

## **Nervous exhaustion : its causes, outcomes and treatment.**

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# NERVOUS EXHAUSTION

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TYRRELL





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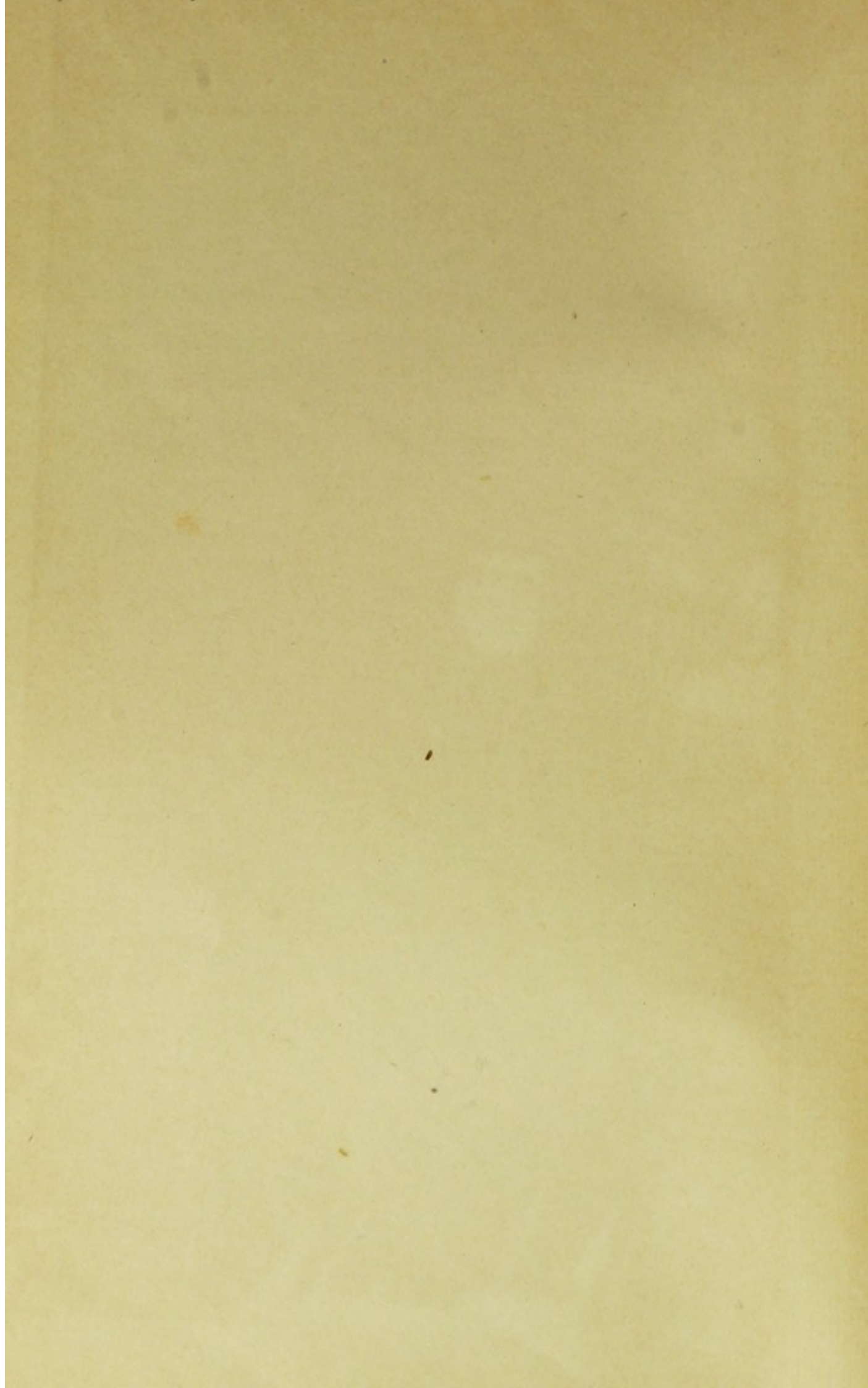
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SECOND EDITION.

*Greatly enlarged, and partly re-written.*

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# NERVOUS EXHAUSTION

ITS CAUSES OUTCOMES AND  
TREATMENT

BY

WALTER TYRRELL, M.R.C.S., ENG.,

*Author of Tonic Treatment of Epilepsy and Kindred Nervous Disorders," and "Gout, Its Nervous Origin,"*

AND

GUY TYRRELL, L.R.C.P., M.R.C.S., D.P.H.

"The neurotic diathesis is fundamental, its outcomes are various."

—DR. MAUDSLRY, *Pathology of Mind*

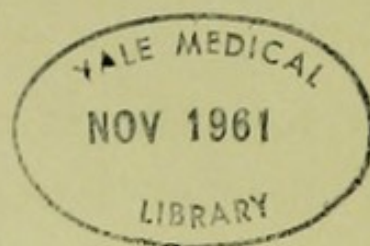
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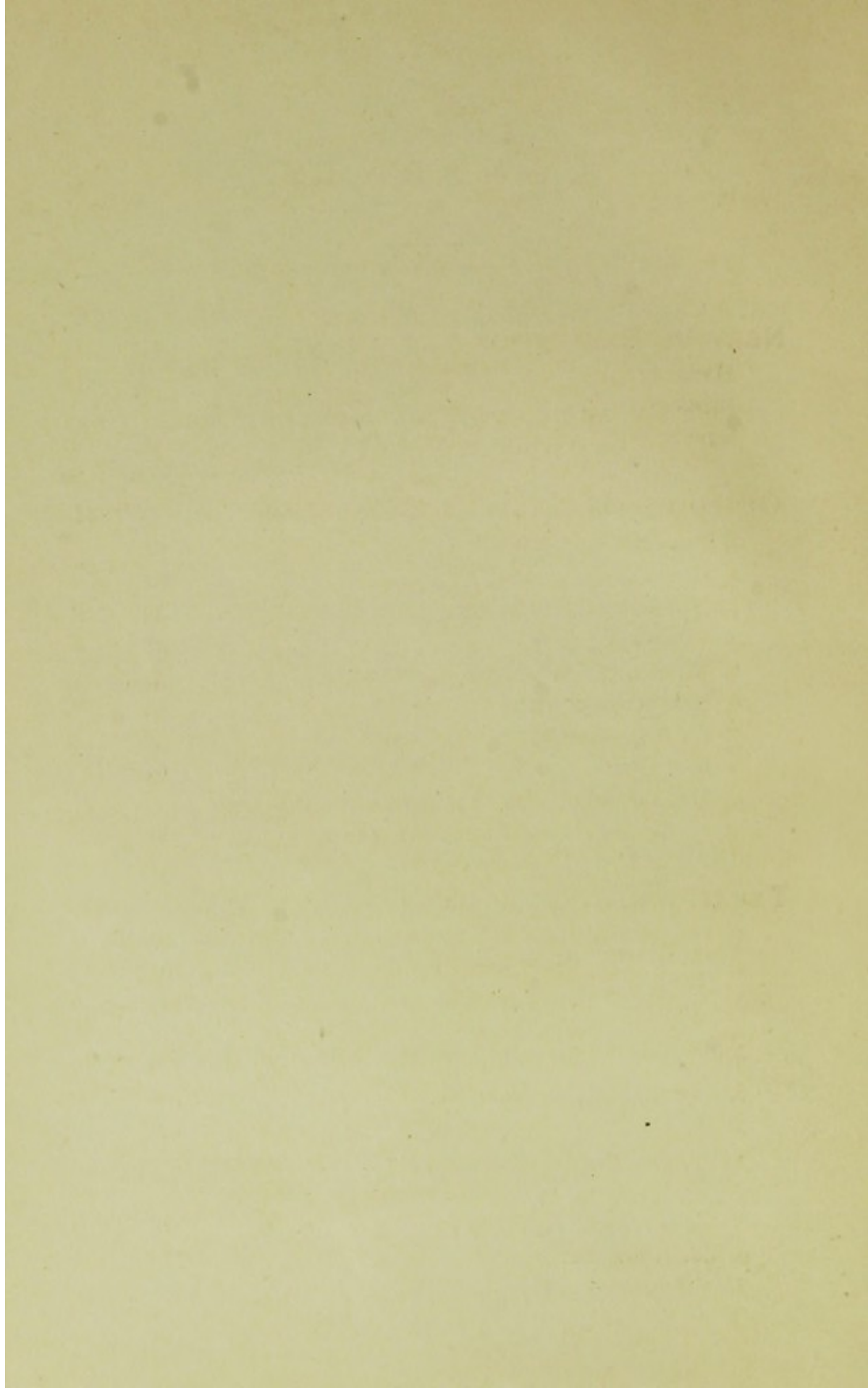
VIRGIL'S advice — “*rerum cognoscere causas*” — should surely be adopted by those who undertake the treatment of Disease; for in the faculty of passing by symptoms, and detecting underlying and often widely-differing causes, lies a large proportion of success in Medicine. This little work is an effort to trace back to their primal origin a group of diseases which, varying considerably in their ætiology, are yet clearly traceable to one identical causation.

I have also endeavoured to show how largely hereditary influences affect the existence of those disorders, and that for this reason any curative measures must be directed towards the gradual restoration of the nervous vigour, not to the mere alleviation of symptoms which are simply the outward and visible manifestations of a deep-seated failure of nervous vitality.

WALTER TYRRELL.

122 VICTORIA STREET,  
(2 ALBERT MANSIONS,)  
WESTMINSTER, S.W.

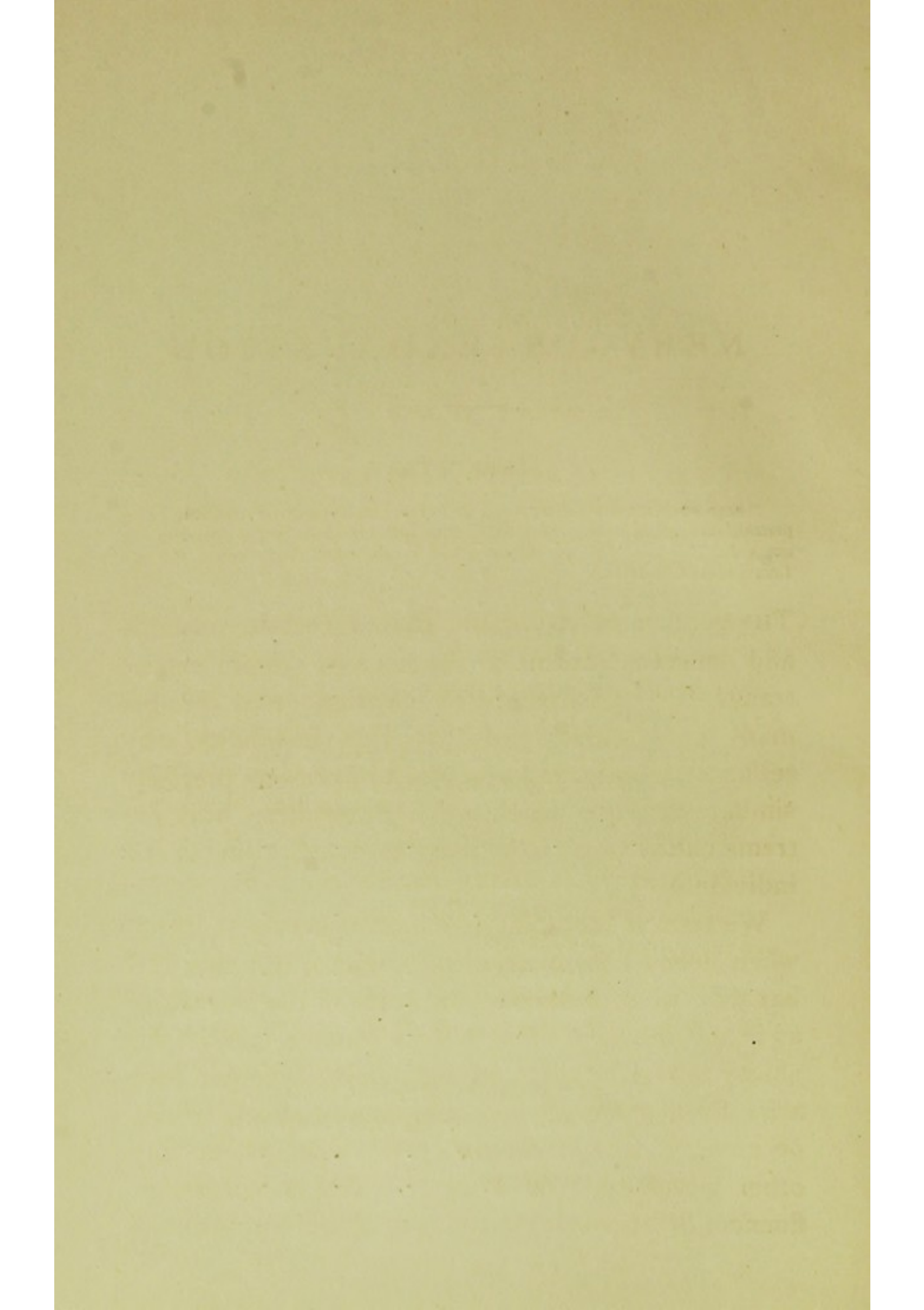
*August, 1893.*



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# NERVOUS EXHAUSTION.

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## HEREDITARY.

"Reproduction is to be regarded as but one incident in a continuous protoplasmic life, which makes a man continuous with his ancestry and posterity, and not a different being in any philosophical sense."—Dr. CLOUSTON'S Morison Lectures (1) *Lancet*.

THERE can be no doubt that a certain unstable and defective control of the nervous system can be transmitted from parent to offspring, often through many generations, and that this instability may resemble closely, and give rise to disorders precisely similar to those which we find resulting from extreme exhaustion of the nervous constitution in the individual.

We term it Instability, or want of nervous control, when derived from ancestral sources, Nervous Exhaustion when induced. In both, in the hereditary as in the induced, there will be found a marked inability to resist depressing influences—whether they arise from overwork of brain, mental shock, worry, or anxiety, from "sorrow, need, sickness, or any other adversity," or from the less important influences of atmospheric change, or rapid alterations

in barometric pressure. It is, in very many cases which come under our notice, difficult to say whether this hereditary default does or does not exist, so great is the difficulty of obtaining reliable evidence—either from reluctance on the part of the patient to admit any blot on the family history, or from real ignorance of the existence of any hereditary taint.

For my own part, I am inclined to believe that hereditary influence is a more or less important factor in almost all cases of disease which have their origin in lack of nervous control.

Indeed it would seem, if we consider the question, almost impossible that it should not be so, when we note how strong is the hereditary bias throughout the human economy: how we are able to trace likenesses, in form, or feature, in habit, or movement, in mental, as well as physical peculiarities, to remote ancestry. These hereditary traits must be due, to some extent at any rate, to a similarity of nervous constitution, and, if so, it is almost certain that the higher centres of brain which organise, control, and regulate, must share the strength or weakness of their ancestral types. If the faculties are alike, the brain which sets these faculties in action must have a similar constitution.

