instincts which crop out in hereditary insanity.'*

So well known, and so patent were the evil results of ill-assorted marriages, even in the time of Socrates, that Plato in his 'Ideal Republic,' after speaking of the good results to be attained by breeding together the best horses, the best dogs, birds, etc., says, that marriages should be arranged by the rulers, so that people should only marry when in the prime of life, and that the best men should marry the best women.†

In a state of perfect health, a condition, I fear, rarely or never to be found in our generation, there will be seen that complete balance or equilibrium so to speak between mind and body, that they both act and re-act upon each other with due and only due relative power, which is guided by those vital or formative laws, which tend to give man pre-eminence among the races of living creatures. It is well known, that some members of the purely psychical school consider the mind to be omniscient, and underrate, indeed almost disregard, the influence of the body upon it altogether. But this cannot be the opinion of the clinical observer of diseased states, or of those who study the physiological anatomy of the, even yet imperfectly known, nervous system.

If what we understand by mind, namely feeling, will, and thought, is immediately connected with and forms part of our physical state, it must be with that portion of the nervous system, which is called brain. And more than this —we know full well, that the brain substance can be divided not only into white and grey matter, but into centres, where motor force is generated, and into divisions, wherein are located foci for the generation of the separate intellectual faculties. We are willing to admit, that in the cells of the

* 'Lectures on Diseases,' *Medical Times and Gazette*, March 28th, 1871.

† 'Republic,' Book v.

cerebral hemispheres rests that nidus, or tabula rasa if you will, wherein dwells our living consciousness. As physiologists, we know that if we will an act and perform it, the performance is secondary to and subsequent upon the willing. Hence it is only fair, upon purely materialistic grounds, to infer that the cells, in which we choose to say our ideas are generated, are connected with those other cells to which the ideas are propagated, and from whence emanates the motor force, which wills the performance of a voluntary act.

In Professor Max Müller's second lecture on Mr. Darwin's 'Philosophy of Language,' delivered at the Royal Institution, March, 1873, we find the following:

'The new philosophy, priding itself, as all philosophies have done, on its positive character, professed to despise the endless argumentations of the schools, and to appeal for evidence to matter of fact only. Our mind, whether consisting of material impressions or intellectual concepts, was now to be submitted to the dissecting-knife and the microscope. We were shown the nervous tubes, afferent and efferent, through which the shocks from without pass on to the sensitive and motive cells; the commissural tubes holding these cells together were laid bare before us; the exact place in the brain was pointed out where the messages from without were delivered, and it seemed as if nothing were wanting but a more powerful lens to enable us to see with our own eyes, how in the workshop of the brain, as in a photographic apparatus, the pictures of the senses and the ideas of the intellect were being turned out in endless variety.'

I do not think that any microscopist, with the most determined materialistic views, could ever conceive so futile an idea as that, which Mr. Max Müller seeks to conveys to us, in the ironical passage just quoted. Yet as clinical observers of psychological changes, we do not feel inclined to give way to the metaphysicist altogether—the more

especially, when we have almost daily evidence in diseased parts of the brain, of pathological changes producing psychological effects. Alterations, in both mind and body, can be traced to disease of those parts of the brain substance, which, as before stated, refer, the one to mind, the other to volition.

In a practical manner this can be readily demonstrated. A man suddenly loses both motion and sensation, in all parts of the body from the shoulders or neck downwards, yet his intellect and reasoning power remain clear, although he is unable to move himself in the least degree. Here we diagnose an effusion of blood to be pressing upon those parts of the brain which originate motor force, but the hemispherical or intellectual brain is unaffected.

He wills to move, but is unable. Yet he will reason upon the most abstruse subjects with perfect clearness and sense. In this case, the physical or bodily power is lost, the mental or psychic power is retained.

2. A man will fall, as though he were dead—void of consciousness, sensation, and motion. 'Apoplexy.'

Here we know, that blood has been effused into the hemispheres of the brain, breaking up these cells which convey the mental force to the cells which originate the physical force. In this case, both voluntary power of the body as well as of the mind is lost.

3. A man will be seized with confusion of ideas, thickness of speech, misplacement of words, total loss of memory, and with partial loss of sensation and motion all over the body.

We shall soon see, in this case, a more or less profound lethargy, with uni- or bi-lateral convulsive seizures; and here we diagnose an effusion of blood upon, and over, that part of the hemispheres of the brain, wherein, as was said before, are located the foci of the separate intellectual faculties. There is however no disintegration of brain substance, but merely a molecular disturbance from pressure; and although this pro-

duces paresis, both psychical and physical, yet we are led to believe, that it is only the peripheral cells of the cerebral hemispheres, which are really implicated, and that the deeper parts are affected only by the influence of contiguity.

In the second case, let it be remembered, there is a breaking up of the psychical elements of the brain, with profound coma. Now we will analyze both the mental state, and bodily condition, of Case No. 3. He appears quite unconscious of surrounding objects—the special senses of sight and hearing are, as far as can be judged, lost. The finger may be placed in close contiguity to the eyeball without his perceiving it; yet when it touches the eye, not only will the lid close, but he will voluntarily endeavour to move his head from the position it occupies—showing evidently that the mind is in subjective, if not in objective, action. If the brow be tickled, he will raise the arm to remove the offending cause; and if the leg be pinched, he will, by a voluntary effort, try to move it out of the way. Yet his perceptive powers are absent—the mind is lost to the outer world, except through the medium of touch; but the actions before referred to are performed by a voluntary effort, and consequently not the result of an automatic or of a reflex act.

I have often felt the deepest interest in knowing whether or not, under such conditions as those just stated, the patients really suffer from pain, and if they are conscious of their condition. In Case No. 2, I feel sure that such could not be so, but in Case No. 3 I think it is. These cases show quite clearly, although roughly, that this especial nerve matter of the hemispheres of the brain is the source, from which emanate those essential manifestations known collectively as mind, with all its attributes.

I have seen an ill-nurtured brain in phthisis, as before noted, producing temporary acute mania, without inflammation of its substance or its coverings. In such a case as this, the effect was the result of some perturbed action in

the nervous schema cells, due to inhibition of their proper nutritive pabulum. It is now a pretty generally received doctrine, that there can be no abnormal condition of mind *per se*. It must arise from some molecular derangement of the brain-cells, from poisonous material floating in the blood, or from an altered condition in the arterial current either in quantity or quality. But I am much inclined to believe that, independent of the mutual relationship existing functionally between mind and body, we ought to take into consideration what seems to be a fact of no small importance—namely, the generation and accumulation of what might be termed psychic force, as distinct from nerve force, and which, in my opinion, acts upon and in co-relation with it.

I have known men whose intellects were in common parlance obtuse enough, but under the influence of wine the brain would become stimulated into new life, and their previously dormant intellectual faculties shine forth in lustrous and resplendent ideas.

The great interest, that attaches itself to the connecting link between the material and the immaterial, the psychical and the physical, the volitional and automatic, is of such magnitude, and fraught with so much profound philosophical research from the early ages of reasoning, that the more its investigation is carried on, the greater appears to be the extent of illimitable space which is opened before us.

Modern writers of a somewhat careless and indifferent mode of reasoning (I mean in a purely philosophical direction) have attributed, and with truth, this state of things to a want of candour on the part of the purely metaphysical school—a want of concession to undoubted physical truths —and an utter disregard of the rapid advance, which has of late years been made into the structure of the nervous system, and the seats of propagation, and mode of conduction of nerve force. Here the clinical worker, in the field of diseased nerve-states will most assuredly in the course of

time, by patient and profound investigation, be able to bring forward such evidence, as will materially shape the views of the purely psychical school. But, honestly speaking, this will be no invasion of true psychical philosophy, and for that reason :—I hold, and it cannot be fairly denied, that man's entity is made up, not of body and mind or spirit alone, but of body, mind, and a psychos absolutely distinct from either. And I think that, as physicians, we shall do well, to leave in the hands of the pure metaphysicist the relation that mind has to soul, while we take up the ruder and, if you will, grosser elements which connect mind with body. And, surely, we can have no better demonstration of the latter than in the play and expression of the various so-called emotions. Therefore I hold, that the materialist has a fair field, in studying the connection of mind in relation to body, while the metaphysician may plant, if he choose, his standard in the realms of the unknowable, and study the co-relation of mind and soul. For it must be understood that man's entity, after all, consists of, in the words of St. Paul, 'Body, soul, and spirit.'

'When man,' says Schlegel, 'is considered relatively to his external existence in the sensible world and Nature, to which by his body he belongs, and forms a constituent part, then the three elements of which, as regarded from this point of view, his whole being or essence appears to consist, are body, soul, and spirit. There is little or no harmony between the higher and spiritual principle of the inner man and the outer world, to which properly his sensuous faculty belongs. . . . . No doubt the external frame of the human body, with its wonderful organization, presents in the prime of its development the corporeal image of a more exalted beauty. . . . . But, on the other hand, it is exposed and subject to innumerable injuries, sufferings, disease, and corruptions. . . . . Added, then, to the other two elements of man's being, spirit and soul, the organic body forms the third constituent, in which,

however, is contained the ground and occasion of conflict and strife.'*

After considering some obscure affections of the nervous system, with an examination into those especial causes, which of themselves, without any inherited ill-habit of body, produce a diseased nervous condition with concurrent degeneracy of the intellectual faculties, this chapter will be concluded.

It is impossible to enter into a consideration of this part of our subject, without reconsidering for a moment the ego and non-ego—the volitional and automatic; and, although I am an advocate for the truth of transmitted hereditary constitutional cachexies, yet I cannot, from my experience, come to a similar conclusion with regard to the habits, or what might be termed mental idiosyncrasies, and intellectual qualifications—excepting as they are connected with the condition of constitution; and there can be no question, that temperament, so called, is mainly influenced by the state of bodily health. Transmitted hereditary constitutional cachexies I consider to be the rule, but a transmitted hereditary mental idiosyncrasy, or intellectual qualification, is exceptional. If we take the various professions—divinity, law, physic, engineering, etc.—we shall find it to be an unusual circumstance for the son to attain to the particular individual acquirements of the father, or even to care for the profession to which the father belonged.

I have said that temperament is subjective to constitution; and it is in many instances not only influenced, but governed by it. In the business of the every-day life of the physician, and especially of the family doctor, this is repeatedly exemplified.

Hence it will be seen, that I am sufficiently materialistic to come to the conclusion that our acquired habits, hereditary

* Schlegel, 'Philosophy of Life,' Lecture II.

or otherwise, are in a great measure due to constitutional government. This is not volitional. We know how functional derangement produces certain definite conditions of temperament—or rather we are as sure as of anything that certain constitutions are prone to functional derangements of certain glandular organs, both secretive and eliminative, which alter the actual constituent normal condition of the blood; and this is made manifest, either in an objective manner, as in gout for instance, or in a subjective, as in an altered condition of temperament; in some amounting to mania—to epilepsy in others—and again, to a depression of spirits or hypochondriasis in others, just according to whatever happens to be the individual temperament or special personal characteristics. In fact, it comes to be a question how far a man is really responsible for an inherited tendency of body. We hear it said that 'So-and-so is a confirmed drunkard, or spendthrift, or thief, or miser, or vagabond'—or, on the other hand, an exemplary character—'pious, devoted, loving, unselfish, charitable, even-tempered—nothing ever puts him out.' Some maintain that the latter are attributes especial to a healthy organization, whilst the former are for the most part attendant on a diseased constitution inducing especial depraved mental characteristics.

It must be remembered that the action of mind upon body, and body upon mind, is co-existent. And if I maintain, that the healthy mind or individual character can be, and is influenced by constitutional causes, on the other hand I am quite inclined to hold that a previously healthy body, evincing no especial tendency to any functional derangement can, by excessive mental strain, be so acted upon as to become functionally diseased; then the enfeebled and disorganized body reacts upon the previously diseased mind, leading to the worst form of obscure, and even of readily recognised, nervous diseases. There are accredited conditions of the nervous system which can undoubtedly

be said to be acquired ; but inasmuch as we are differently constituted, both mentally and physically, and as in one person the balance of the psychical and physical forces is less stable than in another person, I think that we cannot fairly be held responsible for acquired tendencies. Though all persons are *blameable* for *acquired bad* tendencies, yet, from circumstances, one person may be less blameable than another.

BRAIN.—EXHAUSTION FROM OVERWORK AND WORRY.

THIS subject demands some slight consideration apart from the neurasthenia, which we have just had under our notice.* Exhaustions from overwork, from undue excitement, and from worry may be considered as essentially attributes of the present age, and they are more prevalent now, than they were at any other period in the world's history. Life at high-pressure is the prominent feature of the nineteenth century, and we cannot be surprised when we find that the so-called nervous diseases and exhaustions, dipsomania and insanity, are increasing beyond all proportion to the rapid increase of the population.