Strong evidence of the influence of heredity is to be found in the fact that numbers of infants are born with but a slight amount of nervous control, and manifest, from their very earliest days, plain evidence

of their unstable nervous condition. From this cause it arises that Eclampsia, or infantile convulsions, is so frequent among newly-born children. There is little or no innate power of resistance to slight causes of irritation, so that a trifling difficulty of digestion produced by improper food, or the process of dentition, or the presence of worms in the intestines, may be sufficient to force on convulsions. Now, as hundreds of children are submitted to precisely similar exciting causes, and only in a moiety do we find these convulsions to occur, it is evident that there must be, in those few, some deficiency of resistance which is not present in the majority; and it is equally certain, from the very early age at which these disorders ensue, that the deficiency must be a congenital and hereditary one.

Although it is impossible, from the obstacles I have already mentioned, to determine the exact proportion which hereditary influence has in the production of nervous disorders, yet it is admitted by all who have had large opportunities of observation to be considerable.

In endeavouring to detect the fact of hereditary bias, we must remember that it is not necessary that the disorder which we recognise in the child should be of the same nature as that which we are able to detect in the parent, for this nervous Instability has outcomes multiform in shape, and Protean in aspect, and these may interchange, so

that the transmitted taint may show itself in any one of these forms. Thus, an Epileptic or dipsomaniacal father may beget an idiotic son, or an hysterical mother may produce an Epileptic or maniacal child. And this intermingling of neuroses may appear also in the individual, so that not only may we see spasmodic asthma pass into Epilepsy, or at other times merge into morbid mental depression, but several various neuroses may appear grouped together in the same individual; or, again, in one family of unhealthy ancestry one child may be maniacal, another Epileptic, a third a Kleptomaniac.

It is difficult to say whether the effects of an actual lesion of brain, such as the giving way of a vessel, or the growth of a tumour, may or may not be transmitted to the offspring in the form of some of these numerous neuroses. There is some evidence to show that this may be so. At any rate, it is probable that a similar weakness of construction in the nervous tissues of the child may cause a breakdown of similar nature to that which we have already witnessed in the progenitor. That overwork of brain, or mental shock, leading to a complete prostration of the nervous constitution in the parent, will leave its mark on the nervous health of the children, is, I think, not to be doubted.

Again, the influence of environment on the nervous stability has to be considered. The animal

but slowly adapts itself to changed surroundings, and, no doubt, Man has not yet completely accommodated himself to the altered conditions of his life. Science has passed ahead with such rapidity, the last half century has seen such an enormous advance in the development of competition in commerce, in speculation, indeed in every department of life, that there can be little wonder if our nervous vigour is often found unequal to the strain of increased activity and excitement, mental and physical. No doubt, after a time, the nervous system will become adapted to the increased energy demanded of it, so that it will be better able to bear the excitement, rapid movement, anxiety, and competition, by which it is now surrounded. If we contrast the life of the ordinary professional or business man of the last century with that of one of similar pursuits at the present day, we cannot fail to be struck by the vastly greater demands made on both the mental and physical energies of the latter.

No doubt, those living in the large centres were at times subjected to spasms of business or speculative excitement; but even under these circumstances the general tenor of their life must have been calm in contrast with the whirl and vortex which marks the stream of business life of the present day. And it is not only the busy man who thus suffers; the pleasure-seeker, not content with home and its surroundings, seeks excitement far abroad, and demands longer

and later hours. The strain on the nervous constitution thus established has gone far ahead of the ordinary nervous stability.

#### INDUCED CAUSATION.

We are, I think, far too apt to undervalue the influence of exhausted states of the nervous constitution in the production of disease, and to elevate what are merely symptoms of the nervous failure into the unmerited position of diseases—to recognise and treat effects as though they were causes, just as, with the causes themselves, we are apt to class those which are merely the exciting, as pre-disposing or ultimate causes. For instance, we talk of a neuralgia being due to cold, or exposure, passing by entirely the condition of Nervous Exhaustion, on which the disease is really founded, and without which it could not possibly have arisen. No doubt, our ignorance in this respect is partly due to the defective knowledge which we possess of the working and inter-action of the several portions of the nervous machinery, especially of the occult economy of the centre of that system, the Brain, and the fact that its circulation is intangible and invisible. We recognise a local congestion of blood by sight, or touch, but we have no such simple method of detecting a congestion of nerve force. An anæmia makes itself evident, but we have no term even to express, what probably quite

as frequently occurs, a deficiency in the quantity, or quality, of the nerve current.

In the present day we gain our information as to the actual state of the body, in health or disease, from the condition of the circulation of the blood as manifested in the pulse and heart's action ; and yet side by side with this there is a far more important circulation, viz., that of nerve force, constantly going on, of which we are unable in any way to gauge or appreciate the vigour or deficiency.

The fact that the vascular circulation is itself under the control of the sympathetic system of nerves would appear to render our ignorance on this point still more deplorable ; for how can we arrive at correct conclusions as to the vigour, or real activity of the blood currents, when we are entirely in the dark as to the strength or weakness of the machinery that sets them in motion ? It is true we can form some vague estimate of the amount of nervous vigour from the contractility, or rapidity, of the pulse, but these are feeble methods compared with a real, scientific, knowledge of the strength or debility of the nerve current itself, a knowledge which I cannot conceive to be impossible of attainment. Surely some pains expended in a scientific research, which should have for its object the determination of the strength of the nerve currents in the human body, under the varying conditions of health and disease, would not be thrown away.

As the structure of the brain becomes gradually more and more highly organised, in consequence of a steadily-increasing demand for higher and more delicate functions, so, naturally, does it become more liable to derangement ; the delicacy of an organ is increased *pari passu* with its complexity. It is evident that only in this way we can account for the large increase, year by year, in the amount and severity of neural disorders. No doubt, the vast alteration in our mode of life during the present century has had much to do with the large and increasing amount of nervous failure. If we contemplate the vast development of activity in all forms of business, the extreme competition—for, prior to the introduction of the telegraph, any startling event which occurred at a distance, was, before the knowledge of it reached us, modified as to its results (as a business man would say, its effect was discounted), now, when the news of it comes upon us a few minutes after its occurrence, and before its real effects can be calculated, it is liable to cause panic ; if, again, we take the increase in the actual wear and tear of vital energy which railway travelling, and the constant hurry and turmoil of life have brought upon us, we shall wonder that the delicate and sensitive mechanism of the nervous system has so well and so long maintained its stability. Again, the amount of mental energy which is imperatively demanded, if we wish to reach even a moderate point of excellence ; the

extreme pressure which competitive examinations have thrown upon the brains of the young men of the present day, at the very time when such large demands are being made upon their nervous constitutions, for the completion of their physical growth, cannot fail to affect disastrously their future nervous vigour.

As the outcomes of Nervous Exhaustion are multiform, so the causes which may induce this condition are also many, and may be such as affect the mind or body; the former act more directly, and have a more permanent effect, as causes which affect an organ directly are more prostrating than those which act indirectly through the medium of the physical system generally.

The former, those prostrating influences which act directly on nervous centres, are found to arise usually in overwork of brain, in great anxiety, excitement, or worry. Long-continued anxiety from the illness of near relatives, combined with physical overstrain from prolonged watching, often with loss of sleep, is a most prolific cause. Again, overstrain of memory, or overstimulation of the imaginative faculty, are often found to disturb the balance of the nervous circulation.

The influence of fear or distress of mind upon the functions of internal organs is well known. The anticipation of a journey will, in persons of limited control, often produce diarrhœa; and the

menstrual regularity is almost always interfered with in convicts under sentence of death. These examples could be extended *ad infinitum*. The effects of physical prostration on the brain are also well known. Dr. Mosse, of Milan, in an excellent little brochure termed "*La Fatica*,"\* narrates how the quails, after their long flight from Africa to the Italian coast, are on their arrival almost blind—so much so that they are unable to see obstacles, even walls; they are also very stupid, and unable to avoid even the most evident dangers. If the brain of these birds be examined at such a time it is found to be extremely anæmic.

No doubt, great or greatly prolonged physical exertion produces in Man somewhat similar results. That excess or overstimulation does so, we have abundant evidence. We constantly see definite neuroses occur after prolonged loss of sleep.

Then, again, exhausting diseases, such as fevers, cholera, or the so-called influenza from which we have suffered of late years, leave their mark in extreme nervous prostration.

Cases in which extreme fatigue produced by great over-exertion, uninfluenced by other causes, results in nervous breakdown are rare; for it may be taken as a rule in the treatment of all these neuroses that a rapid exhaustion implies the possibility of a rapid

\* "*La Fatica*." Milano: Angelo Mosse.

restoration, but that a prolonged causation is only to be met by a long and gradual course of nourishment and repair. In treating of excess, the form most commonly met with is the result of over-stimulation by alcohol. This, if it has been rapidly effected, may be as rapidly cured, by the administration of full doses of nerve tonic ; but in old-standing cases it is less easy of cure : partly because of the difficulty of weaning the patient from the habit of overstimulation, partly from the deterioration of organs which ensues from long-continued alcoholism. Sexual excess is a very common cause of Nerve Exhaustion, and one which is at all times difficult to combat. It is very apt to influence youth soon after puberty, when it is probably one of the most prolific causes of constitutional failure. One of the most common sources of failure in nervous vigour in the female arises from too frequent, difficult, and exhausting parturition. Some women go on child-bearing until they have hardly "strength to bring forth," to say nothing of sufficient vitality to enable them to suckle, their offspring.

In many cases, when the children have succeeded each other with great rapidity, there is often a breakdown at a comparatively early period of life. But it is more often when the critical epoch of the cessation of the catamenia arrives that the nervous drain is liable to manifest itself. Indeed, the "pain and peril of childbirth" is sure, when too frequently re-

peated, to leave its mark in lowered vitality generally.

It is not always that symptoms pointing directly to breakdown of the nervous constitution occur; it may be a general loss of power, a deficient resistance to unfavourable conditions, so that cold, wet, and unhealthy surroundings generally are apt to give rise to acute or inflammatory affections.

No doubt nervous stability varies considerably at different times, not only being affected by depressing influences of climate or weather, but even within the limits of a single day. Thus it is found that neuralgia, and some of the other forms in which Nervous Exhaustion is liable to manifest itself, are exacerbated at night, when the patient is naturally lowered by the fatigues of the day. And it has been noticed by Dr. Prout and Dr. Handfield Jones that a marked increase in the amount of nervous disease is liable to follow an epidemic of any disorder which markedly depresses nervous vitality, such as cholera. This opinion is, I think, confirmed by the large increase in the number of neuroses which has followed the epidemic of so-called influenza in 1890-91. The poison, which I believe to be malarial, appears in this disorder to affect directly the principal nerve centres, thus causing intense prostration, and violent pains in the forehead and at the back of the eyes; there is also often intense excitability of the heart's action, with rapidly rising temperature; in other cases, the profuse and violent perspirations indicate a great dis-

turbance and prostration of the sympathetic system. No wonder if, after so great a shock to the nerve centres, secondary nervous ailments are found to ensue.

There are two periods of life at which, I think, failure of nervous control is most liable to exhibit itself in disease. Prior to puberty, motor derangements are apt to show themselves in chorea and Epilepsy; and the disorders of this epoch are, as might be expected, often traceable to the influence of heredity. The advent of puberty is fraught with peculiar dangers to the nervous equilibrium, and the derangements which then ensue are characterised by mental disturbance, often of a depressed or melancholic nature. The female is probably more prone to suffer at this period than the male. But it is when nerve power is commencing to wane, at the declining point of vigour, that we find the most frequent indications of nervous failure. The period of life at which this loss of power may commence is very variable—so much depends on the congenital constitutional power of the individual, and the degree to which he has retained, or exhausted, his native vitality and energy by hard work or excess. One man at 60 may retain an amount of mental and physical energy which another has exhausted at 40. Just as we note in the female that the critical period of life may arrive at an unusually early date, or—when the natural vigour is great and the constitutional

power has been well preserved—it may be delayed till long after 50. At whatever age it may arrive, the time when this failure of power begins is one fraught with danger to the nervous health and stability, and a time at which it behoves us to be especially watchful for any signs of collapse.

Now this period is, with many men who are occupied in commercial or professional pursuits, just the time at which they are most called upon for effort and exertion. It is a time at which success in one's avocation is at its zenith ; it is also, unfortunately, a time at which men are apt to recognise this success and to pursue it with renewed energy and vigour. Finding their capacity for business beginning to fail, that the clearness of brain and activity of memory which led to their early successes are no longer what they were ; and finding that stimulants rouse their failing energies into increased energy, they commence the fatal principle of working under pressure. This is especially liable to occur among that large class of persons who gain their living by the exercise of the imaginative faculties : writers, journalists, and others who have to supply, often at rigidly fixed times, a certain amount of matter from an often overworked brain.

And how few men do we meet who are content, when they find digestion flagging, to revise and alter their diet, that it may become adapted to their failing powers ; they are more apt to stimulate appetite

and assimilation by greater refinements of cookery and an increased allowance of alcohol.

### NERVOUS EXHAUSTION GENERALLY.

Depress nervous vitality below a certain point, and the result will show itself in irritability ; and this law applies equally to the centres and peripheræ. We see it in the anæmic, ill-nourished child, in the twitchings and jactitations of chorea ; and a reflection of the same condition is manifested in the irritable, changeable, and unhealthy mental state. The same irritability is also to be recognised in neuralgia ; for what is neuralgia but the passage down a track of sensory nerve of an amount of nerve force of excessive violence, thus showing an irregularity and irritability of the circulation, just as in other cases we find large tracks of mucous membrane showing extreme sensitiveness and irritability. No one who has seen much of nervous disorders could fail to recognise restlessness as one of the prominent symptoms of loss of mental control, restlessness, not only physical but mental also, manifesting itself physically in the pacing to and fro, the wringing of the hands, the inability to remain quiet in any way, and mentally in the indecision and contrariness which accompanies these unhappy conditions of mind.

The first evidence of failure of brain power, whether it be induced by over-strain of the physical system, by long-continued illness, by over-fatigue, or the exhaustion of the brain itself from over-work or over-stimulation, is often to be found in a defective power of resistance to slight causes. The sufferer finds that he is more easily affected by sudden alterations of weather; that heat, cold, and rapid atmospheric changes, produce results which were formerly unknown to him; that mentally he has become more emotional, has less power of decision, and that his disposition, from being firm and energetic, has become changeable and apathetic. He finds also that the small worries and anxieties of daily life begin to assume larger and larger proportions; there is increased irritability, and a lack of power to dispose and put on one side slight causes of irritation: they remain ever present to him, preventing sleep, and arousing causeless apprehension. If, recognising these changes, and attributing them to their right cause, he takes measures so to alter his mode of life that the evil influences are put on one side, all will be well. But if, in spite of the warnings—or, perhaps, failing to recognise the true source and significance of the symptoms from which he is suffering—he continues to urge flagging nature by stimulation, or extra exertion, worse things befall him. He soon finds that digestion begins to fail, and that not only the stomach, but also other

organs, especially those of elimination, begin to perform their functions imperfectly. If we reflect for a moment what this failure involves, we shall soon see how rapidly such a patient must deteriorate. Of course, deficient digestion means imperfect nutrition, imperfect nutrition implies deficiency in the quantity and quality of the blood ; this, in its turn, means imperfect nourishment of brain, which, again, involves a defective nervous supply to every organ of the body. And where elimination is imperfectly carried out, other more acute troubles are soon added. The retention in the blood of waste matters which should be disposed of by the liver, the skin, or the kidneys, gives rise to a poisoned condition of blood, the so-called gout—the popular complaint of the day, which arises (as I have endeavoured to show in my little brochure entitled *Gout, its Nervous Origin*\*) solely and entirely from defective nervous vitality.

As these failures of nerve force are found to occur in men at or about middle age, so in women they are found more commonly at or about the period of cessation of the catamenia—which is not inaptly termed the critical period of life. At this time, as at the on-coming of puberty, marked changes take place not only in the physical, but also in the mental states, and these revolutions are not unattended with

\* "*Gout: Its Nervous Origin.*" Published by THOMPSON, Bookseller, Church Street, Great Malvern.

danger to both mental and physical stability. It is not infrequently the case, in consequence of a decline of nervous vigour, that the regularity of the monthly period may be much interfered with prior to the date of its actual cessation, just as we see its on-coming delayed at puberty from the same cause. In both cases, violent and often sudden disturbances of the nervous balance are apt to occur, and these may take the form of mania or convulsion; in others there is a marked depression or despondency, with or without actual delusion.

In these, as in all other forms of disease which have their origin in Nervous Exhaustion, it is most important that we should not be led into the error of treating symptoms, but that we should clearly recognise the causes to which these symptoms are due, and endeavour to remove them. But striving to stimulate into activity any organ which has ceased to perform its functions regularly and efficiently is a crucial mistake. We must go back to first causes. If the nervous supply to any organ is defective, it naturally fails in its functional power; our efforts must be, then, to restore vigour to the nerve centres, not only by an improved nourishment but by increasing the vigour, tonicity, and nutritive power of the general circulation.

This deficient power of regulating the circulation is well marked in almost all forms of Nervous Exhaustion, more especially so at times when the

nervous vitality is submitted to unusually depressing conditions, as at the occurrence of the catamenia, etc. At such times there takes place a centralisation, as it were, of nerve force in the brain, which, in its turn, brings on a similar congestion or attraction of blood in the same direction. Thus we find the hands and feet cold, the head hot; and, moreover, all organs being, so to speak, drained of their normal supply of nerve force, fail in their functions, while the brain itself, overpowered, as it were, by its congested state, is unequal to the task of controlling and distributing its nervous circulation. It is like a machine which, supplied with too much oil, becomes clogged, and so unable to work.

It is often difficult to discriminate between exciting and predisposing causes of Nervous Exhaustion; so that, what might appear at first sight to be merely exciting causes are found on more complete examination to be really predisposing; for instance, there are many disorders of function, among which I would particularise irritation of the uterus and its appendages, often accompanied by or arising from malposition or flexion, which clearly should be classed among predisposing causes. It may, indeed, be laid down as a law that every irritable and irritative action of an organ, if it be sufficiently long-continued and sufficiently intense, may induce Nervous Exhaustion, not merely acute, but chronic. Of course, we frequently see extreme sudden irritations—such,

for instance, as violent local irritations of a nerve, or the presence of ascarides in the intestines—produce sudden convulsive attacks ; but these are mainly to be classed as exciting causes, acting upon an already sensitive and excited nervous control.

We must, in treating the result of Nervous Exhaustion, never lose sight of the extreme liability to recurrence which all these disorders exhibit. Similar causes will produce identical results, and great watchfulness is always necessary in order to avoid the liability of a relapse. The nervous condition must never be allowed to fall below a certain standard of power, and the various influences which may seem to have proved noxious in former seizures must be guarded against and obviated. Change of scene is often of great value, and at certain seasons of the year—especially spring and fall—such change may become absolutely necessary.

## OUTCOMES OF NERVOUS EXHAUSTION.

## SUPPRESSED GOUT.

IN claiming Gout as one of the outcomes of Nervous Exhaustion, I am not speaking of the Gout of past generations—(inflammatory, acute, and paroxysmal)—but of the atonic, latent, or Suppressed Gout of the present day, which is in reality due to a failure of functional power on the part of one or more of the eliminating organs; perhaps also to some extent an hereditary consequence or sequela of the violent acute disorders of a past generation. No doubt the violence and activity of this old-fashioned Gout were due partly to the habits of excess in stimulants indulged in by our ancestors; but partly also, no doubt, to their greater vigour of nervous constitution, so that any waste material retained in the blood was extruded with great celerity, and not allowed to remain on, a slow poison in the circulation, vitiating the blood and giving rise to all those distressing symptoms which are but too well known to us of the present day as Suppressed Gout.

This non-inflammatory Gout is, as I shall show, a disease largely due to defective nervous vigour. So

soon as the organs of digestion and elimination fail to receive their normal and necessary supplies of nerve power, they begin to fail in functional activity, so that not only is digestion imperfectly performed, but, what is more important still, the organs which should secrete and eliminate from the system waste material also fail to do their duty effectually, and it is the presence of these unhealthy matters in the blood which constitutes the disorder of which I am speaking. Perhaps the most distressing of the symptoms of this condition are to be found in the mental irritability and depression which accompany this state of blood; for although the physical signs of the disorder are evidenced in dyspepsia, in headache, gouty pains in the limbs or chest, sleeplessness, and loss of energy, yet the more painful and distressing signs are often those which manifest themselves through the mental state.

The nature of this disorder, which has been termed the fashionable disease of the day, and its distinct nervous origin, became clear to me several years since. Having devoted considerable attention for some years past to the treatment of nervous disorders, I noticed that in all cases when Nervous Exhaustion formed the basis of the disorder, Gouty symptoms were almost always present to a greater or less extent; but I also observed that these symptoms invariably disappeared as the patient regained his normal vigour of constitution, thus proving that the

so-called Gouty affection was dependent upon and subservient to the failure of nervous supply to the various eliminating organs.

Further consideration served to confirm this view of the case. I noticed that these Gouty symptoms generally come on coincidently with the natural failure of nervous vigour. This occurs at different periods to different men, partly according to their natural vigour, or want of vigour, partly according to the conditions under which their life has been passed. If their brain-vigour has been early lowered by over-strain, over-fatigue, or excess, so much the earlier will the failure of power set in.

No doubt much may be done by the judicious ordering of life, to avoid or protract the on-coming of this failure. Lessening of brain work, avoidance of mental strain and excitement, careful attention to diet, will do much. More especially is much control advisable with regard to eating and drinking; so many men, when other joys fail, indulge more and more in the so-called pleasures of the table, and this at the very time when, instead of increasing, they should diminish both the quantity and quality of their ingesta.

In these cases there is throughout the body a general lack of functional power, almost all organs performing their duties sluggishly and irregularly; the digestion is imperfect, and flatulence, distention, acidity, and unpleasant eructations mark the want of digestive

power. The function of the liver is also interfered with, as is shown by constipation, a deficient amount of bile in the motions, and a corresponding absorption of it into the blood, where it manifests its presence by dulling the complexion and producing drowsiness and mental depression. In consequence also of this deficiency of bile, accumulations of effete matter are extremely liable to occur in the intestines. These scybalæ are sometimes so hard and of such dimensions that the passage of them from the lower bowel is only obtained with great difficulty, and by the mechanical aid either of a gradual softening of them by the administration of frequent enemata, or by the removal of them directly by instrumental means. The action of the skin, again, is unhealthy, being sometimes profuse, clammy, and irregular, but more commonly deficient. We must not be misled by profuse action of the skin into the assumption that elimination of acids is always sufficient. Not unfrequently such perspiration is almost entirely deficient in waste matter, as is shewn on testing it with litmus. I have particularly noticed this to be the case after the skin has been submitted to the action of too great a heat, either from too hot a bath, or from the use of the Turkish Bath. It is, indeed, but an additional evidence to the law that all stimulation must be followed by reaction. This very inactivity of skin is often in itself a very distressing symptom, the surface of the body being both

dry, and burning; and this heat of skin is accompanied by a peculiar feeling of restlessness and instability, so that sleep is impossible. If by any means perspiration can be induced, these distressing feelings subside at once.

The urine is also loaded with deposits and often tinged with biliary matter. Coupled with and dependent on these conditions there are often pains, more or less acute, affecting the head, chest, or extremities; the former are often accompanied by alarming sensations, giddiness, swimings, shooting pains, and weight or heat at the vertex. The sense of dread which attends these symptoms is out of all proportion to their real significance, and testifies to the extent to which the mental control and vigour have been lowered by the circulation of tainted blood through the cerebral vessels. In none of these cases do we find any tendency to the old-fashioned inflammatory Gout. It is true that in some instances lithates are deposited in and around the joints of the fingers and toes, but these concretions have usually taken place gradually and painlessly.

The forms which mental depression may assume in patients suffering from Nervous Exhaustion are numberless, and they are generally found to be more intense early in the morning, on first waking. Indeed such patients usually wake very early, and lie brooding over their miseries. It is also remarkable that this feeling of depression is more acute

after a good night's rest than it is after a sleepless one; this is probably due to the lowered circulation of the brain, which is less vigorous during sleep than it is during the restless activity of a sleepless night. This mental depression is no doubt largely due to venous congestion of the cerebral capillaries, so that the brain does not receive fresh nourishing blood with sufficient rapidity; now, this congestion is likely to be intensified during sleep—hence the increased depression.

In this respect these cases differ from those which are caused by any structural change in the tissues or vascular system of the Brain, where, as might be expected, the mental phenomena are even more markedly prominent after the fatigues of the day.

But we cannot account for mental despondency, solely on the grounds of this defect of the cerebral circulation. There is, no doubt, a similar sluggishness and loss of vigour of the nervous system generally, perhaps chiefly of the sympathetic, so that not only is the vascular circulation allowed to become inactive but various mental phenomena are thus accounted for.

## HYSTERIA.

HYSTERIA is perhaps the least serious, as it is the most common form in which Instability and loss of control manifest themselves. It is essentially a disease of youth, and is almost exclusively confined to the female sex.

It is one of those disorders which are only to be found among those races which have attained to a certain point of civilisation and culture : no one ever saw Hysteria among savage nations. The explanation of this is not far to seek. Hysteria has originated in a long-continued repression of emotion. Emotion, as its name implies, is something that should come out ; but as man adopts a higher culture the necessity for this repression of feeling becomes more and more urgent. The savage keeps back no emotion : if angry he storms and raves, if frightened he does not scruple to run away. Beyond certain points this repression becomes impossible : "*Naturum expellas tamen usque recurret.*" You may try to quench the volcano, but an explosion is sure to occur somewhere, sooner or later.

Hysteria is markedly influenced by the advent of puberty, and is more liable to become paroxysmal at or about the menstrual epoch. Indeed, this fact, and its extremely rare occurrence in the opposite sex, would seem to point clearly to some connection between it and the uterine function; the probability being that the nervous system being more sensitive in the female, and more highly tensioned, any physically lowering cause, such as the occurrence of the catamenia, is apt to react unfavourably on the general nervous control. All the facts in connection with Hysteria mark it as another illustration of the truism that Nervous Exhaustion always shows itself in irritability.

In Hysteria it will be found that it is the mental rather than the physical stability which has failed. Even during the most severe paroxysms, there is always more or less power of control, which only requires to be educed to put an end to the attack; but this is just what the Hysterical patient refuses to do. She allows herself to give way, and it is only some extreme diversion in some other direction, or the strong effort of a more powerful will, which compels her to control and subdue the paroxysm. Side by side with this enfeeblement of central control, there are two mental states which are usually markedly prominent in all Hysterical patients, these are: desire to attract attention to themselves (a kind of morbid vanity), and an intense exaggeration of the

imitative faculty, which is more or less inherent in us all, even in a state of health.

The limits of a small work like this forbid me to enter upon a prolonged description of this most curious, but characteristic, phase of Hysteria ; but, if we examine closely into the phenomena and symptoms of the disorder, we find that simulation marks its whole course. There is in very many cases a desire to appear to be suffering from some more or less complicated ailment ; indeed such patients will constantly endeavour to impress upon all around them, but especially on their medical attendant, that the disorder from which they are suffering presents features and symptoms which differ entirely from those which are commonly found to occur in other patients ; indeed the well-known and easily-recognised paroxysm is itself nothing more nor less than an imitation (often an extremely accurate one) of an epileptic seizure. But in its less active, more subdued forms, there is a constant tending to the simulation of some of the more chronic, passive disorders, such as spinal or joint disease, or some of the many forms of paralysis. In the large majority of instances, the imitative action is entirely unconscious : though if it be much prolonged there may arise in the course of the case some wilful exaggeration in the symptoms, more especially if these are found to give rise to much sympathy or wonder.

No doubt there are cases in which the simulation

is from the outset deliberately plotted and planned ; but these are exceptions. Indeed, in almost all the mental phases which are attendant on states of Nervous Exhaustion there will be found marked similarity in their manifestations. Thus, delusions are apt to assume precisely similar forms ; whether religion, poverty, suspicion, or distrust of others, be the prevailing idea, they will present themselves in precisely the same form in a large number of patients, who will all use the same words and phrases in describing their supposed condition.

Again, when the disorder takes on a recurrent form each succeeding attack will be marked by precisely similar manifestations.

The element of simulation and the possibility of control in Hysteria are, I think, markedly shown by the dislike which all such patients feel towards the term Hysterical being applied to themselves. They are conscious that it is a giving way ; they are aware the possibility of control lies within their power, would they or could they exert it.

It is well known that the concentration of attention upon any organ will, after a time, produce trophic changes from alterations in the supplies of blood and nerve force to the part, and thus possibly induce actual change of structure ; and no doubt this will in some measure account for the occasional development of disease in Hysterical patients.

The moral treatment of this disorder it quite as

important as the constitutional, perhaps even more so. The first point is to remove the patient from her accustomed surroundings; to place her under completely new, and more healthy, mental supervision; the control, indeed, of kindness, watchfulness, but an unbending firmness and power of will. For however healthy the social surroundings of such patients may be, a change from the often too sympathetic influence of near relations is almost always beneficial. It is easy to understand how a slight ailment, which has given rise to the exhibition of too much consideration from the parents, may arouse in the Hysterical child that morbid vanity that feeds on sympathy; so the slight ailment develops in intensity quite as fast as the parental distress and anxiety. Unless such a case fall into the hands of a discriminating and firm adviser, the symptoms will rapidly increase in apparent gravity.

The parents are quite, and the patient probably only partially, aware that the disorder is altogether unreal, unbased on fact. The person who should detect and explain this is the medical adviser. No doubt in many cases to do this is extremely difficult, and it is often only after a prolonged and anxious supervision that we are able to say with certainty that we are not treating symptoms arising from positive, not imaginary, disease.

There are many methods by which we may be guided to a correct diagnosis in these cases, by which

we may be enabled to discriminate between real and simulated disease. Perhaps the most important point is the nature and character of the pain. If during our examination of the patient we distract the attention, we shall often find that we can with impunity press upon some point which, when the patient's attention was directed towards it, was the seat of acute agony. Again, though there may be increased heat locally, yet the marked febrile condition which in true disease of structure manifests itself in irritative fever is shown by the thermometer to be always absent.