The man or woman, suffering from nervous exhaustion, is to my mind the most unfortunate individual in creation, for such persons scarcely know in what direction to turn for help, succour, and relief. It is a condition which is not sufficiently understood and studied even by medical men, and the public, who ought to know something, really know next to nothing, about it. A man, woman, or child with an exhausted brain is, on the one hand, either stupid, wooden, sullen or morose ; or, on the other hand, impetuous, passionate, irritable and insubordinate.

Such persons are invariably nervous, in every sense of the

* It is a subject which has been dealt with very practically by Dr. Routh, in his excellent little book, entitled 'Overwork and Premature Mental Decay.'

word, and may possibly have inherited a thoroughly nervous constitution. The whole world seems unkind to these people. They are accused of neglecting their dutes if they are public men, and, in private life, they are frequently blamed by those nearest and dearest to them, and so their affliction becomes exaggerated, and ends not unfrequently in confirmed melancholia.

The man who from brain exhaustion becomes vacillating, or doggedly obstinate, irritable and morbidly sensitive, and who shuns the society either of his club, or of his associates in pleasure or business, may be, and frequently is, judged most severely and wrongfully by them, and is often set down as ill-bred, ill-tempered, or proud; and he suddenly finds, that he is being cut by those whom he considered to be his friends, and misunderstandings inevitably arise. He retires from society more and more every day of his life, until, in a way, he becomes recluse and reticent even concerning his own suffering. When asked what is ailing him, the answer will invariably be: 'Oh, nothing; I am merely tired: let me be alone.' And if further questioned, bursts out into a fit of temper, and the questioner, if sensible, retires at once; or takes up the argument, when a downright quarrel is the result. All persons, who suffer from exhaustion of the brain, are remarkably suspicious of everyone about them; there seems to be a vague idea floating through their minds, that everyone is anxious to cheat or injure them; that wives, or, it may be, husbands, cease to have that affection and regard for them, which they formerly had—that they cease to take that interest in their comfort and their welfare which they formerly did; and these perverted ideas seem to grow, as the brain exhaustion increases, and there can be no doubt, that cause and effect, and effect and cause, both work together in the production of that unstable and irritable state of the brain-cells, which tends to a state of health of the most serious and lamentable kind. I have had men brought to me by their rela-

tives, sometimes by their wives, who have been considered sharp, shrewd, hard-headed, and talented men, either in the business or the profession to which they have belonged, with a history identical with that I have just endeavoured to pourtray. (It must be remembered that lazy, idle, and indifferent men do not, as a rule, suffer from the disease of which we are writing.) Their friends say, that they are so altered in character, that no one would in this respect take them to be the same persons; and when we put a series of questions to them, we find that some excessive mental strain, induced by too close application to study or business, or, what is perhaps more frequently the case, some perpetual anxiety (worry), is usually the exciting cause; and nothing more than this mere change of disposition will be noticed for some time, or it may be for weeks, or even months. Yet these changes in character (unless precautionary measures be taken) will continue to grow. The patient's sleep becomes greatly disturbed; headaches, loss of appetite, rapid fatigue upon exertion, and complete incapacity for business, are the result, as also the whole train of symptoms which have been described. Professional men, and especially clergymen, seem to be more prone to these attacks of brain exhaustion than others, and it is not an easy matter to assign any especial reason for this. It is quite certain, however, and I believe it is a generally admitted fact, that the performance of constant routine work, without adequate change, exercises, although perhaps inexplicably, an undue tension upon the nervous system and the nervous centres, which, in the course of time, leads to instability and exhaustion.

Brain exhaustion from over-study, and so-called cramming the brain, is, perhaps, one of the greatest social evils of modern times, and is simply a blot upon advancing civilization. It is opposed to all biological laws—social, moral, hygienic, ethical, physical, and rational. If every brain were endowed (for we speak of it as an endowment)

with the same powers of thought, memory, and perception, and if the volitional attributes of the mind, as apart from the mere automatic, were as purposive and co-relative in the one individuality as in the other, then we might perhaps be justified in coming to the conclusion that minds are minds, and brains are brains, and that the brain merely requires physical cultivation, in order to render it capable of doing a given amount of work in a given time, just after the manner of a steam-engine, which consumes a certain amount of coal, and thereby generates a known equivalent of force.

But this is by no means the case with the human brain, and cultivation can never make it so. Yet a careful and early training of the automatic processes of the brain is one of the most, if not the most of the essential factors towards laying down that solid foundation, upon which the future structure of the mind must necessarily depend.

This early and automatic training of the brain cannot be commenced too soon, for the reason, that it is merely a healthy stimulus, favouring the germination of the purely embryonic mental development, which we know to be co-existent with the perception, and which period of life is so aptly described by Dr. Morell, in his 'Philosophy of Religion.' He says, that, at this period in the child, 'A sight or a sound which at first produced simply an involuntary start, now awakens a smile, or a look of recognition. The mind is evidently struggling *out of itself;* it begins to throw itself into the objects around it, and to live in the world of outward realities.'

There is scarcely a man who has ever lived, and had mind superior to that of his fellow-man, whose brain has not received the automatic training to which I now more particularly allude. The brain of a child (and I am now referring to the mass, and purposely excluding individualities of genius) is quite incapable of receiving, or, at all events, ought not to be exercised to receive, more than is conveyed

to it automatically through the perceptive faculties, and this even for some time after reason has become developed. Reason is the highest development of perceptive correlation ; instinct is Nature's capacity to reason. The faculty to reason, and the instinctive faculty of reasoning, are, however, so closely allied, that it is merely a matter of brain development, which renders the power and will to reason a faculty superior to, and distinct from, the reasoning faculty. There would be just as much wisdom, in putting an ordinarily developed boy, to run a mile race with one of known physical strength and endurance, as to expect some lads, or even children, to compete honourably in the competitive examinations, according to the present educational system. Mental development depends much more upon the automatic processes of the mind than is usually supposed, and the perfectibility of the mind, as far as we can admit the use of the term, is dependent upon, to speak plainly, the adjustment of the volitional faculty of reasoning to the intuitive faculty of automatic receptivity. There are many men, women, and children who possess the former, but who are utterly destitute of the latter. They have, in fact, the will, and the earnest desire to cultivate their mental faculties. But, in other words, they have not the brain capacity, or the inherent latent activity of the brain-cells, or, what I venture to designate, the intuitive faculty of automatic receptivity. In speaking of the molecular force of a brain-cell, I divide this force into three parts : 1st, the active ; 2nd, the complementary ; and 3rd, the latent force.

Now in reference to the constitution of mind, what I call the intuitive faculty of automatic receptivity, may be governed by the 1st, or active division of brain force. Secondly, what I would call superficial reasoning, which may be relegated to the class of intuitive selection, may be governed by the 2nd, or complementary division of brain force. Thirdly, what I would call reasoning by volition, is

governed not only by the 2nd division of brain force, but requires to abstract considerable energy from the 3rd, or latent division of brain force. If there be no rational foundation for my theory, it may still be found useful to elucidate some of the phases of brain exhaustion from overwork, with which we are becoming so familiar. We must not forget, that any undue taxation which may be made upon the latent brain force, immediately produces a mutability and instability of the normal molecular action, and correlative integrity of the active and compensatory forces. Hence we find not only sympathetic depression and exhaustion of the mental processes themselves, but also an arrest of latent nerve energy throughout the whole course of the sympathetic system of nerves, which of course leads to arrest of function (elimination) in most of the secreting glands, faulty nutrition, disease, and possibly premature death. At all events, I have no hesitation in saying this: that it is a most grievous mistake on the part of parents and teachers, to endeavour to make children's brains receive what they are utterly incapable of receiving, without such an effort and such an amount of enforced volition, that, should they accomplish the task which has been set them, the expenditure of latent nerve force has been so enormous, and the brain becomes so enfeebled, that it is extremely questionable whether it ever regains even its former equilibrium. I very frequently hear men say, 'Well, I shall go in for such an examination upon the chance of passing, although I do not take very kindly to the subjects.' I condemn this as a bad principle to go upon. A boy or lad has the capacity to pass a certain examination, or he has not. If he has not, he had better leave it alone altogether. But his parents and teachers will say, 'How do we know, before he tries?' Of course if the lad is physically strong, and of fair brain power, there can be no objection whatever to his trying. Yet there are many cases, and some such have in fact been brought to me by their friends for my

advice, when after considering the course of study which has been requisite, and the nature of the examination to be passed, I have unhesitatingly given it as my opinion, that it would be as easy to put a quart into a pint pot, as for the lads to pass the examinations which were proposed. In a few cases my advice has not been taken, and my opinion of their brain power has been found correct—too late, alas! when they have signally failed to pass their examinations. If a boy or girl we will say, by way of example, between the ages of twelve and fourteen years, shows an especial and inherent aptitude for any business or profession, it is the duty of the parent to assist the child as far as it is possible, in cultivating and developing this something, which we are inclined to call an intuitive brain faculty ; and the more I reason concerning this intuitive—or perhaps I may fairly say instinctive—brain faculty, so much the more am I convinced of the absolute value and importance of my statement. This faculty is the outcome of an unconscious cerebration, and shows that the intuitive mental processes are developing in a given and definite direction. It is the cultivation of this endowment which, taken at the tide, leads on to fortune, greatness, and renown. But, unfortunately, these mental instincts are not always, as a rule, generated in conformity with the physical organization and development of the body.

I have, however, watched the growth of these two conditions of mind and body very closely, and the result of a large number of observations leads me to the conclusion, that there is a common relationship between this mental endowment, and the physical organization of the body which is associated with it. But I maintain that parents are often very short-sighted in these matters, and one cannot say that they are always to blame for errors of judgment in this respect; and possibly their determination, that their boy shall be a soldier or a sailor, when his physical development is not equal to such a vocation, or a doctor, barrister,

or clergyman, when his mind is not capable of grasping the subjects for examination, only shows that they have decided to gratify a personal wish, without giving the subject due consideration in all its bearings.

Life is not so long that it may be trifled with, and the nature of the highest class of examinations for almost every profession nowadays, is of such an extended nature, that very few boys can afford to lose time in advanced youth, which should be spent in training their brains in the class of literature, which is most likely to be of value to them in that profession or business, which must form the occupation of their lives. If parents and teachers only considered these points with more care, and when in doubt, if they consulted some physician who was capable of giving them good sound advice, based no less on the brain power than on the bodily development and the constitution of children, I have no doubt whatever, that not only would premature death in some cases be averted, but many a boy would become an ornament to society, and hand down his name to posterity on the banner of his country's fame; but I am sorry to say, that training has by inadvertence led many into the paths of vice, to the drunkard's goal, or to a lunatic asylum. With a few words more about worry, I shall conclude this chapter. It is a very common saying, and certainly no less true than common, 'that worry kills.' I have seen worry kill as surely and as positively as a consumption kills; yet to produce such disastrous effects, it must meet with a soil in which it can produce its destroying and decaying influences, and such a soil is always associated with the nervous temperament, the signs and symptoms of which have been given in detail on pp. 40 and 41. Now worry may act directly upon the brain and nervous centres in two ways—namely, by producing an excess of blood in the brain on the one hand, or a deficiency of blood in the brain on the other hand. By way of example, I quote the following case of Sir Astley Cooper's, showing how mental

excitement produces a determination of blood to the brain. He says :

'A young gentleman was brought to me from the north of England, who had lost a portion of his skull just above the eyebrow. On examining the head, I distinctly saw the pulsations of the brain, which were regular and slow; but soon after he was agitated by some opposition to his wishes, and directly the pulsations of the brain were increased and became more violent, and more blood rushed to the brain.'

M. Broussais gives the following interesting case, showing how the brain becomes congested through emotional influences. This I copy from Dr. Hammond's very interesting and excellent work on 'Cerebral Hyperæmia.'

M. Thavernier, a captain in the French army, forty-two years of age, moderately stout but well-formed, received in the middle of the Palais Royal, ninety days before his death, a letter containing bad news. Whilst perusing it, he remained motionless as if thunderstruck, and the left side of his face became paralyzed and drawn to the opposite side. He was taken to Val de Grace and attended to. At this time he had complete paralysis of the arm, thigh, and leg of the right side, and was unable to speak. After using various remedies for more than two months he began to improve, and became so much better as to be able to stand up and to speak, although with difficulty. In this state of improvement M. Thavernier received another letter, said to be from his wife. He read it, and instantly there occurred loss of speech, general immobility, abolition of sense, and complete apoplexy. He died in three days after the attack, and on examining the head there was found engorgement of blood in the sinuses, and several abscesses were observed in the substance of the brain, and other marks of organic disease. M. Broussais considered this case to be one of chronic inflammation of the brain, induced by a moral cause.'

The following case is of interest, as bearing upon the point, and showing that 'worry, shock, and mental strain are succeeded by, and associated with congestion of the brain.'

'Robert Williams, a railway guard, was sent to me at the Hospital for Paralysis and Epilepsy in Regent's Park, by a well-known ophthalmic surgeon, for intense depression, almost amounting to melancholia. The gentleman who sent the patient to me, had examined the eyes repeatedly with the ophthalmoscope, and had found the vessels intensely congested, and, in all probability, the same engorged condition of the vessels existed throughout the entire brain. The patient was a tall, well-developed muscular man in the prime of life, and he gave me the following history relative to his illness: He had always enjoyed robust health until the 1st of December, 1870, when he heard the distressing news, that his favourite child, a little boy, of whom he was dotingly found, was run over and killed. When he first heard the news he felt the shock, but not acutely, yet, in about a fortnight, he became gradually and imperceptibly aware, that he had been subjected to an inevitable loss. He became particularly cold, and could not get himself warm even by exercise. He suffered from a constant aching pain over the forehead, and occasionally felt rather giddy; he became so dejected, that he was almost unable to do anything, his sleep was disturbed, and he would lie awake for half the night thinking of his child. He felt that he was suffering from something, which haunted him day and night, and which made his life a burden to him. He tried to rouse himself to shake off this depression, but the more he tried the worse he became, until he felt that he was scarcely able to do anything at all. This case is of value, in showing how the health of both mind and body, in a strong man, can be shattered by shock, worry and anxiety. He improved during the short time he was under my treatment, and I sent him away to the country to have a complete change of air and scene for a month.'

I merely quote this case, as I could many others, to show what a wonderful influence, overstrain and shock and worry, have, in breaking down the soundest and most robust constitutions, and in reducing the loftiest and most noble-minded men to effeminacy and second childhood. Again, there is nothing that finds out the *weak point* in a constitution, with equal surety and certainty, as do worry and over mental strain. We frequently hear people say. 'Yes! It is this dreadful weather, that is giving me the gout, or bronchitis, or rheumatism, or making me feel so unaccountably ill ;' but they frequently overlook the fact—and a very important fact it is too—that worry, mental anxiety, domestic trouble and brain exhaustion so undermine the natural and healthy tone of the body, and so weaken the vitality of individuals, that they are immediately influenced by changes from without, as well as by changes from within the body. If the constitutional degenerative tendency of the individual be towards consumption, worry will tend to its rapid development, and so, in like manner, will worry tend to the development of cancer, kidney, and heart disease and gout.

Treatment.

Dr. Beard speaks truly, when he says: 'I have seen cases by the dozen that had taken quinine and iron, judiciously and faithfully given, and who were still uncured and unrelieved.'

There is, in fact, no routine plan of treatment for these cases. Each case must be studied closely and carefully by itself. I must say that this has been my own experience, and in the proof of the non-value of treatment by iron, I think we have good reason for coming to the conclusion, that these exhaustions are rarely, if ever, due to a bloodless condition of the spinal cord, for, in the cases of anaemia of the spinal cord, we find that large doses of iron have the most charmingly beneficial results. All practi-

tioners of medicine, who have had these cases under their care must frequently have been perplexed, at finding how utterly inefficient have been the usual nerve remedies, for the cure of these cases of nervous exhaustion. There are some practitioners, who indiscriminately use the galvanic and Faradic currents to the head and to the spine, without the slightest good effect whatever; and as far as my own experience serves me, this mode of treatment has been utterly useless in nine cases out of ten; but, perhaps, in the tenth case it may prove useful, so that we cannot afford to utterly discard any means, which may possibly turn out to be curative in a not easily curable malady. The Faradic current may be applied as an aid to treatment, in conjunction with the other remedies which we are about to notice. The electrodes should consist of tin plates, as recommended by M. de Watteville. The plates should be covered with flannel, and moistened with water, before their application. I usually apply the positive plate to the nape of the neck, or over the cervical sympathetic centres, and the negative plate to the hypogastrium, keeping the current continuously in action for fifteen or twenty minutes. There is this much to be said for electricity, that it never fails to give great relief during its application, and, it may be, for some hours after; but the good effects soon wear off, and certainly, in many of my cases, the patients have felt worse after than before its application. My experience has been precisely similar concerning the use of the electric bath, and, in no single instance, have I found this mode of applying the galvanic current to be of the slightest value in these cases. Yet, as I said before, I should be extremely sorry to discard electricity as an aid to treatment, the more especially as it has been spoken very highly of by those who are in every way fully capable of judging of its merits.

The drugs which may be of value, in the curative treatment of nervous exhaustion, may be chosen from those, which experience has selected from a long list in the

'Materia Medica.' The chief of all these is opium. The pure, watery extract of opium, in doses of a quarter of a grain three or four times a day, in certain cases acts like a charm; it excites and stimulates for a short time the brain-cells, and then leaves them in a state of tranquillity, which is best adapted to their nutrition and repair. It must be continued for some weeks, and it may be months, and it may be necessary to increase the dose, but a good result is sure to follow its careful administration. I say that there are cases of pure neurasthenia simulating premonitory consumption and a thousand other ailments, but which the practised physician can pick out, and say most decisively that opium will unfailingly cure. I must admit, however, that there are cases of nervous exhaustion, which opium does not seem to affect. Among the other drugs which are at our command we find the following, and I give them in the order of their value, namely, arsenic, phosphorus, strychnine, the salts of bromine and iodine, the salts of zinc and iron, quinine, chloral, chloroform, ergot, maltine, grape sugar, cod-liver oil, atropine, sulphur, nitrate of silver, bichloride of mercury, and terchloride of gold.

When opium fails, in the course of three or four weeks, to produce any marked and decided effects, we ought then to have recourse to increasing doses of arsenic, phosphorus, and strychnine. I have gradually increased the dose of Fowler's solution of arsenic to ten drops, three or four times a day, and the same with the solution of strychnine, before the patients have found themselves actually benefited. In the curative treatment of nervous diseases generally, it will always be found necessary to persist in the continued use of a drug, until some decided effects have been realised, and to gradually and cautiously increase the dose of each drug we employ. If you once submit to the caprices, and try to gratify the wishes of nervous patients, you will be changing their prescription at every

visit. Now, this mode of procedure is especially harmful, both in regard to the drugs you are employing, and to the patients you are treating. One great part of the treatment of neurasthenics is, to make them feel quite sure, that you have the most implicit confidence in the measures which you are adopting for their cure. And it is not unfrequently the case, that many drugs are discarded as valueless, merely because they are not given in the proper dose, and for a sufficiently long period of time; hence it is, that we find our patients resort to mesmerists and unqualified practitioners. The majority of nervous people want building up, for they are invariably below par, and the great success of our treatment will, undoubtedly, mainly depend upon how this process of building up is carried out. The physician has to bear in mind the two cardinal points, in the treatment of nervous affections, namely, *rest and nutrition;* still, it must be remembered, that nervous patients are not, as a rule, liable to acute inflammation, yet they are peculiarly subject to bloodless and congested states of the mucous membrane or of the skin, or, in fact, of any part of the body, so that we have to consider, in what way we can best equalize the action of the vaso-motor nerve-centres, and the current of the blood generally. The remedies, which will be found best adapted to effect this object, are digitalis, ergotine, and the bromide and iodide of potassium. These drugs may be given in small doses, and in combination with any other tonic medicines which we wish to employ. It is also at all times necessary, to keep the blood alkaline, to support secretion, and to secure the due elimination of waste products by the skin, the bowels, and the kidneys.

We will now consider, how rest and nutrition may be best brought about. First, with regard to rest. This must be both bodily and mental, and the exciting cause of either mental or bodily fatigue must be sought for (and in some cases it has to be sought for with consummate tact, as it is not always apparent), and, if possible, removed. I say if

possible, because the physician finds that, in a large number of instances, the removal of the existing cause is not unfrequently attended with the greatest difficulty. The cause of mental anxiety and worry, which are so productive of brain disease and nervous exhaustion, is so often bound up with the mainspring of a man's existence, either from a business or domestic point of view, that I have, over and over again, experienced considerable trouble in bringing about its removal. Patients say to me : 'I only wish it were possible for me to carry our your wishes; but don't you think, if I do so and so I shall get better. I really don't see how it is possible, that I can do as you wish.' My answer is invariably this : 'Do the best you can to carry out my treatment, and let us be in agreement as far as we can.' In all the cases, which we are now considering, it is infinitely better that the conduct of the physician should be tentative, rather than arbitrary. A fixity and firmness of purpose is at all times imperative, but Abernethian roughness cannot be productive of anything but harm, in the treatment of diseases of the nervous system. If the exciting cause has been dealt a death-blow by moral means, and by moral means alone, we invariably find, that great good has been accomplished, and an important step has been taken towards effecting a cure. Then in reference to treatment, we come to the consideration of another cause of neurasthenia, which is, as a rule, secondary to the exciting cause, namely, restlessness, and want of sleep. If sleeplessness should be of itself the primary or exciting cause of nervous exhaustion, then we have to consider our diagnosis with all the more care, for the reason, that we have, in all probability, something more to deal with than a mere arrest of function. 'It always becomes a matter for anxiety to me, when patients say that they pass restless nights, and that they are unable to account for it.' But in the case of nervous exhaustion and brain

fatigue, the sleeplessness is invariably secondary to the mental anxiety; but there can be no doubt, that the one reacts upon the other, and brings about a state of restlessness and discomfort which is truly deplorable, and, as a fact, it will be found absolutely necessary to induce sleep by one means or another. In many of these cases, it will be found to be quite unnecessary, to have recourse to opium, morphia, or chloral. I have frequently induced sleep in patients, by means of a draught of stout, or of mulled claret, or of port-wine negus, when sedatives have been tried in vain. Many ridiculous and untrustworthy statements have been made, concerning the action of the hydrate of chloral. It has been broadly stated, that this drug possesses the especial property of breaking up the newly-formed blood corpuscles, and so interfering materially with the nutrition of the brain. I have no wish to dispute this statement; but the ill effects produced by the hydrate of chloral, as in like manner by opium, or even by an especial form of diet, are of degree only. I have given the hydrate of chloral, for weeks together, with the most beneficial results, and, in some cases of sleeplessness, a few doses have effected a cure. I maintain, that all drugs are either curative, or poisonous; but a dose, which will cure in one case, will be productive of great mischief in another, even in the same disease. If people only knew of the sad results and degenerations, both of mind and body, which arise from the indiscriminate use of medicines, especially such medicines as opium, chloral, and the like, they would hesitate and shrink from their use, unless they felt sure that they were being carefully and properly administered.

There is a state of sleeplessness in nervous people, which becomes a mere restless habit on the part of the brain. They tell you, that they awake at a given hour in the morning—it may be three, four, or five o'clock—and that they cannot get any sleep until, perhaps, it is time to get up. They also say, that they have taken bromide and

sedatives when they have gone to bed, but that they have derived no material benefit from their use.

I have cured many such cases as these, by causing the patients to take a full dose of the hydrate of chloral, forty grains, two or three times a week when they awake, at whatever hour, during the night. This proceeding seems to checkmate the ill habit into which the brain has fallen, and by so doing, a good sleep is almost always secured after a few doses of chloral have been taken in this manner. A good night's rest is one of the most important points to be secured, in the treatment of brain fatigue. Although it is so vitally important, that we should pay particular attention to ensure good, sound, and healthful sleep, still we must be mindful, how necessary it is to secure ordinary bodily repose apart from sleep altogether. Restlessness is one of the essential attributes of the neurasthenic, and moral volitional self-restraint must be carefully exercised. Exercise of body, carried to actual fatigue when in health, is an aid to a night's good rest and sound sleep; but the very reverse of this is the case in nervous exhaustion, for too great exercise produces excessive fatigue of body, and irritability of brain then exists in like proportion, and sleep is completely out of the question.

We now come to the consideration of another point in the treatment of neurasthenia; and that is, as to how far travel, change of scene, change of air and so on, are good for this class of cases. I certainly have seen many patients (perhaps the majority of cases that I have seen) who have not only been unrelieved by travel, but who have been, in many respects, much worse for the journeys they have undertaken. I quite agree with Dr. Beard's remarks upon this question of travelling. He says:

'I have constantly under my care cases of both forms of neurasthenia, who have spent months and years abroad under advice of physicians, not only without benefit, but in

some instances have been positively injured. Cases of myalesthenia especially, are very liable to be made worse by the fatigue of travel, by the discomfort of absence from home, by the laborious and oftentimes wearisome and exhausting tasks of sight seeing. Many are worn out in the picture galleries and in mountain climbing, and must return home to rest and recover from the effects.'