Hysteria may, then, show itself in a mere waywardness and want of stability, passing at times into the paroxysmal stage on the occurrence of any lowering causes; or it may advance with a gradually increasing intensity, into one of the severer and more prolonged forms of simulation, or Hysterical mania; but so long as its symptoms are not misjudged, the derangement will subside with proper treatment in appropriate surroundings, lessening even, by a natural process, as the nervous system strengthens and becomes stable with advancing age. For in all the disorders which are peculiar to the nervous system in youth, there is always the hope that, as the brain approaches maturity, the increased power of control and stability which naturally arises will gradually diminish the intensity of the disorder, until it ceases to be possible.

Much might be written on the mental aspect in Hysteria. The main characteristic is loss of control, and certain mental traits are apt to become warped, distorted, or exaggerated ; thus, an intensely jealous feeling is likely to be aroused towards those nearest and dearest ; a love of self-torture is developed, and perverse conduct in the everyday affairs of life. These fits of contrariety are often followed by an extreme exhibition of penitence and regret, but in all healthy natural feelings are distorted and rendered sensational. The paroxysm of laughter is immediately followed by as violent a tempest of tears. Even in their more stable moments such persons vary much in their moods ; a period of depression more or less intense is apt to be followed by undue and often causeless excitability, they are *têtes montées*. There is constantly a desire for change, and restless excitement ; nothing pleases them long.

There are occasions on which it is undoubtedly very difficult to draw the line between the Hysterical and epileptic convulsions. There are, however, one or two distinguishing points. The first of these is loss of consciousness ; though it is sometimes difficult in the height of a paroxysm to determine whether the patient is, or has been, completely unconscious. Another point of distinction is to be found in the duration of the attack, the epileptic being as a rule less prolonged ; the Hysterical patient also rarely, if ever, bites her tongue, at any rate with any severity.

It is easier to distinguish the simulation of the slighter epileptic seizure from the real *petit mal*, as it is so much more possible to discover whether the loss of consciousness which marks the epileptic seizure is complete.

The ensuing case is perhaps one of the most puzzling I have ever met with. A young lady has for some years suffered from what had always been supposed to be epileptic attacks of a mild nature. One attack, which I recently witnessed, was of the following character. I was talking to her while she was standing up close beside me. Finding she did not reply to some question, I looked at her, and found that she was apparently quite unconscious, still, however, standing quite firmly. There was no change of colour, nor was there any convulsive movement beyond the slightest possible working of the lips. I put my hand on her pulse; it was rather rapid, but not markedly altered in character. She stood there for several seconds, when, fearing she might fall, I pushed her gently into a sitting posture on the sofa. To this she appeared to offer slight resistance.

Now, my knowledge of the history of the case induces me to think that this was merely an Hysterical simulation. I am guided to this view of the case partly, as I say, by my previous knowledge of the patient, and the nature of her seizure, but also by the fact that it is unusual for patients suffering

from *petit mal* to remain so long unconscious ; or, if they should remain for many seconds in this state, I doubt if they could maintain the vertical position so long without any support. Again, there was no change of colour, which usually occurs in epileptic seizures of this nature. On her return to consciousness she had no sequent drowsiness, which would surely have followed so prolonged an attack of *petit mal*.

Space will not allow me to deal with the more aggravated forms of Hysterical simulation, those in which graver forms of disease are mimicked with an amount of reality which may often baffle the most experienced observer for a time. Weir Mitchell has thoroughly exhausted the subject, and has laid down rules for treatment so admirable that one cannot do better than follow his precepts. There is only one point in which I should feel disposed to question his views. He says in his work on Nervous Disease, page 53, speaking of Hysteria : “As to the direct  
“good to be had out of the drugs on which men  
“once relied in the treatment of this disease, I have  
“said nothing ; because, except to condemn, I have  
“nothing to say, and because I believe that the  
“numberless remedies for Hysteria to be found in  
“the books will be swept by another generation  
“into the limbo provided for drugs with decayed  
“reputations.”

No doubt remedies for Hysteria are useless, but

the causes which permit such a condition to arise are distinctly capable of alleviation and cure. Build up the physical side of the nervous constitution, and the moral or mental side will regain its force of control, in whatever way it may have been lowered or lost. In short, it is of no use to treat the Hysteria, which is merely a symptom; but the exhausted state of the nervous constitution generally may be restored with the result of quite relieving the symptom, Hysteria.

## NEURALGIA.

NEURALGIA is, perhaps, the most unfortunate of all the vague terms with which medical nomenclature has been obscured ; for as all pain, from whatever cause it arises, is necessarily Neuralgia, it is impossible to distinguish definitely by that term the very marked neurosis which we wish to describe.

Putting on one side those cases in which the localised pain is caused by mechanical irritation, as of a tumour or a foreign body pressing on or irritating a sensory nerve, the pain which we term Neuralgia is almost invariably an outcome of an exhausted state of the nerve centres. It is another example of the manner in which Nervous Exhaustion develops into irritability.

By Neuralgia we understand a more or less severe localised pain, often coming on at regular intervals, —this periodicity being markedly the case in some forms of malarial poisoning — sometimes more constant (in which case it is apt to vary in its intensity, becoming more or less paroxysmal). It may have its origin in certain poisoned states

of the blood, as from malaria, syphilis, or lead-poisoning; but more frequently we find it based upon Nervous Exhaustion, which is readily acted upon by exciting causes—such as cold, especially damp cold. It constantly selects its nidus in some weak or disordered point. Very commonly, indeed, a carious tooth will form its focus, or a strained or bruised ligament or sinew. It has been the opinion of many that the pain is due to the structural alteration of the tissue of the nerve itself. Dr. Handfield Jones says: “The nutrition of the nerve being ill performed, its structure undergoes some molecular alteration which conditionates pain.” On the other hand, Romberg says, “It seems as if pain were the prayer of the nerve for healthy blood.” This is probably true if we substitute brain for nerve; it is the brain which demands more complete nourishment, and the local nerve pain is the manner in which it shows its want.

It seems to me much more likely that what we term Neuralgia is neither more nor less than an excessive irritable activity of nerve force in one direction, down one track of sensory nerve. That much as an epileptic seizure is a liberation of nerve force indiscriminately throughout the whole nervous system, the controlling power being for the time lost, so may not Neuralgia be a slight local epilepsy, a violent discharge of the nerve current down one track of nerve, the control in that direction being

defective? That this is so, is somewhat borne out by the fact that in severe Neuralgia the surrounding parts are commonly more or less numb, as though the over-activity of nerve supply in one direction had drained the adjacent tissues of their normal supply. The disease is one, usually, of later life; it commonly occurs in women after the cessation of the catamenia, and is more frequent, and more severe, in the ill-nourished and anæmic, and in those whose lives have been exhaustive of the vital powers. The vitiation of blood which occurs from long residence in tropical climates, when the blood is liable to become tainted with malarial poison, while the physical system is exhausted by heat, is commonly found to tend to the production of Neuralgia.

The theory that Neuralgia is a disease of mal-nutrition is amply borne out by a judicious examination of the juvantia. Stimulation often gives immediate (but short-lived) relief; but long-continued exhibition of tonics, in small doses, will, with patience, be found to be invariably and permanently curative.

Full doses of nerve tonic are constantly found to give complete relief for a time. A very interesting example of this occurred to me this year, 1893, in the case of an undergraduate of Cambridge who, just prior to the Tripos examination, in which he had great hopes of taking a high position, found himself suffering most severely from Neuralgia. I found him anæmic, sleepless, and generally exhausted so far

as his nervous energies were concerned. It being imperatively necessary that a temporary relief should be obtained, I treated him with full doses of phosphorus and quinine, with so good a success that he was able to pass with honour through his examination. As might be expected, this stimulating treatment was followed by a somewhat severe relapse, as stimulation must always be followed by reaction. This, however, is now being gradually overcome by small long-continued doses of nerve tonic, combined with bracing treatment by cold and massage.

In those peculiar forms of disorder in which the pains return with a regular and exact periodicity, and which may in many cases be traced to malarial poisoning, arsenic in small doses is invariably of great service.

The pain varies much in different cases in its intensity and duration. In some it is so acute and so intense that anodynes are imperatively demanded. In others there is a dull localised pain, never very severe, but always present. I can recall a case of this kind in which a gentleman of 50 suffered for years from a deep-seated pain in the left hypochondriac region. It was never very acute, but was most wearing from its constant presence. It entirely subsided after some years, in fact when he became better nourished.

This was probably an instance of a refined or sympathetic pain, much as we find one carious or

inflamed tooth producing pain in a corresponding tooth on the opposite side of the jaw, or when the presence of inflammation or ulceration of the hip joint manifests itself by pain in the knee. Indeed instances of this reflex form of Neuralgia might be greatly extended.

There is much to be said on spinal pains. These may be diffused or localised, constant or intermittent. They may manifest themselves at any point of the column, but are especially liable to occur at the upper part of the cervical region in the neighbourhood of the medulla oblongata, and at the extreme end of the column over the sacrum or even coccyx. In this latter case the pain will be found to be usually a sympathetic or referred pain, the result of the irritability of the spine generally. In the former case the pain is often somewhat diffused, in the latter it is commonly extremely intense.

Many of these pains are more or less connected with a gouty diathesis; but even then—and especially when the patient is at or about that time of life when nervous vigour is waning—the nourishing plan of treatment by small, unstimulating, doses of nerve tonic will be found to be efficacious. The want of elimination, which gives rise to the gout, will be found to be the result of defective nervous supply to the eliminating organs.

In many cases the site of the Neuralgic pain is determined by some old strain or injury; the

weak point is one which is always more liable to attack.

In some cases, indeed, we find Neuralgia to exist in conjunction with Epilepsy, but we notice here that just as spasmodic asthma and Epilepsy may alternate with each other, yet they never co-exist, the one disorder taking the place of the other.

The acute pains which are common in young women, which are of less local distinctness, but usually attended by great hyperæsthesia, are, so far as their origin is concerned, distinctly of Neuralgic nature. These pains are not limited to any particular portion of the spinal column, but often change their locality, flying about from one point of the spine to another with great rapidity. When more fixed they are less acute, and are then more often found at the upper part of the cervical portion of the spine, or quite at the lower part of the lumbar region, often extending across the hips.

Some patients, especially women, are very apt to suffer from acute pain quite at the lower end of the sacrum. All these pains may be clearly attributed, I think, to irritable states of the spinal cord itself.

The patients in whom they are met with are usually ill-nourished, and often anæmic, and have in most cases been submitted to much mental shock or physical exhaustion. In the case of a young lady who had been through the exhausting

amusements of a London season, keeping late hours night after night, and then, by way of relaxation, was taken to Switzerland and allowed to climb mountains day after day, these pains were so severe and so persistent that doubts arose as to the possibility of some serious spinal mischief having arisen; however, the absence of any rise in temperature, taken in connection with the history of the patient, set these doubts at rest, and she recovered completely after about six months' treatment, by rest and the use of minute doses of tonic, with cod-liver oil. In this case the accompanying tenderness at certain points of the spine was so great, that I have seen the tears roll down her cheeks at the slightest touch. In another case a disappointment in love, following a period of too exhausting activity, produced symptoms similar, but not so severe. In this case there was great irritability of the mucous coat of the intestine, with copious secretion of brilliantly white mucous, accompanied by much pain.

All patients who suffer from Nervous Exhaustion are extremely susceptible to slight causes. Cold, damp, rapid and sudden alterations of temperature, will affect them more or less unfavourably. This is especially evident in Neuralgic affections.

When the pain is caused by, or is in connection with, any disorder, or structural change in any organ, such for instance as a uterine flexion, or an ovarian enlargement, any movement or

vibration is apt to intensify the suffering acutely. In such cases pressure is often found to give support and relief, but in these forms, as in others, rest and improved nutrition are the main indications.

## INSOMNIA.

BEFORE entering upon the cause of Insomnia, and the methods most applicable to its relief, it will be wise to determine, so far as our present knowledge of the subject will admit, the various processes by which sleep is attained—that is, both natural sleep and that other less healthful, less restful sleep, the sleep of congestion; for it is, I think, quite clear that between the perfectly healthy sleep of the anæmic brain, and the heavy, stertorous stupor of the deeply-congested brain, there are many gradations. We know that in other cases, for instance, as in convulsion, diametrically opposite causes produce identical results. We may have convulsions proceeding from excessive engorgement of brain; we have also precisely similar convulsions as the result of too great or too sudden a drain of blood. Thus, in acute alcoholism we find, first sleep, then stupor, then coma, insensibility, and, if the engorgement proceed beyond a certain point, convulsion, and finally death, to occur.

The sleep of congestion certainly will not renew

our physical or mental powers to the same extent that natural, healthy sleep does. It is not "tired Nature's sweet restorer," and from it one awakes unrefreshed, and with a heavy sense of unrelief. But it is with the phenomena of healthy slumber that we have to deal if we wish to determine the processes by which we sleep. Most physiological writers lay great stress on the vascular circulation, and the alterations which occur in it prior to sleep. Now, I believe the first phenomena which occur to be one and all connected with the nervous circulation, and that any changes in the blood distribution of the brain are secondary to, and dependent on, these antecedent nervous alterations. If we examine the conditions under which we first endeavour to lull the brain into sleep, we shall see the probability of this. Our first object is to shut out the access of all outside stimuli which affect the senses—thus, we darken our rooms, we prevent, as far as may be, the interruption of sound, we surround ourselves by bed-clothes, partly to secure sufficient warmth and partly to prevent any unusual touch. This done, our next effort is to check the activity of thought; not only to prevent fresh thoughts from arising, but also to allow those which already occupy us to quiet down. It is not until a perfect cessation of the currents of activity between the grey matter of the peripheriæ and the brain centres has taken place—indeed, until the cerebro-spinal system is at rest—

that any alteration in the circulation of the blood occurs. This latter phenomenon is brought about by the action of the vasomotor branches of the sympathetic. As I shall presently show, the normal action of the sympathetic nerve is to produce contraction of the capillary circulation throughout the body; but this natural action is held in check by the inhibitory action of the cerebro-spinal system, and it is not until this is, as it were, cut off that the sympathetic system is able to assume its power of inducing capillary contraction.

This inhibitory action of the cerebro-spinal system is best illustrated by what occurs when a sudden fright paralyses the nerve centres of the brain, so that the inhibitory action is entirely withdrawn from the sympathetic, an immediate contraction of the capillary vessels of the face ensues, and consequent more or less complete pallor. Pleasing emotions, such as induce increased sensorial activity, on the contrary, still further inhibit the sympathetic action and allow dilatation of the capillary circulation, and consequent blushing.

A still stronger piece of evidence of the power of the cerebro-spinal system in inhibiting the contractile influence of the sympathetic is found in the fact, which has been often noted, that if the main trunks of the cerebro-spinal nerves supplying a limb be divided, an incision made in the skin of the limb below the point of section will not bleed, so complete

is the contractive influence of the sympathetic on the capillary system of vessels.

These, then, taking them in order, are the phenomena which precede and accompany the occurrence of sleep: (1) Shutting out action of the senses; (2) Cessation of cerebral action, so far as thought is concerned; (3) This, in its turn, allows the specific action of the sympathetic system to contract the capillary circulation of the brain, thus rendering it anæmic. The importance of the removal of all stimuli to the senses is well shown in the case of the celebrated boy of Leipzig. The boy was entirely anæsthetic, except so far as one eye and one ear were concerned; it was only necessary to close these, his only means of communication with the external world, to send him to sleep at once.