However, we must bear in mind that change of air and scene and diet, if not carried to excess or to fatigue, is one of the most important aids to the cure of neurasthenia which we have at our command. I condemn entirely the present system, which is rather fashionable just now on the Continent, of herding together in a large building some four or six hundred invalids, however, like all other fashions, it will soon exhaust itself. These institutions are generally the offspring of men, who have an eye to business, and there are quite sufficient of the credulous, both amongst doctors and patients, to support their existence, and their greatest charm is novelty. A lengthened sea voyage is *par excellence* the best chance of cure, in a confirmed and protracted case of neurasthenia; but I have never seen any patient, who has derived much benefit from a sojourn at the seaside. I do not wish it to be understood, by my remarks concerning these large continental hotels, that I in any way undervalue the advantages, to be derived from the invigorating and toning influence of the splendid mountain air, which one finds, for instance, in the Upper Engadine. The characteristic qualities, of the climate of the Upper Engadine, are due to its very pure, clear and at the same time dry atmosphere. Dr. J. Pernisch, of the Tarasp Schultz, speaks very truly of the valley of the Inn, in the following words:

'The different component parts of the climate in this region, produce in their unison a strong excitement of the organism, a great facilitation of the vital functions and of

the change of substance, a better formation of blood and nourishment, an improvement of the digestion and assimilation, and thereby strengthen and invigorate the functions of the nervous system.'

I need scarcely say that Cannes, Mentone, Nice, and other fashionable resorts in the south of Europe, are quite unsuited to the treatment of neurasthenics, and, in fact, to organic disease of the nervous system at almost every season of the year. I can most truly say, from my large experience at the Central Sick Asylum at Highgate, that the effects of a pure, dry, bracing air, no matter how cold it may be, has a most marvellously beneficial effect upon patients suffering from nervous disease. I am attending at the present time a physician, suffering from paralysis of the lower limbs and severe exhaustion of the nervous system. He has been a great traveller, but he declares, that the air of Margate contains more ozone, and is more bracing than any place he has ever tried. Upon one occasion, whilst living in London, he was suffering greatly amongst other things from catarrh of the bladder, with all its attendant troubles and inconveniences; and he told me, that he had not been at Margate for more than a week, when in this respect he quite recovered.

We will now consider one of the most important points in the treatment of nervous disease, and that refers to diet. The question, therefore, of food must be studied by us somewhat carefully. Articles of food are usually divided into two great classes, namely: 1. Heat and force producers; 2. Flesh-formers, or non-nitrogenized compounds and nitrogenized compounds.

HEAT-PRODUCING COMPOUNDS.

Sugar Starch Gum Lignin Oils and Fats	composed of	Carbon Hydrogen Oxygen

FLESH-FORMING COMPOUNDS.

Albumen Gluten Fibrin Casein Legumin	composed of	Carbon Hydrogen Nitrogen Oxygen Sulphur Phosphorus

The various parts of the human body, such as the brain, nerves, muscles, fat, bones, etc., are found by chemical analysis to consist of oxygen, carbon, hydrogen, nitrogen, phosphorus, sulphur, chlorine, fluorine, silicon, calcium, potassium, sodium, magnesium, iron, manganese, and copper; and we have all these elements presented to us in a compound form, in the following tabulated articles of diet, and the table shows pretty accurately the relative amount of flesh-formers and heat-producers, and the amount of heat-producing elements they contain for every ten parts of flesh-formers.

	Flesh-forming.	Heat-producing.
Milk	10	40
Beans	10	22
Fat mutton	10	27
Fat pork	10	30
Beef	10	17
Hare	10	2
Veal	10	1
Wheaten flour	10	44
Oatmeal	10	50
Barley	10	57
Potatoes	10	115
Rice	10	123

But as physicians and physiologists, we must not be carried away, and place too implicit a confidence in these statistics. It is no doubt a very easy matter, to make an exact computation of the amount of heat and force, which is generated from a lump of coal to drive a steam engine,

and if we merely take this, as an example of the latent energy residing in a lump of coal, so far well and good; and we may even go farther, and say, that if a man eats rice, he will have more heat and force-producing power generated in his nervous centres, than he would if he took an equivalent of beef or beans. But in dealing with an appropriate dietary for the man in health, as well as for the man in sickness, it would be absurd to follow as a rule the fact, that in consequence of fat pork yielding thirty parts of heat-producing elements to ten of flesh-forming elements, that it should, on this account, be given to patients in preference to beef. The physician, if he uses the care and skill which are required of him, will take into consideration many other matters, and matters of great importance, in reference to dietary—such as the climate, the season of the year, and more particularly the nervous constitution of the patient. Again, the physician who treats the dyspepsia of the neurasthenic in the same way that he would the gouty and the purely dyspeptic, will, judging from my own experience, fail in doing the patient any good. The truth of this observation is fully borne out in a large number of epileptic nervous people. These patients frequently consult me, complaining of the most severe forms of flatulent dyspepsia, so that they say, they cannot take food without the most distressing symptoms of dyspepsia resulting. They are suddenly, and without any apparent warning, distended with wind, so that they can scarcely breathe, and this flatulent uncomfortable condition usually subsides, as suddenly as it makes its appearance. This is unquestionably a nervous dyspepsia, and all the pepsine, and ordinary dyspeptic remedies, will be of no avail in relieving the patient ; but a full dose of chloroform, opium, and bromide of potassium, will frequently prove of immediate benefit. I have had patients consult me on account of flatulent dyspepsia, which is frequently the result of over-anxiety and worry, who have been under the care

of other physicians, and who have been dieted, with the most scrupulous and punctilious zeal, without their getting in the least way better; I have fed such patients every hour in the day, without paying any heed to the kind of food taken, and in a week they have been perfectly cured. The end justifies the means adopted, in nine cases out of ten of nervous dyspepsia; and in such cases, I am led to the conclusion, that it matters little what kind of animal or farinaceous food be given, so that it be pure in quality, and given to the patient every one or two hours during the day. In nervous dyspepsia, vegetables should be rarely given. The diet for the nervous and neurasthenic, should as a rule be chosen from the following:

Soups.—White, barley, à la julienne, macaroni, milk, rice, sago, semolina, vermicelli, calf's-head, oyster.

Fish.—Eels, flounders, mullet, oysters, soles, brill, whiting, smelts, fresh cod.

Meat.—Mutton in any form, beef, lamb, calf's-head, sheep's-head, ox-tails, sweetbread, bacon.

Poultry and Game.—Fowl, pigeons, turkey, pheasant, partridge, etc.

Vegetables.—Asparagus, spinach, seakale, French beans, brocoli, beetroot, stewed celery, Spanish onions, tomatoes, watercress, lettuce.

Wines.—Amontillado, Manzanilla, Latour Carnet, Chateau Lafitte.

Eggs.—Boiled, poached, raw, yolk, white of.

Sweets.—Farinaceous milk puddings, milk, fruit, and most kinds of jellies.

I do not wish it to be inferred, that no other diet should be taken but that here stated, because everyone must be acquainted with the fact, that as cases differ in type and degree, so will they require exceptional forms of diet. I have (and I feel quite sure upon this point) cured many cases of nervous exhaustion, in the main by diet. For

instance, in those patients where the circulation is slow and the extremities cold, great benefit will be found by the administration of sugar, commencing with one ounce of white sugar, and increasing this quantity until the patient takes as much as six or eight ounces three times a day. Milk is a very valuable article of diet, and it may be taken in the form of Dr. Jagielski's Koumiss. Milk is much more digestible if it be kept in a warm place until it becomes faintly sour, and it is in this condition that I frequently recommend my patients to take it. Milk is the most perfect food, in itself, that we can find in nature. It is of course the natural food for the young, and many mothers are really responsible for the defective organization of their children, through feeding them improperly and injudiciously. Children and young people, judging from the amount of work which their brains are expected to perform in these days, should be fed very much better than they really are fed, even at many of the better-class schools; and if care be not taken, this want of deficient feeding will soon make itself evident in brain exhaustion and weak physical development. Can anything be more absurdly ridiculous, than to expect the amount of brain power, which I presume (judging from the curriculum) is expected, from these half-fed and improperly-fed children of London, who are compelled by law to attend these Board Schools, and to cram, as it is called, their brains full of knowledge to pass examinations? Why, the result will be, that one-half of them will die prematurely, from nervous exhaustion either in the form of scrofula or consumption. Every child before the age of ten should partake of four meals a day, and drink at least a pint of milk in the twenty-four hours. The dietary should be mixed, and it should vary according to the season of the year: fresh vegetables and fruit, both cooked and uncooked, should always be given in due proportion. The building-up of a child's brain and constitution, generally before the age of fifteen years, is of the

most serious and vital importance, and I may safely say, that, in no other period of life, is it in any degree so important as in this. It is quite true, that some children require much more careful feeding than others, but there are very few young people, whose health does not begin to suffer, if they do not take at least four good meals during the day. With my own boys, if their health begins to fail, and they suddenly change colour and rapidly become tired, I alter the condition of things, in a few days, by feeding them freely with eggs and good strong beef-tea. I need scarcely say, that wines and fermented liquors should never be given to children. Fish, and especially shell-fish, certainly seems to possess the material which is necessary to reinvigorate the nervous centres in many forms of brain exhaustion, and oysters may be mentioned as possessing this power to a great degree; and it is very possible, that the amount of phosphorus contained in shell-fish may, in a measure, account for their value in this respect. Dr. Routh speaks highly of the value of phosphorus in his work 'On Overwork and Premature Mental Decay.'

I sometimes prescribe, and with great advantage, cod-liver oil for my younger patients, who are suffering from brain exhaustion, or what is still better, the hydrated olein. This preparation is not only the cod-liver oil, whose particles have been separated by water, but it is emulsified and rendered more digestible by the addition of alkaline salts. We have before alluded to the fact, that everything must be done to remove the cause of brain exhaustion, and in young children this is of the utmost importance; and it is frequently accomplished by a complete change of life, and this must be carried out at an early period of the disease. Cases of brain exhaustion, in young boys of a highly sensitive nature, have come under my notice, and this upon investigation, was found to be due, not to overwork, but to a system of bullying, on the part of the elder boys

towards some of the younger, and which constantly worried them, as they were in constant dread of some unjustifiable thrashing. There is another point of some importance for our consideration, and that is this : How far are we justified in advising our nervous patients to take alcohol ? It must be remembered, that we are dealing with a class of people, whose resisting power is of the lowest order—who are liable at any moment to give way to any idea, which is uppermost in their vacillating minds—and to gratify every passion, without the power to exercise self-restraint, as we have seen to be the peculiar characteristics of brain exhaustion ; and we can readily understand, how tempting a glass of champagne or brandy must be to the man, who does not feel himself, until he has taken some kind of stimulant. It is very fortunate, that the excessive use of alcohol cannot be borne by many neurasthenics; it either gives them intense headache, or increases some of their morbid symptoms. There are others, however, who have been advised, either by their medical attendant or by their friends, to take wine or spirits, and they have suddenly become habitual drunkards. For my own part, I am inclined to the belief, that dipsomania is more frequently the result, rather than the cause, of nervous exhaustion.

Dr. Beard, of New York, in a pamphlet, on 'Nervous Exhaustion as a cause of Inebriety,' makes the following statement, which so thoroughly accords with my own experience, that I give it verbatim :

'It is a fact which my professional experience satisfactorily confirms, that alcoholic liquors have not only a relieving but a curative effect in the different forms of nervous exhaustion. After all other remedies have failed or lost their powers, alcoholic liquors will sometimes produce satisfactory sleep, relieve depression and debility, bringing about those agreeable results without any apparent evil accompaniments, except danger of this one terrible evil, inebriety, but when inebriety is contracted, then any number

of physical evils may follow, the liver and brain may be diseased, and life shortened. Physicians and patients both observe this delightful action of alcohol in the treatment of neurasthenia, and without proper caution on the part of one or the other, one is tempted to use very strong liquors in excessive amounts, just as they would use the quinines or the bromides. Then, again, there are some—and these cases are very interesting indeed—who, so to speak, leap with a single bound into inebriety; without any advice of their physician, without consideration, and of themselves without reflection, they rush to alcohol for relief, and become inebriates at once with all its symptoms, just as one breaks out with chills and fevers.'

I frequently feel desirous to advise my patients, who are suffering from nervous exhaustion and sleeplessness, to take stimulants to relieve them of melancholy, to assist digestion, to quicken their circulation, or to procure natural sleep; but experience has taught me that such a proceeding may be attended with the most dangerous results. I am happy to say that I have less hesitation now than I formerly had of recommending my neurasthenic patients to take stimulants, because practice and observation have proved to me pretty conclusively in what cases I may recommend it with the greatest advantage, and in what cases its administration may be followed by a craving for drink. That many cases of neurasthenia are not only relieved, but absolutely cured, by the judicious administration of wine, is an unquestionable fact.