If we turn now from the healthy sleep, the process of which I have been endeavouring to describe, to the other sleep of congestion, we shall find a great difference between them. As the capillary circulation of the brain is lacking in any muscular coat, it is easy to understand how any increase of excitement of the heart's action may cause dilatation of these vessels, and thus forcibly overcome the natural contractile influence of the sympathetic nerves. The sleep of congestion is not sought: it forces itself upon us; it is purely a sleep of pressure. We see how the congestion of brain, as it advances, produces an enfeeblement of action in all the organs which

depend on the brain for their supplies of nerve force, whether to furnish motor power, or to regulate and control function.

These points are best illustrated by the results which occur in acute alcoholism. First the patient becomes excited, then loses to some extent his power of speech; while the flushing of the face indicates that the increased activity of the cerebral circulation is stimulating the cerebro-spinal system into greater activity, so that the sympathetic or contractile action is checked and inhibited. Then his motor power begins to fail him; finally, he sinks into a drunken stupor of sleep. If, then, we examine his circulation, we find that the congestion of his face and eyes indicates the blood pressure which is going on in his brain; that the increased force of the heart's action has set at nought the normal contractile influence of the vasomotor nerves, and this notwithstanding the fact that the cerebro-spinal system, being in abeyance, has ceased to exercise its inhibitory influence. Such sleep as this, is, as might be expected, disturbed, uneasy, and unrefreshing.

If, then, I have correctly stated the conditions which allow healthy sleep to occur, it will not be difficult to explain how these processes may be interfered with so as to cause that distressing malady which we term Insomnia.

I have stated more than once in the preceding pages that exhaustion of brain shows itself some-

where or other in irritability, and this is especially true when the brain itself is concerned; too great activity is liable to end in irritability. We are all familiar with the fact that if for many hours we have concentrated the energies of the mind on some abstruse problem—or even some game, as chess or whist—how apt we are to find our sleep disturbed by bothering dreams in which our game or our problem take a too active part. Now carry this further, and allow the slight irritability which has occurred from a simple over-concentration of mind to become an irritability founded on exhaustion of brain, and we shall see how easily an unpleasant dreamful sleep may become converted into Insomnia. The more exhausted the patient, the less power has he of controlling or subduing worries or anxieties.

As I have endeavoured to show, the critical point in the direction of sleep is when the train of thought becomes gradually slighter until it ceases altogether, and allows sympathetic action its full power. Now, in the exhausted and consequently irritable brain, we find it impossible to sever this slight train of thought. If we lose it for a second the cerebral irritability again asserts itself, and we find ourselves wide awake again, following the painful or worrying train of thought which binds us to wakefulness.

Insomnia shows itself under various forms. In some there is heavy unsatisfactory sleep for perhaps one or more hours. When this ceases the patient

lies tossing about, a prey to worrying and anxious thoughts which render sleep impossible.

The fact that our troubles and fears are always intensified during the watches of the night probably arises from the lowered state of control of mind during these hours, and to some extent possibly from the gloomy surroundings of night. Somewhat of the dread which affects the child in the presence of darkness no doubt tinges our feelings, unconsciously presenting our present and our future to us from a depressing point of view.

A second form of Insomnia is possibly still more trying. Here the patient is unable to get to sleep at all, but lies tossing about, thought succeeding thought with endless, wearying repetition; and this may go on for night after night, to the destruction of health, for as sleep is the period during which the body is renovated for work, it follows that its deprivation must necessarily end in failure of energy physically, as well as in prostration of mental vigour.

## MEGRIM.

MEGRIM occurs more commonly in women, and in them more often at or about the catamenial epoch. It is characterised by intense nervous irritability of brain: the action of the senses is exalted, light is torture, sound is agony, the pain in the head is unusually intense, often worse on the forehead. In severe cases the patient can only lie in a darkened room, light and sound as far as possible excluded; appetite there is none, in fact there is commonly nausea, with loathing of food. In some cases it is possible that a check of biliary flow, or some indigestible food in the stomach, may act as exciting causes, for vomiting will sometimes give relief; but the pre-disposing cause is undoubtedly an irritable condition of the more sensitive portions of brain, due to exhaustion. The probability is that in all these cases of intense cerebral pain, with increased irritability of the organs of sense, there is a congested condition of the higher nerve centres; a congestion not of blood but of nerve force, so that over-stimulation of those parts which derive their

energy from these centres gives rise to an irritable and excited action, accompanied, to a greater or less extent, by pain.

In slighter cases the pain is not so markedly severe in character, and is often distinctly due to a gouty condition of the blood. In some cases there is little or no pain beyond a sense of fulness and discomfort on one side of the head, attended often by disturbance of sight and the vision of irregular zig-zag lines, or, as Sir Andrew Clarke has happily termed them, lines of fortification, from which often bright rays of light appear to radiate. The first phenomenon which occurs in these cases is a dullness of vision, as though a luminous cloud hung over the brows; this is generally accompanied by hemiopia. In these slighter cases the symptoms are more disturbing and annoying than painful, though a more or less severe headache commonly follows. Nausea is almost always present, and sometimes vomiting occurs. In some not common cases hyperæsthesia has been noticed. The patients liable to this disorder are commonly anæmic, or chlorotic, or both. In many cases I have been able to detect its origin in gouty states of the blood. Perhaps in consequence of the frequency with which nausea occurs; perhaps because a check of the flow of bile is likely to occur, as a consequence of the determination of nerve power to the head—the disorder had been considered by some to have its origin in derangement of the liver. This

is clearly a misconception, effect being mistaken for cause.

Megrim is very commonly hereditary, and may alternate with Epilepsy and other disorders of this group. It is almost invariably to be noticed that there is in persons subject to this disorder a great want of eliminative power, and this no doubt to some extent influences its occurrence. The blood supplied to the higher centres of the brain being impure, and loaded with waste material, irritates those delicate and complex structures, producing deviations from the normal action of sense.

I do not propose to enter upon the treatment of Megrim separately, as there is not much to be said on the subject; indeed Megrim itself should hardly be treated as a distinct disorder, as it takes its place as a variation of neuralgia, or occupying a position between that disorder and Epilepsy.

This disorder—which is clearly due to a loss of control of the nerve circulation consequent on a condition of enfeeblement or exhaustion—is best met by improving the nourishment of the brain generally. This is to be effected not only by care in diet, but also by the administration of nourishing medicines, such as the hypophosphites, with or without the combination of cod-liver oil. If nerve tonics are given they must be strictly confined to those small doses which nourish without stimulating.

Bromides and antipyrine will both give a measure

of relief during the existence of the attack, but the alleviation afforded is merely temporary, and both these drugs leave behind them more or less depression.

Great and positively harmless relief is to be obtained from the derivative action of hot footbaths, with or without mustard, or a hot mustard fomentation to the epigastrium. The object, however, should always be to cure by a re-establishment of the cerebral energies, not to relieve by palliatives.

I have very rarely failed to cure this disorder by the exhibition of small doses of *nux vomica*, though the amount borne is often extremely attenuated. A lady who suffered severely from this complaint found that  $\frac{1}{100}$  part of a grain taken thrice daily increased the suffering extremely, every dose bringing on the pain; the best possible result, however, followed the lowering of the dose—which I was enabled after a time to increase again—with the result that the disorder has entirely ceased, no attack having been experienced for over twelve months. A lady who had tried almost every other remedy, was completely cured of Megrim, after two months, by the use of the same remedy, coupled with appropriate diet and the use of bracing measures of cold, etc., etc.

## SPASMODIC ASTHMA.

SPASMODIC ASTHMA is another disorder which has its origin in the same condition of neural instability as the other diseases which I have already referred to. This fact has, however, only been made clear during the last few years. Maudsley\* classes this disorder among those which may be transmitted by a neurotic parent, and notes it as one of a group of similar disorders which may interchange or alternate among themselves. But, many years before Dr. Maudsley's book was published (1879), a case came under my notice which will be found mentioned in my little book *The Tonic Treatment of Epilepsy*, which led me to form a strong opinion as to the closeness of the connection between this disorder and Epilepsy, and the probability of their having an identical origin. In the case I alluded to, a boy of 14, the attack came on suddenly after over-exertion at play. There was great difficulty of breathing, and a very peculiar hiccough. These symptoms were complicated with considerable irregularity of the

\* Maudsley, "Pathology of Mind," pp. 107, 108. "Neuropathic Element in Spasmodic Asthma," *Lancet*, Feb. 21, 1891.

heart's action. The boy was perfectly conscious, but expressed himself as suffering from a feeling of great alarm, much greater indeed than the gravity of his seizure warranted.

The character of the symptoms, which pointed clearly to a discharge of nerve force in an uncontrolled manner down the pneumogastric nerve, struck me as being so nearly allied to the similar but more extensive explosions seen in many cases of Epilepsy, that I warned the boy's father of the possibility of these seizures (of which I had seen three) passing into true Epilepsy. My caution was fully justified by the boy's becoming the subject of well-marked Epilepsy a few years after, though he ultimately completely recovered by treatment directed towards the restoration of his general nervous vigour. A paper by Professor Brissaud, in the *Revue de Médecin* 1890, on this subject, produces a large amount of evidence to show that the Asthmatic may in reality be regarded as a neurotic. Indeed the marked association of Asthma with diseases such as insanity, epilepsy, hysteria, hypochondriasis, and melancholia, points clearly to a similarity of origin, and proves it to be an outcome of the general neuropathic diathesis, possibly of induced causation, but still more probably due to ancestral inheritance.

Hay fever, so called, which is clearly due to mechanical irritation of the mucous membrane lining the nose and eyes, and to some extent the air pas-

sages, has also a distinctly nervous origin. There is intense irritability of the nerves supplying these mucous surfaces, which is in its remote causation due to an exhausted state of the nerve centres. Similar conditions of extreme nervous irritability are also often found in the lining membranes of the stomach and intestines; and as in hay fever the exciting cause is to be found in the pollen from the grass, so, where the mucous coats of the stomach and intestines are concerned, the irritation is often brought on by some irritating substance in the food.

Spasmodic Asthma so clearly owes its origin to the irritability of nerve consequent upon exhaustion, that I need say but few words concerning curative measures, as the principles which I have already laid down under the head of treatment of Nervous Exhaustion generally apply especially to this manifestation of it. Of course there are many measures for palliation of the paroxysms when they arise which are of great value as means of immediate, though temporary, relief. Among the most efficacious of these will be found the soothing use of hot inhalations, relief being given by the use of hops or poppyheads infused in the hot water. With these, however, it is hardly within my province to deal.

## CHOREA.

THIS disorder owes its origin, perhaps more clearly than any of those of which I have been treating, to Nervous Exhaustion. It is also closely allied to, and often indeed accompanied by, one or another of these neuroses. Thus, we find it not rarely preceded or attended by epilepsy, insomnia, or neuralgia, and in many respects it is also closely akin to hysteria. In the majority of cases there is impairment of both physical and mental control, the former showing itself in its greatly increased, and at the same time uncontrolled, mobility; the latter in every kind of uncertainty of disposition, from peevishness or perversity up to active delirium, or even mania. It is chiefly met with in anæmic, ill-nourished children, and much more frequently among the poorer classes. I have often noticed that it is more prevalent among children who have been subjected to cold and damp. Residence for too long on a wet clay soil has seemed in some cases to give rise to it.

Chorea, like hysteria, is much more rare among uncivilised and uncultured races. Dr. Weir Mitchell has made some very valuable researches in this

direction, and he is clearly of opinion that among the black races of the West Indies and the Southern States it is but rarely found. If we remember the slight extent to which the Negro can repress his emotions, we shall see the probability of this statement,

Coupled with Chorea there is also at times marked enfeeblement of certain muscles and limbs. This is found at times to be unilateral, only one side of the body showing the increased irregular mobility or paresis.

The simpler forms of this disorder are limited to what Dr. Weir Mitchell happily terms Habit Chorea. This is chiefly confined to children, and consists in the jerking of a limb, or the hitching up of a shoulder, the spasmodic movement of an eyelid, or rapid movements of the head—what are commonly termed tricks.

In many cases Chorea is found to come on suddenly after a mental shock, as fright, or from the irritating influences of dentition, or at times from the presence of worms in the intestine; but all these are exciting causes, and can have no effect in the production of Chorea, unless when acting on an already enfeebled and exhausted nervous condition, and one therefore predisposed to the disorder. Where Chorea presents itself in the adult; it is not unlikely to pass into mental disorder; in the child it very rarely does.

In almost all cases there is considerable enfeeblement of mind, which exhibits itself in vacillation, peevishness, easily-excited emotions, restlessness, and at times even more complete loss of mental control. The patient sleeps badly, and often suffers from troubled and perplexing dreams. In some cases the jactitations, which are so markedly characteristic of this disorder, came on in paroxysms, at others they never cease except during sleep. In most cases they are controllable by a strong effort of will, but the effort is with difficulty kept up, and becomes after a time painful, and the return of the irregular jerking seems to be a relief. Any excitement, even taking notice of the movements, will commonly cause an increase of them. At times the motions assume a rhythmical character, occurring with great regularity and order ; but for the most part they are confined to irregular jerkings of one or more limbs, extending occasionally to the head and body.

Chorea is for the most part a disorder peculiar to youth, though, more rarely, it is found in persons of middle age. The disease is one to which the imitative faculty is particularly apt to lend itself, and epidemics of Chorea have in past times, and in foreign countries, raged with great violence, and were apt to be attributed to Satanic possession.

They are also liable to occur to a less extent in the wards of our hospitals, or schools, or other places where a number of children of like age and con-

dition are congregated. Some physicians have endeavoured to establish a connection between acute rheumatism and Chorea, others have allied it with valvular disease of the heart, the result of rheumatism ; but the disorder is so clearly the outcome of enfeebled states of the nervous system that although it may be that both diseases are liable to occur in consequence of this enfeeblement, yet it cannot, I think, be admitted that there is any more definite connection between them. Not only do the symptoms of the disorder indicate its origin in exhausted conditions of the nervous constitution, but if we examine into the previous history of any large number of cases we shall find ample evidence in favour of it.

Chorea is essentially a disease of large cities, where numbers of poor are congregated, breathing contaminated air, ill-nourished and uncared for. In the country, and among those living under more favourable circumstances, it is comparatively rare. No doubt it is more prevalent in damp low-lying positions, and malarial poison has often influence in its production.

## EPILEPSY.

EPILEPSY is a disease of a paroxysmal nature caused by a sudden escape or discharge of an accumulation of nerve force from the nerve centres of the medulla oblongata. This discharge may take place with more or less suddenness, and is in some cases heralded by nervous sensations of various kinds, and of different degrees of intensity. In many cases, however, the attack is instantaneous, the patient falling in a moment, and without the slightest warning.

Although it is in many cases difficult, as I shall presently show, to distinguish pure Epilepsy from its kindred nervous affections, hysteria more especially, yet I think that it may be taken as a rule that every case of pure Epilepsy is attended with complete unconsciousness. No doubt certain cases may arise in which even this symptom may be simulated, but I think these are usually not difficult to detect.

In describing the forms of Epilepsy, I prefer to adopt the usual obvious method of classification, and divide the disease into the two forms, convulsive and non-convulsive, *le haut mal* and *le petit mal*.

Convulsive Epilepsy may be complete or partial: that is to say, that the nerve force discharged from the nerve centres of the medulla oblongata may find its way down all the motor tracks, thus producing a universal convulsion, or it may pass down only one or two efferent nerves, and so produce a local or partial convulsion. It will generally be found that, in the commencement of a convulsive seizure, one side of the body is affected before the other: that is to say, that the attack commences on the one side prior to the other, and one side of the body is more drawn than the other; very commonly the head is twisted over to one side—this is due to the greater muscular development on one side than on the other; the hands are firmly clenched, and the thumbs are drawn tightly inwards towards the palms. An attack of this nature (*le haut mal*) may commence in one of many ways, and may or may not be preceded by a change of colour in the face; but if such a change do not take place early in the course of the paroxysm, it is sure to come on sooner or later, usually first a pallor passing into lividity, followed by a deep congestion and engorgement of the whole head and neck, from the obstruction to the venous circulation. During the progress of the seizure the heart's action is found to become tumultuous and very irregular, and the pulse also is much disturbed; the eyeballs are distorted, being usually turned upwards; the tongue is in

many cases pushed forward between the teeth, and torn and lacerated by the convulsive grinding of the jaws; the difficulty of respiration, owing to the fixing and spasm of the muscles of the chest, is often great; and after a time the supply of nerve force, which has to pass off, becomes exhausted and the muscular spasm ceases, the patient gives a deep inspiration, and the congestion of the face and head begins to diminish. However, clonic irregular spasms will occur at intervals. After the attack, the patient usually sinks into a deep, stertorous sleep. Such is the description of an ordinary attack of convulsive Epilepsy. The lesser form of seizure usually consists in a temporary loss of consciousness only; this may be so momentary as to be almost overlooked by the patient; in childhood especially it is apt to be passed over as a matter of no consequence. Patients unaware of the importance of these attacks are apt to call them by terms of their own invention. I have heard them described as "feelings," "turns," "sensations." In some cases the lesser form of Epilepsy may alternate with the convulsive form of seizure, or the one may pass into the other, as I have often seen. It is difficult to say precisely why these two forms of attack should exist, and what are the different conditions which produce such entirely distinct symptoms. I imagine the fact to be that in the lesser form of seizure the wave of nerve power liberated from the medulla oblongata passes only

upwards through the cerebrum, thus producing unconsciousness, but no convulsion. Of course this would demand the expenditure of a much smaller amount of nerve force, which may account for the much greater frequency of such seizures. It would also explain the extremely prostrating mental effect which such discharges produce. Indeed the mental condition after such attacks is often most perplexing. Patients will do all kinds of extraordinary things while thus distraught, and are frequently very obstinate and difficult to manage. When this is the case, it is most important that they should be in the hands of a careful attendant, or very distressing results are apt to occur. These slighter attacks vary very much in the phenomena by which they are attended. They may or may not be accompanied by slight twitching of some of the facial muscles, and the patient may or may not change colour, though in most cases there is a sudden pallor followed by a deep flush ; in many cases the loss of consciousness is immediately preceded by an exclamation, or an indistinct muttering ; in others there is no sound whatsoever, but a grinding or munching movement of the jaws takes place ; in most cases the eyeball is fixed, and the eyes stare with a vacant look straightforward. In my experience attacks of this nature are more frequent among women, and are more apt to occur at the catamenial epoch. In two cases now under my care the seizures commence

directly after the menstrual period, and continue usually for a week or ten days, when they suddenly cease, to re-appear again at the next period.

Many physicians are inclined to connect peculiarities in the shape of the head, and malformations such as irregularities in the two sides, or a twist of the calvarium, with Epilepsy. I think there can be no doubt that in such patients we do meet with neuroses of various kinds; but I do not think that we must look particularly for Epilepsy.

The medulla oblongata is that central spot of the nervous system, the *nodus vitæ* as it has been termed in which motor power becomes bilateral. In the spinal cord below, divided as it is into two lateral portions, between which there is no decussation of the motor nerve, and in the cerebrum above, in which most functions would appear to be unilateral, an injury of one side produces a merely unilateral effect, and it is only through the medium of the medulla oblongata that a bilateral combination is produced. This is very well shown by an experiment of Brown-Sequard's. That observer divided one half of the spinal cord in dogs opposite to the lower dorsal vertebræ; this produced, after three weeks, convulsions which affected both sides of the body, which convulsions could be at any time brought on by irritating the medulla oblongata through the nervus trigeminus of the same side. Thus, if the cord was divided on

the left, irritation of the left cheek produced the attacks; if both sides of the cord were divided, irritation of either cheek would induce them. We must infer from this that the sense of irritation travelled slowly up the cord to the medulla oblongata; indeed the convulsions could be induced only by irritation of a nerve springing directly from that spot. I have long observed that in epileptic patients a peculiar sensitiveness exists in the neighbourhood of the medulla oblongata. I frequently find that, by applying pressure over the space between the occiput and the atlas, peculiar sensations are apt to arise. These sensations are liable to be referred either to the stomach, throat, or some other point which derives its nervous supply directly from the medulla oblongata, and are apt to assume a similarity to sensations which would ordinarily precede an attack; indeed, in several cases I have been enabled by pressure over this space to intensify all these nervous sensations almost to the verge of an actual seizure. If the earlier phenomena of an epileptic seizure be watched carefully, it will be found that they all arise in parts which are immediately in connection with the nerve centres of the medulla oblongata. Thus the first symptom may be the peculiar cry caused by the sudden closure of the glottis; or, again, the sudden spasm discharged from the vasomotor centre may cause a sudden pallor to come over the countenance. Again, as Van

der Kolk\* remarks, the first disordered action may manifest itself in difficulty of respiration. In several cases I have noticed that the attack commenced by a sudden choking while swallowing food. Joseph Franck observed that, in seven out of twenty-one patients treated at Wilna, vomiting was the first noticeable symptom. Now, in all these cases, which are examples of the most common commencement of epileptic attacks, the parts implicated in producing the phenomena are in the most intimate relation with the nerve centres of the medulla oblongata. On the other hand, in cases of Epilepsy in which the source of irritation or exciting cause is situated at a distance from these sensitive nervous centres, and also in those cases which commence with an aura, the convulsions do not become general, nor do any head symptoms occur until the irritation has reached these important nerve centres. The experiments of MM. Kussmaal and Tenner, although they misled them into forming an incorrect theory as to the immediate cause of convulsions, afford a strong proof that the medulla oblongata is the seat from which these convulsions spring. These observers first excited convulsions in rabbits by cutting off the supply of arterial blood to the brain and medulla oblongata; they then removed the cerebrum even as far as the

\* Van der Kolk, p. 210.

crura, and in one or two cases the cerebellum itself was sliced off; yet, notwithstanding this mutilation, the convulsions still continued. These very crucial experiments would certainly seem to place the seat of Epilepsy below the cerebrum proper. Again, if the supply of blood to the spinal cord were cut off by applying a ligature to the arch of the aorta, no convulsions but paralysis ensued; but when the aorta was tied and compression of the vessels made, thus cutting off the supply of blood to the cerebellum and spinal cord, convulsions came on immediately. Thus we must infer that the source of general convulsions must be sought for within the cranium; yet convulsions continuing after the cerebrum and cerebellum were removed would plainly limit the seat to the sensitive parts lying at the base and closely connected with the medulla oblongata, those parts, indeed, which Marshall Hall grouped together under the name of medulla oblongata. In many cases of Epilepsy, especially in children, there is a remarkably free flow of saliva, a fact which would point to an exalted sensibility of the centre for excitation of the secretion of the saliva which is situated in the medulla oblongata. The protrusion of the tongue, again, although it is not always one of the earlier phenomena of an attack, is an action too closely connected with an irritation of the medulla oblongata to be passed by without remark.

If we now proceed to compare these facts with

others which are to be gathered from the results of post-mortem examination, we shall, I think, find remarkable confirmation of the views I have expressed. The seat and causes of Epilepsy have been so little understood, that many otherwise accurate observers have altogether failed to detect after death any deviation from the normal condition. Foville, indeed, in speaking of the post-mortem examination of the epileptic, says, "Vous en trouverez rien, absolument rien qui diffère de l'état normal dans le plus grand nombre des cas de ce genre." It was partly owing to the dicta of men like Foville, partly, no doubt, to the want of accurate observation of pathological changes in the dead body, and perhaps, most of all, to the want of microscopical aid, that so little was discovered until late years of the true nature of the changes produced by Epilepsy. For instance, Dr. Boyd, who gave the results of the post-mortem examinations of fifteen epileptics, seems to have paid more attention to the thickness of the skull, and the weight and general appearance of the brain, than to any minute examination of its tissues—indeed, it is not clear that in any case he examined the medulla oblongata at all—yet these reports were published so late as 1857. It is to Van der Kolk, of Utrecht, no doubt, that the credit is due of having first pointed out that deviations from the normal structure are to be detected post mortem

in the nerve centres of the medulla oblongata of the epileptic. He first noticed that the sensitive parts at the base of the brain became hardened, owing to the deposition of albuminous matter in its tissues through exudation from the vessels. This led him to a closer examination of the capillary system of the medulla generally, and he found that in the epileptic of long standing these vessels were invariably more or less enlarged. So accurately were his investigations carried out, that he was able to foretell, with a considerable amount of certainty, whether a patient had during the attack been liable to bite his tongue or no, by observing whether the capillaries which supply the hypoglossal centres in the medulla oblongata were or were not dilated.

It would be useless to follow up the reports of other investigators beyond saying that M. Ferrus observed increased density of the brain, a condition probably akin to the hardening produced by albuminous deposits as observed by Van der Kolk, and so far a corroboration of the truth of his examination. Wenzel, again, considered that disease of the pituitary body was the real "causa mali" in Epilepsy, and quoted a number of cases in which it was found to be affected in persons who had thus suffered. In this, however, he was refuted by Rokitansky, who says, "I have frequently failed to discover this disease (of the pituitary body) in those

who had notoriously suffered from Epilepsy and convulsions." There can be no doubt that disease and disorganisation of other parts of the brain may and do act as exciting causes of Epilepsy, but they can, I think, do so only through the medulla oblongata. To the above opinion of Van der Kolk's I may add that of Dr. Russell Reynolds, who regards the medulla oblongata and the upper part of the cord as the primary seat of Epilepsy. I may also quote the opinions of MM. Luys and Voisin, who, as the result of very careful post-mortem investigations, conclude that "the parts which mainly suffer in this affection are the medulla oblongata, corpora striata, the cerebellum, and other parts at the base of the brain."\*

This is, of course, giving a large base of operation, but it must be remembered that there were great difficulties in the path of observers, and that in a disease which has its origin, as I believe, in the derangements in the circulation of an unseen and impalpable force, a disease which in its inter-paroxysmal periods gives but slight sign of its existence, we can expect to find but few structural changes, and these only in old-standing cases.

I think the facts which I have brought forward afford strong evidence that the seat of convulsion is situated in the important nerve centres of the

\*Bristowe, p. 1069.

medulla oblongata. Now, if this portion of my theory be granted, it then remains to discover what is the condition of these centres previous to an attack; and further, to inquire into the causes of the seizure, proximate and remote.

An epileptic attack presents many points, among which I may mention the instantaneous and complete nature of the seizure, which leads one by a natural inference to compare the phenomena of convulsion with the discharge of a Leyden jar; and I think there can be no doubt that a somewhat similar process does take place, viz., a sudden explosion or escape of nerve power. It is evident from Van der Kolk's observations, as well as from numerous symptoms which precede the actual convulsion, and which in themselves strongly corroborate his discoveries, that the nerve centres of the medulla oblongata in persons suffering from or liable to epileptic convulsions acquire a too active supply of nerve force, in consequence, it may be, of increased arterial supply, or simply from a determination towards them of nerve force to the depreciation of the rest of the body, in fact, that a nervous congestion occurs. I use this term "congestion" advisedly, for I see no reason why such should not occur precisely in the same way that a corresponding vascular congestion takes place in consequence of derangement of the blood circulation. Many facts which I have observed in actual

practice strongly support this view. Generally speaking, an epileptic develops greater energy previous to an attack. He expresses himself as feeling better than usual, and more full of vitality. "His bosom's lord sits lightly on his throne." He is apt to become excited, and in many cases irritable—in fact we see in different cases different developments of disposition, just as we do when the cerebrum is excited by alcohol. "Bon vin ou mauvais vin." In some cases, indeed, there is distinct hallucination and disturbance of the nerves of special sense, and these exalted conditions are almost always to be connected with an overstimulation of the nerve centres in which these nerves originate, coupled, possibly, with an excessive arterial supply. Thus, in one case which came under my notice some years since, an attack of Epilepsy was always preceded by a foul smell in the nose, coming on sometimes two or three days previous to the actual seizure. In a second case, a distinct hallucination of sight occurred, the patient seeing objects surrounded by a bright halo of light for some time previous to an attack. Thus, on one occasion, I remember that he saw a dog with such a light around it. In a case which is now under my care, flashes of light, followed by brilliant revolving lights and colours, often precede an attack by some minutes.

In many cases also, there is a distinct increase

of the heat of the head and neck. In a case mentioned by Van der Kolk, there was a difference of  $13^{\circ}\text{F.}$  between the heat of the head and that of the cheek of a patient immediately prior to a severe epileptic seizure; and in a case I have now under treatment, in which the Epilepsy followed a severe injury to the head by a fall from a horse, which left a considerable cicatrix at the lower part of the frontal bone, a marked redness and increase of vascularity in the cicatrix was always observed to precede a seizure.

Another fact which seems to help out the analogy between epileptic and electric discharges, is the manner in which a second discharge occurs when the first has been insufficient to exhaust the accumulated nerve force; but when once this is exhausted the patient will experience an immunity from attack until the jar is, as it were, again charged. To this may also be traced the fact that in *petit mal*, or non-convulsive Epilepsy—in which the wave of discharge is much slighter, and passes off only through the cerebrum—the attacks are usually much more frequent, forty and fifty, or even more, sometimes occurring in one day.

The nature of the processes which are continually going on between the nerve cells of the various ganglia, are but little understood. It is impossible to surmise what form of action passes between these cells whenever a simple reflex action

such as the transference of a sensory impression received from an afferent nerve, has to be converted into a motor influence and conveyed down a motor track to a muscle. It is therefore, as might be expected, difficult to say positively what changes the nerve centres of the medulla oblongata (structures of most delicate and sensitive organisation) undergo to render them liable to suddenly discharge their force. In all probability there is, as I have stated above, a too active determination of nerve power to these parts, coupled with an excited and hypersensitive condition; and this is probably intensified by the increased flow of arterial blood to the same parts. But these causes would, in themselves, I think, be insufficient to effect a discharge from the cells, were it not for a defect of which I am now about to speak, and which defect, in my opinion, constitutes the main predisposing cause of Epilepsy.

That the whole nervous system in man is subordinated, regulated, and controlled by some power within him is evident; otherwise all the natural functions of the body, all power of combined and co-ordinate movement, would be at an end. Of this power, and of the manner in which it acts, we have but slight knowledge. As Michael Foster,\* in summing up his remarks on the function

\* Michael Foster : *Physiology*, p. 541.

of the spinal cord, says, " These various facts plainly show that the spinal cord, and indeed the whole cerebral nervous system, may be regarded as an intricate mechanism, in which the direct effects of stimulation or automatic activity are modified and governed by the checks of inhibitory influences ; but we have as yet much to learn before we can speak with certainty as to the exact manner in which inhibition is brought about."