Exercise.—A due amount of muscular outdoor exercise is essential, and in fact absolutely necessary, to the neurasthenic; but it must be taken with extreme caution. The man suffering from nervous exhaustion will say that one day he feels able to do anything or walk any distance, and on the following day he is not equal to anything, and the least exertion rapidly exhausts him. This condition of

things is quite true of commencing exhaustion of the spinal cord; but if, on the other hand, the exhaustion has been allowed to continue for some months, or even years, we then find a different state of things to exist, and more particularly so if the brain participates in the exhaustion. When we have a protracted exhaustion of the whole nervous system the patient seems more or less unconscious of his weakness, and, until he makes the effort to walk or to run, or in fact to accomplish anything which requires a definite amount of energy, he imagines that he has sufficient power to fulfil anything which he may try to accomplish; but he suddenly breaks down, and finds that he is unable to do what, in his own weakened mind, he thought that he could do without any difficulty. Far different and more hopeful, however, is the case when we know that the patient imagines that he is *unable* to accomplish anything that he may try to do, but which, when he tries, he can do with the greatest possible ease. Yet these are merely phases of the same disease, and differ only in reference to the degree of the disease which we are now considering, namely, nervous exhaustion. We have, therefore, to think over what should be the kind of exercise taken, and at what hour of the day it should be taken, and how much should be taken. It would be unwise to ask a neurasthenic to put on his hat and take a seven miles blow, at the same time cheering him up, and saying, 'It will do you good, old fellow.' The advice of such a friend might be given with the best intention, but it would inevitably, if acted upon, be attended with the most serious consequences—namely, undue *fatigue*, which we have particularly to guard against. In health, *fatigue* is the natural consequence of some accomplished muscular or mental work, which calls upon the store of our latent forces, and in health this store is readily and easily replenished.

In nervous exhaustion, however, *fatigue* means that such a demand has been made upon the already inefficient

reserve forces that they cannot be well repaired, and nervous exhaustion is thus increased. I have seen patients suffering from nervous exhaustion, who, from the bad advice given to them by their friends, had what they called *tried to exert themselves*, and with the result that they perspired profusely; their limbs were in a state of tremor and agitation; they suddenly became so tired and stiff that they could scarcely put one limb before the other; or even raise a glass to their mouths; and yet they were unable to rest, or remain in one posture, on account of the irritability which this *fatigue* engendered; and when they tried to go to sleep, the frequent startings in the lower limbs would rouse them, and prevent them from doing so. I would give the following general advice to the neurasthenic —Don't rise until eight o'clock in the morning; take your bath just tepid; after this envelop yourself in a sheet which has been wrung out of cold water, and recline with it around you, until it is of the temperature of your body; and then remove it, rub your body carefully and thoroughly with a rough coarse towel until it be dry and warm. After this, dress quickly and take breakfast with fish, or a well-cooked chop or rump steak. Avoid taking too much fluid; a breakfast-cup filled with half coffee and half milk will be quite sufficient; dry toast at breakfast is to be preferred to bread; above all things, do not eat hurriedly—let your food be well masticated before it is swallowed. For half an hour after breakfast read the paper, or attend to any little correspondence which may be necessary, but avoid being too deeply interested either in politics or money matters. Then stroll gently in the open air for an hour or even more, but never give yourself a set task to walk from one given point to another; gentle horse exercise is much to be preferred to walking. At eleven o'clock take a glass of dry sherry and a biscuit, or a new-laid egg beaten up with a glass of port wine, and after this sit or stroll in the open air, if the weather permit, until

luncheon. For luncheon, at half-past one, take oysters three or four times a week if they are in season; upon other days take a basin of really good soup, which should be followed by a cut of mutton or beef from the joint. Do not take much exercise immediately after a meal. On the contrary, rest in a recumbent posture for an hour. You may drink, at your luncheon, a wineglass of whisky with a bottle of Apollinaris water. At four o'clock a small cup of immediate tea may be taken, and after this, either walking, riding, or carriage exercise commensurate with your strength. You may dine at seven p.m., but before dining I would advise the use of the Turkish bath once a week, and at other times a tepid sponging will be found extremely refreshing. The dinner should never consist of more than four courses, namely—soup, fish, joint, and game; let pastry be avoided. You will observe that I omit to mention the use of light wines, and I do so purposely, for they are, in my opinion, most injurious and untrustworthy. Don't take stimulants in the evening, but an hour before going to bed take a bottle of seltzer or Apollinaris water, with a tablespoonful of fresh lemon-juice. Sleep on a hard bed, and let the bedclothes over the body be light and comfortable; the feet and legs should be kept warm, and well covered during sleep. The bedroom should face the south-west, and the bed should be so placed that the head is to the north and the feet to the south. Before getting into bed, the body, and especially the spine, should be well rubbed with a dry coarse towel. There is another simple, but very important, matter to be attended to. Avoid all draughts of cold air, and have your under-linen thoroughly aired; always see that your bedroom window is closed by three o'clock in the afternoon in the winter, and seven o'clock in the summer, and be sure that your bedroom wall-paper does not contain arsenic. Let your house be in an elevated position, built upon a gravel or loam soil, and, if possible,

with cheerful views and a good supply of water. The rooms, especially those which are lighted with gas, must be lofty and well ventilated. Your wearing apparel must be of woollen material next the skin, and your boots thoroughly water-tight. I have gone minutely into these small details; but every detail, let it be ever so small, is of the utmost importance in the curative treatment of nervous exhaustion.

THE EXHAUSTION OF INFLUENZA.

ONE is never astonished or surprised nowadays to hear a very large number of people complain of the exhaustive effects of the influenza.

It is just possible that many ailments are attributed to this disease wrongfully. Yet, as we yearly become more familiar with its results, there is little room for doubt that they are very widespread and productive of grave distress. Patients tell us that they cannot sleep, that they become depressed and despondent, that they are rarely free from pain, and that they fail in energy, and get done up in a manner quite unaccountable, and, in fact, quite unknown to them before.

The brain worker will remark that his memory has become defective, and that he fails in concentration of his powers of ideation.

The neurotic will make all sorts of vague complaints, far too numerous to mention, painful neuralgias being very frequent.

Sometimes we find positive mental derangements leading to suicide.

The most general trouble is failure of the heart's action, and an unaccountable sense of weariness and fatigue, and a feeling of incompetency and inadequacy to the fulfilment of the ordinary duties of life. I shall attempt to analyze these conditions, in order that we may the better comprehend their true meaning and significance and cure.

Every physician is fully alive to the dangerous results associated with and following all the acute infective diseases when they expend their specific influence upon the central nervous system, and in particular upon the respiratory and cardiac centres in the medulla oblongata. But in speaking of the mental and moral, no less than the physical, changes which are too frequently the outcome of an attack of influenza, we can only conclude that there is undoubtedly in this disease a determining cause at work, which exerts itself in a very large number of cases upon the nervous system of the individual infected by this malady, in a way and after a manner peculiarly its own.

Our knowledge relative to influenza is increasing day by day, but up to the present time its wizard-like action upon the system generally, and its want of uniformity, have given rise to wide and various opinions concerning its onset, its nature, its progress, and its decline. There does, however, appear to be a growing consensus of opinion that it is an acute specific and infective disease, pandemic and miasmatic, and that the cerebral, cardiac and other symptoms are very largely due to the presence in the blood and lymph of the products of bacteria. These products, or toxines, of course vary in the virulence of their action in different individuals, according to the toxicidal powers of the cells and fluids of the body. M. Metschnikoff, from his investigations, states that the destruction of morbific microbes may be due to the liberation of bactericidal substances into the serum, consequent upon the breaking down of leucocytes, but the consideration of these questions is foreign to this article. There are some points of interest of a general character which must be referred to in passing, inasmuch as it is my opinion that many of the distressing and disastrous effects following influenza are really due to its inefficient management, and sometimes to its too meddlesome treatment. I am quite sure that in uncomplicated, and even so-called compli-

cated cases, the administration of drugs should be carried out with extreme caution. They should certainly not be given carelessly. Drugs which are useful under ordinary conditions to relieve pain, spasms, and congestion seem to be absolutely innocuous in certain cases of influenza, and even mild aperients will sometimes give rise to violent tenesmus and dysenteric diarrhœa. There is no law for treatment other than warmth, rest, and a fairly generous diet, with good nursing. Strong mustard foot-baths at night relieve depression and help to ensure sleep, and turpentine stupes are efficacious.

A lady patient of mine, of a weakly constitution and highly nervous organization, in whom the catarrhal symptoms were well marked, with persistent, profuse, and continuous overflow of tears, was suddenly seized with the most violent vomiting. I ordered her to take half a grain of morphia, to be repeated in three hours if the vomiting continued, when by some mistake the two powders were given at once. She slept soundly for ten hours, and awoke really comparatively well, with complete subsidence of catarrh. Doubtless the vomiting in this case was due to an irritable and unstable state of the medulla oblongata. I was so pleased with the good effects of the morphia that I have invariably given it in full doses when from the symptoms I have been led to believe that the central nervous system was chiefly at fault, and even in cases of cardiac and respiratory failure I have not hesitated to administer this drug freely, and with the most excellent results. As a rule, patients, when getting convalescent from influenza, are in no hurry to get about too soon. This is fortunate in reference to their future welfare. In my experience, even in ordinary cases, patients should live in a warm atmosphere, clothe warm, and rest as much as possible for a full month, dating from the commencement of the symptoms. By this means immunity from future visitations

is best secured, and many troublesome nervous affections are throttled in their birth or obliterated in their conception.

We are inclined to admit that this influenza is essentially a nervous form of fever, sometimes attacking the centres of all the levels of the nervous system, at other times confining its interest to one level only. Thus we may have the encephalic form, the catarrhal or respiratory form, and the gastro-intestinal or abdominal form, just according to the level of the nervous system specially invaded by the toxine, and not unfrequently each level may be attacked in succession at varying intervals in the same individual. By this I mean that the primary symptoms may be essentially encephalic, lasting sometimes for three days; secondly, laryngo-tracheal, affecting also the respiration, as well as the heart and circulation; and, thirdly, abdominal symptoms may follow, and be alone present.

I am not quite clear as to the precise meaning of the term nervous fever, if it is not a fever, a rise of temperature, due to some depressing action (exhaustive or inhibitory) upon certain nervous centres (thermotaxic, thermogenetic, or thermolytic), rather than the liberation of heat energy from chemical change in the blood and tissues of the body, and particularly in the chemico-vital processes that are going on in the muscles. The nervous influences concerned in the development of heat are at all times of interest, but this is particularly the case in influenza. The sudden rise and short duration of fever heat is one of its marked features, and is fairly good evidence that, whatever may be the nature of the infective material, it does not greatly influence the 'thermogenic tonus,' or the healthy equilibrium existing between heat production and heat loss, neither does it apparently involve marked changes in the 'thermogenic' stuff of the tissues. Heat production, dissipation, and distribution are essentially under the control of the

nervous system, and we may fairly conclude that in influenza the changes of temperature are rather due to the influence of the toxine upon the vaso-motor and trophic centres in association with vascular changes, than to the chemical effects accompanying increased molecular activity of muscular and other tissues. Thus my experience leads me to the conclusion that during the fever stage of influenza tissue waste is not notably increased, neither are morbid products formed to the same extent as in the fever accompanying the exanthemata, although the temperature may be equally high.

It may be asked, Why does influenza attack one level of the nervous system whilst it leaves others comparatively alone? The answer to this question is evident. Influenza seems to do its work, which is essentially destructive, in the most matter-of-fact way, and, like other forms of energy, travels in lines of least resistance, the least resistant being naturally the weakest, the strained, and the enervated. It certainly does its best to maintain the survival of the fittest, not only amongst men, but amongst the organs and tissues of men; in other words, the toxine of influenza has the special faculty of picking out and exercising its presence for evil upon the weakest part of the individual coming under its influence, let that be an overstrained brain and nervous system, a weakened state of the lungs or respiratory system, or a weak heart and circulatory system. A patient under my care, about forty years of age, suffering from glycosuria, actively employed, and in moderate health, was seized with influenza, and died comatose in forty-eight hours. I merely mention this case to demonstrate how rapidly the toxic action of this disease may spread, even to absolute dissolution in one whose constitution was weakened, exhausted, and non-resistant. Again, in the aged, we see how readily this disease does its fatal work by its exhaustive effects upon the medulla oblongata, and usually signalized by heart failure and

sudden death. Such cases are coming under notice daily.

In fact, the more we know of influenza, the more complex and the more subtle does it appear. We have no other disease like it, for it subjects the organism to some special and peculiar change, requiring for its readjustment unusual processes of treatment.