Even in those vital actions which appear to us at first sight to be almost entirely automatic, we shall find that this controlling or inhibitory power has influence to a greater or less extent. Respiration, for instance, is partially under control of this power. The heart's action may be checked by impulses proceeding from the brain, and aroused by emotional causes, as in cases of syncope from terror, and in some instances by an effort of will ; and all organic functions will be found to be under this regulating influence to a greater or less extent. And as we descend in the scale to the less important functions, we shall find the inhibitory restraint to be greater. Michael Foster, indeed, says, " Seeing that in the ordinary actions of life the spinal cord is to a large extent a mere instrument of the cerebral hemispheres " ; and if we examine the functions of organs which derive their power by reflection from the nerve centres of the spinal cord, we shall see the truth of his remark. Take, for instance : the action

of the lower bowel in defæcation ; of the bladder in micturition ; of the erectile power of the penis—all reflex actions, yet to a vast extent subordinate to cerebral control.

Familiar examples of the more simple forms of inhibitory power are not wanting. Take for instance, the power of preventing the jerking of the legs when the feet are tickled, and of refraining from uttering cries when undergoing pain ; the arrest, by the exercise of this power, of hiccough or cough. In perfect health, no doubt, the supply of nerve force to each part of the body is duly regulated, any excess is checked, and any deficiency supplied ; and by this means only can any organ be kept in active working order, and ready at each moment to obey the dictates of the will or the summons of reflex stimuli. Nor is this regulating or inhibitive power confined merely to the superintendence of physical actions, it extends also over those organs which are distinctly cerebral : thus it keeps in check and moderates mental emotion, and by thus doing produces a marked influence on the regular performance of purely physical functions.

As there is no doubt that man possesses to a remarkable extent the power of directing nerve force into different channels, the influencing and inhibiting the action of organs whose functions would at first sight appear to be almost automatic ; and it is also certain that nerve force flows more readily through

accustomed channels, so that a flow once directed down a certain track is likely to continue to run in that direction even after the controlling power has ceased to act upon it directly; even under deranged conditions, such as the discharge of nerve force in Epilepsy, every occurrence of the paroxysm tends to establish the Status Epilepticus, as it has been termed. Some interesting observations in illustration of these facts will be found in Darwin's work on *Expression of the Emotions*. He speaks of "mental attention as having some power to influence the capillary circulation." He goes on to say that many sound observers "are convinced that attention, or consciousness concentrated on almost any part of the body, produces some direct physical effect on it. This applies to the movements of the involuntary muscles, and of the voluntary muscles when acting involuntary, to the secretion of the glands, to the activity of the senses and sensations, and even to the nutrition of parts. It is known that the involuntary movements of the heart are affected if close attention be paid to them. Gratiolet gives the case of a man who, by continually watching and counting his own pulse, at last caused one beat out of every six to intermit. On the other hand, my father told me of a careful observer who certainly had heart disease and died from it, and who positively stated that his pulse was habitually irregular to an extreme degree;

yet to his great disappointment, it invariably became regular as soon as my father entered the room." Sir H. Holland remarks that the effect upon the circulation of a part, from the consciousness suddenly directed and fixed upon it, is often obvious and immediate. Professor Laycock, who has particularly attended to phenomena of this nature, insists that "when the attention is directed to any portion of the body, innervation and circulation are excited locally, and the functional development of that portion developed." He goes on to show how the involuntary muscles in connection with the peristaltic movements of the bowels are affected by attention being drawn to them at particular times; the same may be observed of the excitement of the sexual impulse.

That Epilepsy is ever idiopathic, that is, a *morbus a se*, I do not believe, though it may take its origin in a defect of which it is impossible to detect the presence post-mortem—I mean a defective power of regulation and distribution of nervous force.

Perhaps the best mode of explaining the manner in which I believe an epileptic attack to arise, from the combined action of the two causes which I have mentioned, is by watching what occurs when a nerve centre, whose action is confined to the carrying on of a definite function, is excited from over-stimulation or any other cause. Let us

take, for example, the spinal nerve centres which are occupied in regulating the discharge of semen. This, it is well known, is a reflex action, but to a great extent under inhibitive control from the cerebrum, as is proved by the effects of timidity or fear. Now, in cases where these nerve centres have been much over-stimulated and excited by sexual excesses, they fall into precisely the condition which I wish to describe; in fact, they become to a certain extent epileptic, that is to say, they are rendered liable to discharge their nerve force involuntarily, or upon the application of slight stimuli; more especially does this occur during sleep, when the restraining power is naturally less active, or altogether removed. No doubt this condition is coupled with a too active supply of arterial blood drawn to the spinal centres by the over-stimulation of the parts, and the consequent necessity for an active nutrition; but the derangement of the function is from first to last of a purely nervous character. The frequent micturition of children at night in bed is also a somewhat similar instance of the effect of the suspension of inhibitory power over a natural function. That there must be some such specific condition of the nervous system existing to induce Epilepsy is evident. Sieveking plainly saw this when, in endeavouring to account for the epileptic seizure, he says: "Hence we must assume something more than the predisposing

influences commonly so called—namely, a peculiar habit of body which we are certainly unable to define, but which, for want of a better term, may be called a nervous diathesis.” Now it is, I think, very clear that what Dr. Sieveking terms a nervous diathesis is, in fact, the very condition of which I have been speaking, viz., the deficiency of the power which controls and regulates the distribution of nerve force. In regarding this deficient power of nervous control as the main factor in the production of Epilepsy, we account also for the absence of all structural change in the nervous centres, a fact which has proved so bewildering to pathologists. In fact, if we regard the pathological changes which we do detect as consequences, not causes, of the disease, Epilepsy may be described as a disorder dependent on the defective control of an unseen circulation. This being so, it is unnecessary to look to altered conditions of nutrition, and changes of vascular circulation, for the proximate causes of the disease.

That some such condition must exist is rendered evident by the fact that precisely the same causes of irritation may exist in a number of persons, and yet in only a small percentage of them will Epilepsy arise. Take, for instance, the irritations of the fifth nerves produced by the effects of teething. Numbers of children suffer excessively from this cause but are never attacked with what are termed

eclampsia or infantile convulsions, seizures identical with those of Epilepsy; and the same is true of disorders incident to adult life. Given a large number of persons affected with precisely the same causes of irritation, Epilepsy will occur only in a certain small percentage.

We have, then, two conditions which are eminently conducive to Epilepsy—first, a deficiency of the power which controls and regulates the distribution of nerve power. This is probably the most important and imperative factor. Second, an excited and hyper-sensitive state of the nerve centres of the medulla oblongata. This may be, and often is, brought on or aggravated by outside sources of irritation.

HYPOCHONDRIASIS, MELANCHOLIA,  
AND  
LOSS OF MENTAL CONTROL GENERALLY.

WHERE Nervous Exhaustion exists, mental depression is almost invariably found to be one of the prominent symptoms; for as the mind is but the reflection of the physical organism, it follows that if the latter is enfeebled and depressed the former will manifest a sympathetic failure.

But mental depression varies greatly in its intensity, and will be found, as a rule, to be less in those cases in which the irritability finds an outlet in motor disturbance. Thus Chorea and Epilepsy are less likely to be accompanied by depression than those disorders in which the symptoms have less prominent manifestations. Indeed both Epilepsy and Chorea are in themselves but symptoms by which Loss of Control is manifested.

The conditions which express this Loss of Mental Control vary very widely in intensity and character. They may be simply slight forms of what might almost be termed mental eccentricity, or they may show themselves in the deepest and most intense

melancholy ; between either of these extremes there will be endless gradations, and every variety of weakness and delusion.

In the slighter forms a patient may simply exhibit great irresolution, difficulty of making up his mind, timidity, often a dislike to meeting friends or going into any crowded or public place. In others there is a fear of being in any enclosed position, as in a seat in church, or at the theatre, a sensation that under such circumstances they are unable to breathe ; while in others there is a dislike, often amounting to terror, of railway travelling. I have known many men, otherwise apparently of quite sound mind, travel long distances by carriage, at great expense and inconvenience, because they found themselves quite unable to face a journey by railway. In others there is a curious dislike to cross open spaces ; the patient feels that the houses are some kind of protection to him, and dislikes losing touch of them, as it were. This form of want of Control was well recognised in former times, and was called by the Greeks *ἀγοράφοβία*. A patient who suffered from this failure of Nervous Control once told me that if he found himself on a great elevation, as on the top of a hill, he had a feeling that he should go up, and that at times he had thrown himself on the ground and clutched at the grass so as to prevent his rising. No doubt the much more common feeling, that you must throw yourself from any high building or

other elevation, has its origin in the same form of Nervous Instability.

Some patients suffer from a feeling that they are, as it were, outside themselves; that they are, as it were, leading a kind of dual existence, regarding themselves and their actions as matters beyond their own individuality.

But these are merely the lighter and less grave symptoms from which the loss of Nervous Control is to be diagnosed. The more intense forms of mental depression are those which are most trying to the patient, and most difficult of cure by the medical man. And here, again, there are endless degrees of intensity in the nature and character of the feelings. There may be simply a sensation of depression on first waking, which passes off with the first nourishment, or the first contact with active life; or the patient may wake at a very early hour—for this state is often allied with insomnia—full of the gloomiest dreads and apprehensions, in which bathos of despair he will continue for the greater part of the day, generally gaining some relief before evening.

The fact that the depression is much increased in intensity after an unusually good night would seem at first difficult to account for. But the sleep in these cases is probably not the healthy sleep of the anæmic brain; it is the congested stupor resulting from the sluggish circulation of blood poisoned by

waste material. Now, as during sleep the vascular circulation is less active, the tissues of the brain are submitted more completely to this unhealthy pabulum, the result being an increase of morbid depression.

Somewhat a similar state is to be noticed in cases where the blood is not sufficiently purified by an active elimination, and when the circulation is extremely inactive. In such cases passive congestion may come on and may be accompanied by loss of memory, loss of motor power, and extreme apathy and depression. Although the melancholy may, and often has, some foundation in fact, yet it will in almost all cases be intensified more or less by delusion, which, however, the patient will by no means admit.

The condition in these forms of depression can be best compared with nightmare. There is an absence of control of mind, and a tendency to exaggerate simple, ordinary, conditions into strange and terrible eventualities. And all this time there is a causeless, horrible, dread hanging over all. Such patients are often extremely recriminatory of themselves; they will narrate to you all the fruits and follies of their life, magnifying their importance, and often accusing themselves of perfectly imaginary crimes. There is often a strange incoherency in their talk. They will mingle texts from Scripture with oaths and bad language, but always returning to themselves their sins and iniquities. Their fears for the future are

intensified by vague nightmare horrors. The countenance shows their extreme mental depression, the face is drawn and marked with deep lines, the forehead is depressed, and the brow marked by deep wrinkles, the complexion is sallow and tinged with bile, the lids droop over the eyes, the whites of which are yellow and bloodshot.

In many cases this mental prostration is liable to assume a religious form. The patient fancies he has committed the unpardonable sin, that he is utterly and for ever lost. No amount of argument or persuasion will induce him to recognise that his mental condition is due to a failure in his physical power. He will probably admit the truth of your arguments as applicable to other cases, but "his case is distinctly different, no one ever saw a case quite like his," etc. This mental state in its severer forms is often accompanied by an almost complete interruption of function of the organs of digestion and elimination; there is often great loss of appetite, dyspepsia, constipation, aperients acting with great difficulty, and then only producing scybalæ in consequence of an almost complete stoppage of the biliary flow. The skin is inactive, dry, tinged with bile, and in some advanced cases the elimination from it is extremely offensive. There is a complete loss of energy; such patients will not take exercise, they wish to be left alone, and they sit crouched down muttering to themselves or quoting texts of Scrip-

ture. Such patients rapidly lose flesh and muscular tone, partly from their reluctance to take food (for they often hold a firm conviction that they are too wicked to take any form of nourishment), partly from loss of digestive and assimilative power. That these conditions of mind are largely dependent upon loss of energy of the sympathetic system is evidenced not merely by this marked loss of tonicity in the vascular system, but more directly by the sensations which arise immediately from the large plexus of nerves. The solar plexus is especially liable to manifest these painful sensations, the more common of which are sinking, faint feelings, which are aggravated by pressure on the plexus.

But the delusion is not necessarily confined to religious matters. In many there is a dread, or a certainty, of impending poverty or destitution, of which nothing you can say or do will dispossess them. In severe cases of depression it is not uncommon for the patient to suffer from hallucination. He may see the Evil One *in propria personâ*, or may have horrible visions of dead bodies, or of being surrounded by flames, etc., etc.

Attacks of depression of this kind are more apt to recur at certain times of the year, more commonly at spring or autumn; and it is a curious fact that when a patient suffers from a recurrence of attack it will in all probability come on at the same time of year as the first seizure. It is difficult to say why

this should be so. It has seemed to me most reasonable to account for it on the ground that some patients are unfavourably affected by cold, others by heat. I think most people find that there is a time of year at which they are more liable to failures of general health. No doubt a more extended observation would afford some solution of this question. In very many of these cases there is a more or less decided tendency to suicide, and it is never wise to trust such patients too much to themselves; they should always be under a certain (almost imperceptible) amount of control.

## TREATMENT.

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### TREATMENT GENERALLY.

IF we examine carefully the history of the diseases which I have noted, and compare their symptoms, we shall see not only how they merge one into the other, but also that they one and all bear internal evidence of having arisen from an identical causation. Thus we see Hysteria in its worst form so closely approaching Epilepsy that it is often difficult to distinguish between them ; we see that the mental states of Hysteria and Chorea are closely allied ; we find Neuralgia, Insomnia, and Mental Depression frequently engrafted on the other more pronounced forms of Nervous Disease.

There is, in fact, clearly in the nervous system of Man an evolution of degeneration in disease, just as there is in the opposite direction an advance towards higher levels of culture and civilisation. Take Man in his highest perfection, crowd him into filthy slums, with impure air to breathe and worse

water to drink, saturate his brain with alcohol, and you will find that disease will soon break down and mar the delicacy of that highly complex organism his nervous system, that delicate and sensitive machine the powers and faculties of which have only been acquired through endless generations, and by an almost imperceptible process of growth and development, the result of the accumulated experience of ages. The great wonder is that so sensitive and complex an organism as the brain should offer so great a resistance to the destructive influences by which it is constantly surrounded.

As I have before stated, Man is influenced in both his advance and degeneration by his surroundings, and if these alter quickly it will often be found that the human organism is unable to keep pace with the altered condition of its environment. Now this has notably been the case during the past few generations, and the advance is still continuing with ever-increasing rapidity.

It is clearly to the increased amount of competition in business life, to the greater rapidity generally with which we "live, and move, and have our being," to competitive examinations, and to the pressure put upon feeble intellects by School Boards, that we owe the large and rapid increase in the amount of Nervous Disease.

Dr. Weir Mitchell noted that the rapid increase in the number of cases of chorea during the months

of April and May was probably due to the pressure put upon the brains of the children preparing for the yearly school examinations which took place in June.