At one time it was thought that young children were exempt, but during the present epidemic they have suffered severely. Nothing is more certain than the fact that epidemics vary in symptoms and manifestations. For instance, last summer they were chiefly catarrhal, but during the present winter the attacks have been remarkably evidenced by sore-throat, harsh dry spasmodic tracheal and bronchial cough, and the usual derangements of the medullary nerves and the circulation, with extreme depression, prostration, failure of nerve power, and sleeplessness. One would think that in a disease like influenza, whose onset is sudden, and the attendant fever of limited and short duration, the powers of recuperation would be rapid and decisive. In a way this is the case, for upon the third day, with the usual subsidence of temperature, there may be, and there frequently is, a departure of all the more severe symptoms, and the patient to his cost declares himself well and makes an attempt to follow his occupation. Vain and delusive is this transitory period of restoration, for within twenty-four hours his troubles return in an exaggerated form, and the cure is greatly retarded, with possibly some risk to life. Here we have again evidence of the vagrancy of this latter-day plague.

Ordinary cases of influenza, unaccompanied or not by local congestions, are invariably attended with pronounced nervous symptoms, which, as before stated, are referable rather to the nervous centres than to the nerves themselves. The centres lose their ordinary power of control, and neuro-pareses are the result. Headache and neuro-muscular

pains, varying and variable in intensity and extent, from the crown of the head to the soles of the feet, are indeed usual and ordinary accompaniments. With this brief and very incomplete outline of the more common characteristics of influenza, I must now draw attention to its *exhaustive action* upon the nervous centres and the nerves (psychical and physical), and the failures in function which result therefrom ; but for clearness of comprehension it may be as well if we take a superficial glance at the nervous system to understand, if we can, something relative to its simplest workings.

The component parts of the nervous system entering into the formation of the prime reflex nervous arcs may be called, for the sake of classification and easy definition, *central*, *peripheral*, and *intermediate*. The central parts, or *centres*, are in constant communication with the *peripheral* parts or the sensificatory organs, through the mediation of the *intermediate* parts or *nerves*, which are merely channels for the conveyance of *stimuli* or *energy* created either in the nervous *centres* or in the *peripheral sense organs*. So that we have, in reference to *exhaustion* (which is not always an appropriate word), to consider where in the nervous arc the defect does lie. Does it exist in the centres which give rise to the formation of energy, or in the channels for its transmission when formed ? Or is the centre so *controlled* or *inhibited* or *blocked* by *superior* centres that it is not permitted to exercise its own will, to liberate the energy which it has at its disposal. The nervous system is the *originator*, the *regulator*, and *controller* of all bodily activity. The human body is traversed in every direction by streams of energy, not only attacking and overcoming resistances, but continuously and constantly undergoing transformation. We have every reason to conclude that the vital energies are the most delicate and attenuated of all the known forces. The nervous system appears marvellously complex when we remember that, although every centre has its own

special part to play in the human economy—it may be to drive the heart or retard its action, to maintain respiration, to check or accelerate the flow of blood to a part, to build up or destroy every form of tissue by the arrangement or disarrangement of atomic groupings—yet that this or that special centre can only exist to perform its work in the presence of another centre whose sphere of activity is in antagonism to its own. This antagonistic duality in the vast variety of human activities is being recognised as an indisputable law, and any disturbance of the normal balance between these normally opposing forces leads to the championship of the one centre over its defeated (*exhausted*) opponent. However, we must remember that in the *healthy action* of life function a state of balance of power is essential. There is no such thing as anarchy or oppression, and our defeated centre can appeal to and obtain redress from a superior centre by means of induction, and, if need be, obtain compensation from its victorious antagonist. This dependency or subjection in the hierarchy of the nervous centres, as also the well-known antagonistic action of centres, maintaining gravity, balance, and equilibrium, are phenomena most intimately associated with vitality itself, life being the sum-total of an infinite variety of factors. Irritant action is everywhere manifest in developing the energy of function, therefore antagonism is the agent for the development of energy. May not life be maintained and supported, and energy created, by an increasing warfare between functions? This is a doctrine with which the name of Sir William Groves is notably associated, and which was so ably exemplified by him in his address upon the subject at the Royal Institution two or three years ago. All thinkers have had to note the existence of continual war throughout creation; death and life, good and evil, charity and malignity, are illustrations of it. Race has been observed battling with and trampling down race. The ravages of fire, the fury of

floods, the angry strife of evils, have been marked and deplored by numberless generations of moralists. By Darwin it was perceived, as well as its power. He traced its invincible and indispensable utility in compelling organized vitality to ascend through an infinity of stages from imperfection towards perfection. In its *ordinary* character it preserves the current of being in happy and healthy action ; it secures the regular beating of the human pulse, as well as the pulse of the universe. The sense of tranquil comfort, when the physical functions perform their duties accurately and fully, arises from the balanced struggles of opposing forces, *and not from the unchallenged despotism of one.* 'Antagonism,' says Sir William Groves, 'is a law above and beyond gravitation. It holds the stars in their course ; it is that which gives the sensational novel its charm ; it is the secret of the fascination of party controversies. Light, heat, and motion all illustrate its activity. Health exemplifies it, just as disease exemplifies its absence.'

We leave antagonism for the moment to consider the nervous system from the hierachy and control point of view. The elaboration, complexity, and competency of the nervous system of man takes precedence over that of any other living creature, and it might be looked upon as a consummation of progressive development and elaboration by successive stages from the primitive lump of *excitable* and *contractile* protoplasm as we find it in the amœba. Milton held similar views to these. Raphael, discoursing with Adam, teaches that the *principle* of life and power of the *intellect* develop themselves more and more on an ascending scale from the humblest organized sentient being to the highest spiritual order of creation.

'One Almighty is, from whom
All things *proceed* and up to Him *return*.'

In man we distinguish two sets of centres, namely, those of the brain (voluntary) and those of the spinal cord (reflex).

The brain centres, however, frequently act by habit and acquirement automatically. It is questionable if there be an automatic level of nerve centres.

Dr. Waller, in speaking of the general plan of the nervous system, gives the following paragraph, which conveys in a ready manner some idea of the office of the nervous centres: 'A familiar comparison may help to bring home to some minds a clearer picture of the relation which subsists between brain and spinal shares in the government of the body, and lead to a rational conception of the relative significance of the terms voluntary and reflex. An ordinary business enterprise, a factory, a political party, an army—in short, any body of men gathered together under leadership—is like the collection of *cells* forming the animal body, led and controlled by certain individuals whom we may call *centres*, and characterize as "master centres" and as "foreman centres." The function of a *master centre* in a body, as in a business, is mainly that of *administration*, to initiate proceedings, the detailed supervision of which is delegated to and carried out by *foreman centres*, to actually take part in supervision only of novel proceedings, or proceedings which go awry. The function of a *foreman centre* is mainly that of immediate supervision: to execute instructions received from the *master centre;* to issue instructions in matters of routine without reference to headquarters, but to inform and take instructions from the *master centre* as emergencies arise. This is a true picture of the relations between the cortex of the brain, the bulb, and spinal cord, as far as we know or can conceive them.' The spinal cord is credited with eleven centres, whilst the bulb is credited with fifteen centres, and the brain has its own centres or areas for sensation, for motion, for speech, for the special senses, and, as the phrenologists would have us believe, for the attributes of mind and character.

From what has just been stated, it is evident that the *highest* centres alone have to do with conscious and pur-

posive and preconceived action (volition). The *lowest* centres are for the most part concerned with unconscious acts, and are essentially reflex, so that from the lowest and most subordinate centre to the most supreme and ruling centre, we have a succession of centres advancing in grade and rank, importance, power, governance and control. Whatever may be said for or against the bulb of the spinal cord as the seat of a number of centres of somewhat doubtful existence, we cannot conceal from ourselves the fact that the medulla spinalis (bulb) is immediately concerned in the performance of those important functions which are absolutely essential to life, such as respiration and regulation of the heart and vessels, and which, to say the least of it, can act independently of the more supreme and cortical centres, so intimately bound up with volition and the functioning of the mind. It is quite probable that some centres act by association, for when one centre fails to act by default, it unquestionably receives some assistance from its associates, so that we have reciprocity of action. The physiological student of the nervous system, as far as investigations go, has certainly not done much to unravel its mysteries beyond the discovery of phenomena of the simplest kind, in relation particularly to motor and special sense areas; he may use all the latest discoveries in science, and he finds the central nervous system to consist of nothing but cells and processes, endowed with great sensitiveness and activity, receiving messages by afferent stimuli, and transmitting energy or stimulus by efferent nerves to muscular and vascular systems.

Reflex action, and action by induction, is the key to the physiology of the central nervous system, and shows us conclusively that it is almost illimitable and incomprehensible, and that its activity may be influenced by events occurring in any other part of the system, and at any distance from a centre. Every action of the nervous

system, from the lowest and simplest to the highest and most complex, consists of four parts, namely—the ingoing current, the discharge, and the outgoing current, with other subsidiary currents communicating between superior and inferior centres. Dr. Mercier claims the credit of being the first to put forward the existence of a double current of energy. He says: 'There is in the body a double circulation of nerve energy, just as there is a double circulation of the blood. From the heart to the body at large, and from the body at large back to the heart, flows the greater or systemic circulation, and from the heart to the lungs, and from the lungs back to the heart, flows the minor or pulmonary circulation. Similarly from the sense organs and the skin to the brain, and from the brain back to the muscles, flows the greater circulation of nerve energy, by which the movements of the body are adapted to circumstances in the outside world, and from the viscera and body at large to the brain, and from the brain back to the viscera and other organs, flows the lesser circulation, by which activity of function is adapted to bodily needs.' I know of nothing so overwhelmingly interesting as a conception of the multitude and vastness of the reflex activities which are going on in the human body, all, of course, the result of the liberation of energy formed by and stored up in the great centres and ganglia of the nervous system. Nerve cells are for the most part in a state of continuous activity, which in a measure seems to lead to the conclusion that their activity is of a dual nature—first, in reference to that which is induced and excited by stimulation, and secondly, that which is continuous and the subject of control; this conception of continuous activity *from the sensory side* is evidenced by some neuralgias. The phenomena of central neuralgia show that the sensory cells can evolve nerve force without stimulation, because the pain may continue after the nerves are divided, and on the *motor* side there is evidence of continuous activity by the

constancy of *muscular tone,* and as the so-called thought-readers have shown us, in the normal condition of a muscle there is almost perpetual movement. The hand seems to us quite steady, but the alert and sensitively-excited thought-reader detects vibrations, from the variations in which he gains information as to the state of the emotions. When the nervous system is *depressed* or *fatigued,* the rhythmic movements of the muscles become more obvious. Dr. Alex. Hill writes of the cerebro-spinal axis being worked upon the block system, one impulse restraining, or diminishing, or inhibiting another. He states: 'The nervous molecules are never still; activity in any part affects the movements in all the rest; the passage of one set of impulses is accompanied by the blocking of neighbouring routes.' We can fairly accept any number of lesser systems as being associated with, and contributing to, the nervous system of Man.

Dr. Hill gives the following case as an instance of the blocking system, or blocking action, of the brain.

'It happened to me once at the seaside to see a girl who was bathing, and had wandered some fifty yards from the shore on to a sandbank, overtaken by the tide. The water was too deep for her to walk, it filled her chest, and before anyone realized that she was in difficulties, she was floating insensible, face downwards. Her father had been bathing with her, but had already entered his machine. He ran down the steps, and, holding his towel in front of him, shrieked to the people on the beach to save his child; but although a good swimmer—although, as he told me afterwards, he loved his only child so dearly that he could not have lived had she been drowned—he made no effort to rescue her. Why not? Because he had taken off his bathing drawers. The sentiment of modesty in this man—a clergyman—was so strong that it blocked the most urgent impulses to movement, backed as they were by parental love. Shock, as in railway accidents, etc., is often

the cause of a blocking action of the brain, giving rise to contractures and such-like muscular deformities, which are really inexplicable by any other mode of reasoning, and are too frequently assigned to malingering or to hysteria. In hypnotism or the hypnotic state, we find that the most supreme centres of the brain cortex are cut off from the lower cortical centres, and from lower centres still which are associated chiefly with motion and sensation. By this means volitional control is in great part blocked or held in abeyance, with the result that the sensori-motor processes are quickened and greatly increased in activity. We have before taken notice of this law, which seems to obtain throughout the central nervous system. '*The higher controls the lower, and uncontrolled the lower passes into a state of increased action.* Now, what do we find in the somnambulistic stage of hypnotism? The senses are not merely awake, but quickened to an extraordinary degree. Subjects feel the cold produced by breathing from the mouth at the distance of several yards; vision may be doubled in range and sharpness; smell may be developed, so that the subject is able to discover by its aid the fragments of a visiting-card which had been given to the subject to smell before it was torn up; hearing is so acute that a conversation carried on beneath the floor below may be overheard; and memory sometimes displays hyper-excitability. This merely illustrates a phase of hypnotism, where the faculties are exalted and where volition is suspended.

This *will-blockage* is well illustrated by the following example. A puritanical old lady, to whom dancing was an abomination, when under the influence of hypnotism, was sent capering about the room by playing a reel tune upon a piano, and telling her to join in the dance.

The following anecdote is interesting, as it seems to illustrate the blockage possibly through funk and auto-suggestion of the supreme brain centres, as well as those of sensation and motion. A French soldier was known to

pass a whole night on the field of battle, afraid to move lest he should bleed to death, believing that the lower part of his body had been shot away. He was found standing in a hole made by a cannon-ball, which had simply passed under him, carrying away the earth in its progress. The awful conviction that the shot had cut him in two was so real that, to all intents and purposes, as far as he himself was concerned, he was only half a man, so long as the suggestion lasted.

The late Dr. Braid of Manchester, who certainly knew as much of the physiology of the hypnotic state as we do now, writes as follows *on the physiology of fascination* (Monoideology), having a most direct bearing on blockage and inhibition of supreme centres, in reference to volition :

'The law upon which these phenomena are to be explained has long been familiar to me, from observations made during my investigations of hypnotic and mesmeric phenomena, and it is simply this : That when the attention of man or animal is deeply engrossed or absorbed by a given idea associated with movement, a current of *nerve force* is sent into the muscles, which produces a corresponding motion, not only without any corresponding effort of volition, but even in opposition to volition in many instances, and hence they seem to be *irresistibly* drawn or *spellbound*, according to the purport of the dominant idea or impression in the mind at the time; the *volition is prostrate;* the individual is so completely *monoideized* (one dominant idea) or under the influence of the dominant idea as to be incapable of exerting an efficient *restraining* or *opposing* power to the dominant idea.' As an illustration he speaks of the bird spellbound by the serpent ; it is first curiosity, then wonder, which arrests the creature's attention, and then fear causes that monoideo-dynamic action of the muscles which involuntarily issues in the advance and capture of the unhappy creature.

The consequence of *concentrated* attention becomes

intensified in a correspondingly greater degree, whatever influence the mind of the individual could produce upon his physical functions during the waking condition, when his attention was so much more diffused and distracted by other impressions. Moreover, inasmuch as words spoken, or various sensible impressions made on the body of an individual by a second party, act as suggestions of thought and action on the person impressed, so as to draw and fix his attention to one part or function of his body, and withdraw it from others, whatever influence such suggestions and impressions are capable of producing during the ordinary waking state should naturally be expected to act with correspondingly greater effort during the nervous sleep, when the attention is so much more concentrated, and the imagination, and faith, and expectant ideas in the mind of the patient are so much more intense than in the ordinary waking condition. Braid says he is persuaded that the real object and tendency of the various processes for inducing the state of hypnotism is obviously to produce or induce a state of abstraction or concentration of attention—that is, a state of monoideism—whether that may be by requesting the subject to look steadfastly at some unexciting and inanimate thing or ideal object, or inducing him to watch the fixed gaze of the operator's eyes, his pointed fingers, or the passes or other manœuvres of the mesmerizer.

Before commencing the consideration, which I propose now to do, of the signs and symptoms of the exhaustive effects upon the nervous system of the toxine of influenza, I thought it advisable to make the brief allusion which I have done to some few of the leading points in connection with the central nervous system, in regard to its working and modes of operating.

The *effects of influenza* are not the same upon every individual; in some cases its grip-like seizure is most marked in its influence upon the highest level of the

cerebral system, made up of the centres of the prefrontal lobes (highest motor centres, motor divisions of the organ of mind—*Jackson*), or upon the lowest or first level (cranial and spinal nerve level), including the cord, medulla, and pons.

We will take the highest level first, because it has specially to do with those intellectual processes which, in association, form the mind of the individual, and the functioning of whose centres gives rise to *consciousness*, and to other conditions which we can deal with as *mental phenomena*—the emotions and the feelings. It is not self-evident how and in what way mental phenomena result from physical activities; nevertheless, as the outcome of practical observation, we know they do, and we can no more exclude the circulation from the physical activities necessary to healthy intellectual development, than we can the fact that a poisoned blood or defective circulation will give rise to mental states of an abnormal and insane nature; and I do not for my own part see so much difference between the mind as a function of the brain, or the mind as the outcome of the functioning of the brain.

DEPRESSION.—In a very large number of cases of influenza, one of the most marked features is depression, leading to dejection and despondency, which in some takes a form of the profoundest misery and despair, really painful to witness; and the most robust are not unfrequently the victims to this state of supreme unhappiness. The condition of the nervous system here is similar to the state produced by shock the effect of accident, which we know frequently causes so much disturbance of the nervous system. In each case we find *defective will-power*, *sleeplessness*, *troublesome dreams*, and a temperament *capricious* and *explosive*. I have seen men, within twenty-four hours of taking the influenza, sob like children for hours together as though their hearts would break. I have not taken the trouble to examine such patients for hysterical stigmata, but it is quite possible

such would be found if sought for. This emotional depression is most probably due to some disorder of the working of the highest nerve processes, owing to the low tension of the energy, which not only obtains there, but which exists throughout the whole of the nervous system, and with this diminished tension is associated a slackened activity of function everywhere. The complete loss of appetite, with loathing of food and a furred tongue, are almost constant accompaniments of this state.

Many a man with an active intellect has gone to bed with influenza, and at the end of a week has been unable to collect his ideas to write a letter; I mean, without his having suffered from any manifest grave lesion.

In such as these we certainly find suicidal impulses arise; but they are not common, and when they exist the patients have generally suffered from continuous brain strain and stress for some time previous to infection.

Cases of this kind, however, require careful and almost special treatment, as they are particularly liable to become subject to nerve exhaustion and brain fatigue, with their accompanying troubles and ailments.

SLEEPLESSNESS.—I have stated that these patients suffer from disturbed sleep and absence of sleep, which must be corrected, or the feeling of utter helplessness and prostration will continue. I have no hesitation in saying that from eight to ten hours' sleep, profound sleep, effected by morphia, acts like a charm in these cases, removing depression, *whilst any form of stimulant or tonic treatment is worse than useless, and very frequently harmful.* If it be needful to give the body complete physical rest, surely it must be still more important to secure physiological rest for the brain; and this is a point in treatment which never ought to be lost sight of; nothing recuperates the nervous system like a good dose of genuine, dreamless, unadulterated sleep. There is an accumulation of potential

energy during sleep; and the freshness and vigour of body, the clearness, brightness, and activity of the intellect after a *good* night's rest, are indicative of power and capacity for work. In health, fatigue and sleep go hand in hand; in disease, fatigue and unrest also go hand in hand. Sleep is looked upon as the diastolic phase of cerebral activity, and during sleep there is diminished excitability of the whole nervous system, the lessening of all functional activity. Heart, respiration, gastric, intestinal, heat, secretion point to this, and the same holds good of corresponding nerve centres, and of the reflex excitability of the spinal cord. There is all the difference between superficial and deep sleep; the deeper and more wholesome the sleep the longer it lasts.

In the treatment of sleeplessness, when due to the exhaustion of influenza, we should be careful to make a proper selection of the drug to be employed. I prefer opium and its preparations to all others, because drugs of the class of phenacetin have a tendency to produce the slow liberation from the brain centres of a continuous and prolonged flow of energy of low tension, leaving the cells pretty well deficient of activity, so that in physical phraseology 'the human battery gets run down'; and so long as sleep endures this running-down process continues, and may lead on to exhaustive delirium, coma, and dissolution. Even sulphonal, which under ordinary circumstances is a very simple and non-deleterious drug, has sometimes in the sleeplessness from influenza produced the most utter fatigue, and prostration of an alarming nature, and it is interesting to find that many observers have noticed like effects. Dr. John Grant, of the United States Army, sends to the *Boston Medical and Surgical Journal* two instances of inconvenient and alarming symptoms, where twenty grains of sulphonal had been administered. The first patient, a married lady, suffering from influenza with chest symptoms, after a week's illness considered herself convalescent, but,

as she was still sleepless, twenty grains of sulphonal was given in hot water. In a few minutes profuse perspiration followed, and the patient sank into what appeared a profound sleep. Next morning, however, she awoke unrefreshed, and in such a state of prostration that she was unable to turn in bed without help, on account of muscular weakness. The patient was unable for some days to leave her room, but ultimately recovered. The second patient, who was also convalescent from influenza, but suffered from slight excitement and sleeplessness, was given twenty grains of sulphonal at bedtime, with the same almost immediate effect, and the next morning he was in a condition of similar prostration, almost unable to move a limb, and suffering severely from a feeling of constriction in the head, with a weak, compressible pulse. I think cases like these are of great teaching value, both from the scientific and clinical aspects, and serve as lessons for our practical guidance, and they certainly bear out the truth of Professor Huxley's remarks, namely: 'That it would be simply manslaughter for a doctor to treat his patients on the new and undigested principles of physiology.' Medicine must not be looked upon as *mere science;* it is wisdom and experience sublimated from many sciences, or, in Broussar's words, 'The real physician is the one who cures. Observation, which does not teach the art of healing, is not that of a physician, it is that of the naturalist.'

MORBID MENTAL PHENOMENA.—From defect in the normal activity of the mental processes, we find a partial absence of that natural vividness and healthy tonus concomitant with the intelligent functioning of the sensitive areas of the gray matter of the convolutions; the tide of nervous energy seems continuously to be at the ebb, and its expenditure, slow and fitful, is attended by marked depression of the mental faculties which characterize the virtues and the attainments of man's understanding. *Distrust* and *disgust* frequently reign supreme; *self-confi-*

dence is known only by its absence; and the domains of space, time, and matter are questions of no moment. The patient seems to be dreaming in an atmosphere of dim twilight, unawakened by the ordinary impressions which usually charm, or gladden, or excite the heart of man. Consciousness and feeling and thoughtful life are for the time in a state of arrest or inertia.

A patient under such conditions is incapable of adapting himself to the ordinary environments of life. There is clearly defective appreciation, and the powers of control and resistance are alike defective. That this is no theory or myth is well known to physicians who give their attention to mental alienation. This state somewhat resembles that of old age, where the nervous structure has lost its plasticity, and free energy is not only diminished, but resistances are created which, when acted upon by diminished forces, fail to yield, and blockage is the inevitable consequence. This diminished physical inactivity has its mental equivalent in lessened activity of mind as well as of body, formative, secretive, eliminative, and motorial. It is well to bear in remembrance that in the majority of cases of exhaustion from influenza the nutritive processes are in part retarded, so that a man may have the appearance of being robust where there is decided want of vigour and sustaining power. But we do not always get that loss of weight which usually accompanies distinct melancholia. We infer, therefore, that the metabolic processes are in like manner sluggish with the universal functioning of all tissue. It is not common to find delusions of a pronounced and positive kind; still, if sought for, they will not unfrequently be found, although the patient will readily enough admit that they are merely passing results of temporary derangement of his imagination. By gradual and appropriate stimulation, by peripheral excitation of the visceral and vaso-motor nerves, reacting upon the spinal and cerebral centres, these patients rapidly recover. On the other hand (and I have

no doubt most physicians will agree with the assertion), I have seen many sufferers from influenza presenting anomalies of mind which may be called *mental ailments*, existing one or two years after the original attack ; and although I am willing to admit that time and change are potent factors in the cure of these cases, still we must not forget (and experience proves this), the longer they last the more likely they are to become chronic, and lead on to absolute and confirmed mental derangement.

This is, of course, a mere shadow-like fragment of this important subject, and it is not meant to be anything more.

HEADACHE pure and simple, as the term is generally understood, can scarcely be looked upon as one of the sequelæ of influenza, therefore it will not receive more than passing notice. It is, in fact, one of the initial symptoms, and is continuous when it exists with the fever stage ; as the fever subsides, so, as a rule, the headache subsides also. It varies in intensity, like all the other symptoms of this disease ; it is often strikingly severe and agonizing in its character ; it may affect all the head, but its usual seats are the front and the back of the head ; suddenness of onset and intensity is its peculiarity. There is, I believe, evidence to prove that it is congestive in some cases ; but this is certainly not the rule : although meningitis, and even cerebritis, may occur, they are exceedingly rare. A physician was telling me of a little patient about twelve years of age who was under his care for influenza, and who suffered from an acute and aggravated form of headache for four days ; the symptoms became so exaggerated and non-yielding that he became suspicious about the existence of inflammatory mischief. However, he decided to give the child five grains of chloral every four hours, with the result that the child slept soundly, and awoke absolutely free from pain. I have seen patients suffering in a similar way, even to delirium, completely relieved by sleep after a full

dose of morphia, and, as before stated, I prefer the use of morphia to any other sedative. It has been proved that, according to the persistency of the headache, and high temperature locally and bodily, we are justified in concluding that a true inflammation does exist, which might lead to degenerative changes.

THE NEURO-MUSCULAR APPARATUS.—We now come to the consideration of the motor area of highest level, and of the middle and lowest levels of the nervous system, as they are influenced by the toxine of influenza. These levels comprise the nerve systems of the spinal cord, brain, and medulla, and the so-called motor and muscular sense areas. In briefly going over these levels or systems, I shall draw attention to those changes of function which are almost common to influenza, 'specially in nervous matter, and by sympathy and continuity in muscle.' The whole of the neuro-muscular system consists of the batteries or nerve cells for the generation of energy, the nerves for the to-and-fro transmission or conduction of energy, and the motor end-plate in the muscle for the diffusion and distribution of the energy, and the muscle itself, which becomes impressed for volitional contractility, and stimulated for ordinary automatic and reflex movements. (It must, I should think, be admitted that from shock to the nervous centres the liberation of energy is greatly retarded, not only on account of central inhibition, but also on account of increased resistance in the tissue of the muscle.) Streams and currents of energy are constantly flowing at a low potentiality from nerve centre to muscle, and from muscle to nerve centre, and according to the activity of the centre so should be the activity of the muscle, and vice versâ. The nervous arc, as we have seen, must be complete and continuous (nerve centre, nerve, and muscle), and the nervous process must be made up of an ingoing current, passing along the nerve to its centre, and the discharge of energy from the centre forming the outgoing current to the muscle. In speaking

of a current of electrical energy, we speak of its tension being high or low, and we speak in like manner of nervous energy, which in passing along a living nerve increases in intensity so long as the axis cylinder be healthy, and insulation complete. Cortical sensori-motor areas are representative of muscles in movement, and are the centres in which muscular movements are arranged, so that each motor nerve cell probably represents a series of muscular fibres, each producing the same effect by its contraction, and each motor nerve cell in the cortex may be said to represent a primary element in movement, and certainly in *volitional movements* and *muscular sense*. Anyone who takes the trouble to study the nervous system as a *simple apparatus* for the conduction, transmission, manufacture, and evolution of energy, will readily perceive from the foregoing statements why it is that in influenza we have such an infinite variety of functional defects, some serious, and others less vitally important. When the *muscular sense* area of the motor cortex is in a state of positive or initiative lesion, through the toxine of influenza, we find decided interference with ordinary normal *muscular control*, in combination, of course, with defective *voluntary* or *purposive* movement, normal muscular sense being, in fact, a conscious sensory impression, preceding in point of time a voluntary muscular movement, and determining the precise amount of muscular effort.

Sense impressions of movement preceding the sequential motor act have for some time been known under the name 'Kinæsthesis,' which indicates *sense* of *movement*, *strain*, *effort*, and the *like*, or, to use the words of Dr. Bastian, who puts the matter very clearly in the following sentence: 'A movement may be called *voluntary* if the outgoing impulse is preceded in mental time by a conscious idea or conception of the movement to be performed.' I draw attention in this superficial way to the sensori-motor area of the convolutions, because undoubtedly volitional acts are

formulated in this region, and in the exhaustions (many and various) following influenza, none are more common than those which we find associated with the neuro-muscular apparatus and *conscious volition;* and it is quite possible that mental alienations are primarily due to some defect (tension, strain, stress) in the normal working of the centres in this area. Although physiological investigations have not as yet given us a direct clue to the mode of connection between the functioning mentation process of a conceptual ideation of voluntary movement, and the functional activity of a kinæsthetic centre, still we have every reason to conclude that such connection does exist. It is, therefore, fairly reasonable to infer that a paretic condition of the kinæsthetic centres, producing as it must do volition distress (strain and tension), may, and in fact does, lead to a similar state in the evolution of what should be the normal and correlative integrity of mental ideational processes, and the thoughtful, intelligent powers of reasoning. We are certainly not quite clear concerning the psychological definition of volition, and we are unquestionably at a loss when we endeavour to define by lines of demarcation the differentiation between a volitional or purposive, and reflex or automatic, act.

What evidence have we to come to the conclusion that the sensori-motor area of the cortex of the brain has undergone derangement by the toxine after influenza? It is true we have no muscular paralysis, but it must be borne in mind that paralysis does ensue after this disease by recurrence. I have seen it in a few cases, and the following are instances. A lady, about thirty-eight years of age, consulted me for an ordinary condition of writer's cramp, with which she had been afflicted and *cured* about two years previous to the attack of influenza. When the attack of influenza had subsided, she found, to her surprise, that the writer's cramp had returned, and she was unable to write more than a few lines. A gentleman, fifty-three

years of age, consulted me for a weakness in his right arm and leg. He had suffered from a complete right hemiplegia when forty-four years of age ; but the paralytic condition rapidly subsided, and at the time of the influenza coming upon him he could move the arm and leg with perfect freedom ; after the influenza the right side was so weak that his power of grasp was exceedingly feeble, and he could not put his hand to his head. A gentleman, thirty-seven years of age, consulted me for a paralysis of the right third nerve (drooping of eyelid and contraction of pupil), with some symptoms of locomotor ataxy. He said that he had suffered from tabes for twenty years, but the symptoms were never very aggravated. He had a similar condition of the eye when his condition was first diagnosed, but it passed off in a few days, and had not returned until after the attack of influenza. Now, we often find after influenza defective *muscular sense*, defective *muscular control*, defective *purposive* and *voluntary power*, and defective *ideation*.

It is, of course, impossible in this purposely short article to enter minutely into these conditions, and give evidence of these states by cases, etc., but any medical man in large practice must have seen numerous examples. Take a good billiard-player who, after an attack of influenza, fails in making an average break. I have seen several such men, and they invariably say, 'I cannot feel the cue properly ; my muscles don't seem to act, and the more I try, the more ridiculous it seems.' These patients have for the time lost their normal power of control, their *muscular sense*. I have also seen similar failures in players of tennis and golf. With regard to volition, from its psychic aspect it is at times peculiarly defective and deranged, of which I have seen several interesting examples. A gentleman who had recently recovered from influenza had some important business to attend to in Liverpool, and, although in apparently good physical condition, nothing could induce

him to undertake the journey; his *desire* was to go, and he made several attempts, but failed.

A gentleman habituated to extensive correspondence, after recovery from influenza, was unable to write a line, from defective volition, certainly not from muscular fatigue, and his powers of ideation were fairly active.

A physician who had just recovered from influenza commenced to visit his patients, and upon writing the prescription found his brain an absolute blank, and he could neither think nor write. Physiological investigations into the functions and functioning of certain areas of the brain have helped the clinical physician very greatly to unravel these somewhat mysterious manifestations.

NEURALGIAS.—What might be called paretic neuroses and neuralgias are common, as one may suppose; but they are essentially functional, and due to low tension energy and exhaustion, and they do not differ from other forms of neuralgia due to exhaustion. I have never met with nerve degeneration as the result of influenza.

HEART FAILURE is the most unfortunate of all the exhaustions of influenza, and its consideration is of the most intense interest; in part because the heart muscles are the connecting link between the volitional and the automatic. The whole subject is of some complexity; its literature is vast and ever extending. My allusion to this matter must be brief. 'The *force* by which the blood is made to circulate is supplied by the heart muscle (systole and diastole).' '*The normal beats of the heart depend partly upon the maintenance of a due tonic condition of the muscular tissue. That tissue is capable of "variation" between "two extreme" conditions: that of extreme "atonicity," which gives rise to the phenomena known as "diastolic," or I should prefer to call it "atonic standstill"; and that of extreme tonicity, characterized by the "systolic" or "tonic standstill."*'—Gaskell, Roy. Soc. Proc. Each cardiac motor cycle consists of contractions and relaxations. The movements of the heart may be

retarded or accelerated through nervous channels. This is a point for attention. The nervous supply of the heart is derived from the medulla oblongata and cord, through the vagus and sympathetic. The atonic, or relaxed, or exhausted condition of the heart is that of variability, and degree of variability of diastole over systole. The force of each contraction is diminished, whilst the cavity of the ventricle is no longer closed. Exhaustion and failure represent hyper-diastolic 'activity,' which is the reciprocal of hypo-systolic 'inactivity'; and woe to the heart which is found to 'stagger' between these opposing states of vaso-constriction and vaso-dilatation, for failure is too frequently the result.

The experimental physiology of the day, and clinical observation, leads pretty well to the same conclusion, that the beat of the heart is the result of stimulation from intrinsic cardiac ganglion cells acting upon the excitable muscle plasma and contractile tissue of the heart muscle.

'The vaso-*inhibitory* and the vaso-*motor* cardiac nerves leave the central nervous system, the former among the fine medullated nerves which characterize the formation of the cervico-*cranial* rami vesicuales into the *distal* ganglia, the latter among the fine medullated fibres which characterize the formation of the *thoracic* rami vesicuales into the proximal ganglia of the heart' (Gaskell).

It is a question for consideration in heart failure whether it be due to defect in the strength of the stimulus coming from the central nervous system, or whether on the other hand it be due to some defective or resistant agency in the normal receptivity of the heart muscle.

In the heart failure accompanying an attack of influenza, we are naturally led to conclude that the toxine exercises its influence upon the vaso-inhibitory cardiac nerves, and that the vaso-motor cardiac nerves being in this way uncontrolled, rapid action ensues, leading to failure and exhaustion with characteristic frequency, rapidity, and

compressibility of the pulse, a state similar to that produced by the administration of atropine, which in effect is equivalent to an interruption between the vagus nerve and the heart. It is just as possible for the toxine of influenza to paralyze the intra-cardiac inhibitory apparatus, as it is for atropine to do so; the former, however, being cumulative in serious cases, the paralysis is so profound and continuous that the vaso-constrictor centre becomes finally and completely arrested.

THE END.

Baillière, Tindall & Cox, 20 and 21, King William Street, Strand.

Second Edition, just published. 400 *pp.*, 8*vo.*, *with over* 60 *Illustrations.*
Price 7*s.* 6*d. post free.*

LECTURES ON
MASSAGE AND ELECTRICITY
IN THE CURATIVE TREATMENT OF DISEASE.

By THOMAS STRETCH DOWSE, M.D., F.R.C.P. Edin.,

Formerly Phys. Supt. Central London Sick Asylum, Associate Member Neurological Society, New York.

SUMMARY OF CONTENTS.

Extracts from Press Notices.

'Dr. Dowse is to be congratulated on the production of a work which brings the subject of masso-therapeutics up to date, and which is likely to bring this method of treatment prominently under the notice of practitioners in this country, who are, to say the least, distinctly blameworthy for the apathy with which this most important therapeutic agent has been regarded. It is sincerely to be hoped that medical men will soon rise to the conception that massage and electricity are valuable therapeutic agents if carefully used, that a masseur or masseuse is made, and not born, and then, perhaps, those unfortunates who can be benefited by massage, employed in a rational way, will have a chance. Taken as a whole, Dr. Dowse's Lectures are in every way worthy of careful study, and can be very strongly recommended to those who wish to become more conversant with two such important methods of treatment as massage and electricity will eventually come to be regarded.'—*Glasgow Medical Journal.*

'We think the book might be of considerable use to anyone wishing to make himself acquainted with the subject of which it treats.'—*Medical Press and Circular.*

'These lectures form an excellent treatise for those in the profession desirous of becoming more practically acquainted with a branch of medicine ever useful and of growing importance. The whole question of when massage does good and when harm, how it acts, and the allied subject of feeding are discoursed on agreeably, pointedly, and impressively. How massage is not taught the reader will discover in these pages, when Dr. Dowse reproduces the advice to his class given by a celebrated physician—advice which is in every respect dangerous and wrong. The principal value of Dr. Dowse's work lies in the careful analysis he makes in regard to what cases are unfitted for the rest-cure. Also, in regard to diet, he gives us some rules by which we may avoid the error of indiscriminate and improper feeding. The cases given throughout the book are narrated in that graphic style which only an Englishman seems capable of attaining. The illustrations are profuse, and really give one an idea of the method of procedure in true massage.'—*Therapeutical Gazette, Philadelphia.*

'Dr. Dowse's work is exceedingly opportune. Ably constructed, modestly written, and admirably expressed, from the first page to the last, this book is one which should be not only referred to, but attentively studied by all medical practitioners and students who can read English.—*The Monthly Magazine of Pharmacy.*

'The drawings are well done, clear, and explanatory, and add greatly to the value of the work.'—*New York Medical Journal.*

'Lecture VII. teems with practical hints and observations, which only those who have had such cases under their care will be able fully to appreciate. Lectures XIV. and XV. are models of concise writing.'—*Pharmaceutical Journal.*

'The present excellent volume will do much to give massage its rightful place in the Medical Armamentarium, and free it from the clutches of charlatans.'—*Glasgow Herald.*

'The author has treated his subject in the most painstaking manner possible, and this work may be looked upon as consisting of practical lessons in the art of massage. Those who wish to get a thorough knowledge of this form of treatment cannot do better than make these pages serve them as tutor.'—*Herald of Health.*