Whether, then, the lowered vigour and control of the Nervous System be due to hereditary or induced causation, it will be found to manifest itself in an inability to resist the effects of slight exciting causes.

Before proceeding to the discussion of the treatment of the various outcomes of exhaustion of the Nervous System, I must make one remark respecting the duration of time through which the depressing influences have been at work. It will be found a reliable law that rapid lowering of vitality implies the possibility of rapid restoration, but that, on the other hand, when the causes of the Instability are native, or hereditary, or have been in existence for a lengthened period, then the building-up process must be proportionately extended. Indeed, the maxim to be found on some barometers may be applied here with equal truth: "Long threatened, long last; short notice, soon past." And to this natural law must be added the observation that the lower the point to which the nervous vigour has been carried, the greater will be the amount of irritability and tension, and the more attenuated must be the doses which can safely be borne by the patient.

As I believe that, in the large majority of cases of Nervous Disease which come before us, hereditary influences will be found to be the main factor, it will be evident that if we wish to treat these cases successfully we must allow ample time for their cure; that nourishment and not stimulation must be our aim; that we must in our treatment approach them from every point of view, not only by medicinal means, but by diet, by baths, the use of hot and cold water, by rubbing, massage, electricity, and last, but not by any means least, by moral force and influence.

If I were asked why the treatment of these forms of nervous disorders has been hitherto attended by such unsatisfactory results (I may specify here especially the treatment of Epilepsy), I should say that it was because we have lost sight of the protracted causation of these disorders, that we have been endeavouring to do quickly what can only be done gradually and by almost infinitesimal steps.

Let anyone try to treat any of these long-standing depressed forms of nervous disorder which I have specified by full, or even medium doses of tonic, and he will find that the result will be only to increase the irritability and intensify the symptoms he is trying to ameliorate. Take the one disease of Epilepsy, for instance. Almost every writer who has treated of this disease has recognised it as having its origin in depressed nervous conditions; yet one and all have

failed to cure it by the presumably natural method, by tonic treatment, and have had recourse to bromides, the effect of which is to numb the irritable and excited nerve centres temporarily into quiescence, and thus to obtain a relief which, as a rule, lasts just so long as the effect of the medicine is kept up. A drug of which the main action is declared by all pharmacologists to be depressant of nervous vigour, is surely not a reasonable remedy for a disease which originates in lower nervous vitality; so the profession finds itself in the curious position of endeavouring to cure a disease of Nervous Exhaustion by administering a powerful nervous depressant.

But to return to the natural method of cure by tonics. No doubt the reason why these efforts failed so signally was because we have lost sight of the extreme irritability and intolerance of tonics which exist in most cases of Epilepsy. The enfeebled state of the nervous control can deal with but very small accumulations of nerve force. Directly the centres become, as it were, charged beyond a certain point, a sudden liberation of nerve force takes place, which, indeed, constitutes an epileptic paroxysm; so that unless we can first strengthen and increase the control which regulates the distribution of nerve force it is of no use to attempt to increase the supplies. We must in all our measures keep below the point of stimulation, and nourish and

build up so slowly that we gradually strengthen the power of control without at any time putting too great a strain upon it.

That it is possible thus to build up the controlling power is evident, if we only watch the gradual return of this force in patients who have been exhausted by long and depressing illness; we see how at first they are unable to co-ordinate their movements with regularity, so that actions which had become almost automatic—as walking, for instance—had to be learnt afresh, and were at first performed awkwardly and with difficulty. Now, if we continue by nourishment and tonics to build up our patient, we soon see the power which regulates the circulation of nerve force gradually re-perfecting the power of movement until complete co-ordination is restored. In the mind, also, we see how the control has been lowered, the patient being often vacillating, peevish, irritable, or depressed. Of course the gradual increase of this controlling power is still better seen in the infant as it gradually emerges from childhood; only here it is the acquirement of a faculty, not the restoration of one which had been previously lost.

I propose in entering upon the various methods of treatment of the nervous disorders which I have classed together as outcomes of Nervous Exhaustion, to take them seriatim, though they all have a similar primal origin. Yet, as we have in many cases to

endeavour to afford more immediate relief than can be given by the somewhat slow process of restoring the nervous vigour, and as these means vary greatly in different cases, such a course as I propose becomes almost imperative.

So far, then, as medicine is concerned, it is evident that what we have to find are drugs which shall, without stimulating, nourish and build up the vigour of the weakened nerve centres. Now there are many nerve tonics which in anything approaching full doses are distinctly stimulant, yet in small attenuated doses just fulfil this object of nourishment, or restoration. Among them I may mention *nux vomica* and its alkaloid *strychnia*, *cinchona* and its alkaloid *quinine*. Both these remedies must be given in very small dose, one which is distinctly below the point of stimulation, if their nourishing properties are to be effective. However, there are many other medicines which feed brain. Among these I should place cod-liver oil first: in cold weather especially, when it is less likely to disagree; though in small doses it may be taken and well digested at almost any time—combined with Hypophosphites, as in Scott's Emulsion, it is undoubtedly of great value. *Avena*, again, the active principle of the oat, is in some cases useful. Arsenic is another remedy which is of very great service, more especially in all those forms of disease in which malarial poison acting as an exciting cause gives rise to Chorea, Neuralgia,

or any of those forms of nervous disorder which are excited or modified by climatic influences.

When the prostration of nerve force is due to sexual excess, I find phosphorus, either by itself or in combination with the minute doses of nux, most valuable as a restorative. But whatever the form of tonic to which we have recourse, it will be found an unfailing rule that the dose must be small, and given for a lengthened period. Coca, again, the liquid extract of which will be found a reliable preparation, is a most excellent unstimulating tonic.

A more recent introduction is Kreat Halviva. Of this I have but little experience, though I have just commenced using it somewhat largely, in some cases with most promising success.

## DIET.

Much has to be said on the subject of diet, for the stomach is one of the first organs to suffer from the deficient supply of nerve force transmitted to it from the exhausted centres. On this account it is highly important that the amount of work thrown upon it should be proportioned to its enfeebled powers. For this reason, milk, fish, and farinaceous foods, and the other brain-feeding forms of nourishment, will be found preferable to much meat. Indeed I am in the habit of advising that meat should only be taken at one (the mid-day) meal, and

that then only the lighter and more digestible kinds of meat should be eaten—as mutton, lamb, game, poultry, or some of the numerous extracts or compounds of meat. Again, in these enfeebled states of digestion, it is highly important that food should be taken often, in small quantities, not in large, full, meals.

Care must be used in giving cow's milk. In many cases the weakened mucous membrane of the stomach is found to be secreting an excess of acids, which is frequently increased by the inaction of the liver. In such cases, unless we dilute the milk thoroughly, it is apt to become sour and form curd. Boiling the milk, under such circumstances, will often be found to render it more digestible.

Koumiss, again, as supplied by the Aylesbury Dairy Company, I have also used with very excellent results.

Fish and shell-fish (the latter pounded or otherwise prepared) are excellent in these forms of nerve failure. Among farinaceous foods, oatmeal, rice, sago, tapioca, barley, are very useful, especially when prepared with milk; or, for a change, with some broth, beef tea, or clear soup. Among the numerous patented foods, I prefer Benger's, or revalenta arabica; both are light, nourishing, and very easily digestible.

With regard to stimulants, the less taken the better. The whole principle of treatment of these

cases lies in the rule : nourish, but do not stimulate. Of course the wholesome exception to this law lies in the giving of just that amount of alcohol which aids digestive power. The form in which I prefer to give this amount is usually the purest Scotch whisky, or brandy, thoroughly diluted with water. In some cases a wineglass of stout has an excellent effect in improving the assimilative power. Wines—as containing a large amount of colouring matter, and acids—are rarely to be recommended, at any rate those containing much alcohol. Claret and burgundy, as containing a maximum of nourishment with a minimum of stimulant, are often very useful.

### BATHS.

Tonic treatment, by the use of cold, is an admirable adjunct to medicine in the management of Nervous Exhaustion, and one which has been greatly neglected. In the commencement of its use, however, much caution has to be used : for if the circulation be very wanting in energy it will hardly answer to vigorous measures ; and if no active re-action takes place we are doing our patient more harm than good ; the test of the value of the use of cold is the amount of reaction it produces.

Of course much may be learned from the previous habits of the patient ; but in most cases I prefer to begin by the more gradual method of warmth

followed by cold. Much good is also ensured by active friction. With regard to massage, I use this largely in cases where the prostration is so complete that active exercise is impossible, or can only be taken to an inadequate extent; for we must never forget that rest, physical and mental, is a most important agent in aiding the general restoration.

One of the most common results of Nervous Exhaustion is the failure of the eliminating organs (the skin, the liver, and the kidneys) to perform their functions with sufficient activity and vigour. As a natural consequence there is retained in the system waste material which finds its way into the blood, so that the brain—receiving only vitiated, impure nourishment—fails to act with energy, and thus adds to the general failure.

In order to withdraw from the blood these waste matters, which the organs have failed to secrete in a natural manner, it becomes necessary to supplement nature by artificial aid, and with this object the Pack will be found a most efficient auxiliary, a wet sheet wrung from cold water (damp, not dripping) is wrapped tightly round the body from below the arms to the feet; the patient then lies down upon two blankets, which are wrapped round him closely from the neck to the feet. He lies thus for one or two hours. He then removes the coverings, washes himself quickly in warm water, and gets at once into

a bed which has had the chill taken off. Of course this process is best carried out last thing at night. In place of being at all an unpleasant process, the Pack will, when it has been used three or four times, be found to be not only a most efficient derivative but a soothing and pleasant form of bath.

And here I find it necessary to say a few words on the Turkish and those other forms of Baths which expose the surface to very great heat. There can be no question that the skin when submitted to the stimulating action of great heat is liable to extreme reaction, and this is but a rendering of a natural law which applies to all organs indiscriminately.

The following is a somewhat interesting case illustrative of this fact: An extremely gouty patient who came to see me, took, prior to his consultation, a very hot brine bath. On the following morning I found him, suffering from a very acute attack of gout, sitting in an easy chair, with his joints wrapped in cotton wool. As he was perspiring very freely, I dipped some litmus paper in the beads of sweat on his forehead—it showed a perfectly alkaline reaction. That night I had him packed in a wet sheet, in which he remained for an hour-and-a-half. The next morning the gout had nearly gone, and the litmus when touched to his skin turned bright red, showing an ample discharge of acids.

The functions of every organ are governed by natural laws, the right understanding of which is imperative if we wish successfully to combat disease. We all know that stimulation of the Liver, though it may cause immediately a freer flow of bile, is certain to be followed by a corresponding reaction, a check of action.

It is impossible in the limits of so small a work to describe all the processes, whether of medicine, diet, general regimen, or water treatment, which are to be recommended in different cases. I can do no more than indicate the general principles of treatment, for as in no two cases are the developments of Nervous Exhaustion precisely similar, so no general law can be laid down which shall apply to the treatment of all cases.

## TREATMENT OF SUPPRESSED GOUT.

As all the symptoms which we find in Suppressed Gout are identical with those which have their origin in Nervous Exhaustion, we can have no difficulty in referring effect to cause. It is clearly the defective nervous supply to the digestive and eliminative organs which lies at the base of the whole disorder.

Indeed, the dyspepsia, the constipation, the inactivity of skin, the mental depression, are all clearly traceable to loss of vigour; and what is more important, they are all found to be remediable by measures which restore to the brain its normal energy and vigour.

In approaching the treatment of these forms of nervous disorder, we must never lose sight of the fact that they are all largely dependent on hereditary influence, and even when this can be quite put out of the question, and the depressed state of the nervous constitution clearly traced to induced causation, it will be found that the exciting causes have usually extended over so long a period as to nega-

tive the possibility of a rapid repair—at any rate, if that restoration is to be of a complete and permanent character. This being so, it is equally clear that all forms of stimulating treatment are out of the question, and that if tonics are to be used they must be given in such small quantities as to guard against the possibility of reaction. All stimulation must be followed by reaction, and implies a subsequent lowering of the normal status. Of course the first step in the treatment of such cases should be, as far as we can, to remove the causes which have produced the result which we see, to take the patient as far as possible out of his present surroundings, and place him under those which will be favourable to a rapid recovery. Any such case requires to be attacked from every side. The environment must be such as will divert the thoughts from their gloomy broodings, and by diet, exercise, baths, and general hygienic treatment, we must endeavour to restore the healthy power of brain, the loss of which constitutes the disorder. It will, I believe, be found to be a general law in all such cases, that the more complete the loss of nervous vigour the more delicate must be the means by which we should attempt its restoration. Those who are not conversant with the treatment of such cases, or who have failed to watch them closely, would find it difficult to understand the extreme intolerance which they exhibit to the action of tonics.

Of course any distinctly Gouty symptoms which may show themselves may be treated at the same time, but it will be found almost invariably that these will succumb rapidly to the means by which we are endeavouring to treat the nervous failure, and that, as the former are but symptoms which come into existence in the progress of the latter, they will yield to the means by which this cause is overcome. In very many of these cases it is a problem difficult to solve by what method to increase the brain power without undue stimulation and consequent aggravation of the symptoms. Those medicines which partake more of the character of nerve foods, rather than tonics, are the most applicable to these cases: for instance, cod-liver oil, iron, the hypophosphites, coca, *avena sativa*, and other similar drugs, will all be found useful; but when they can be borne, I prefer very minute doses of *nux vomica*, as acting more directly on the nervous system and enabling the brain battery to discharge a stronger current in the direction of the different digestive and eliminative organs. With regard to the action of *nux vomica*, one would hardly believe how small a proportion will produce tangible results, and what detrimental effects attend the exhibition of too full doses. The British Pharmacopœia tells us that the dose of extract of *nux vomica* lies between the eighth of a grain and the half or even one grain. Now I find that I get my best results with doses of from the

fiftieth to the two or even four hundreth. Indeed, our aim must be, by the continuous frequent, exhibition of these small quantities to obtain a gradual but, because gradual, permanent result. In many cases where the nervous system has by long-continued exhaustive causes been rendered extremely sensitive to the action of drugs, I have seen the one-hundredth part of a grain of *nux vomica* intensify the very symptoms which it was intended to relieve.

But there are other methods of treatment, besides medicinal ones, on which great reliance is to be placed, namely, the general surroundings of the patient—exercise, diet, fresh, bracing air, and, above all, the use of cold, in the form of baths, combined with rubbing and massage. Electricity also, in some cases, has an excellent effect; but it must be used with caution, and so as to invigorate, but not stimulate, the nervous system. But of all these means, the judicious use of cold is by far the most powerful and most lasting in its effects. Its beneficial action is mainly due to the improvement which it produces in the circulation both of blood and nerve force, so that the stoppage of function resulting from the local congestion of internal organs is relieved. With regard to the amount of cold, we must be guided by the circumstances of the case; the test of the use of cold water is reaction: the greater the reaction the greater the benefit to the patient. In cold weather, and in cases where the

nervous vitality is slight, we can proceed only by the most gradual steps, commencing with hot or warm water, and using one or two spongefuls of quite cold to the spine, following its use by active friction. The patient gradually becomes habituated to more extreme measures. It is generally wise to give the bath more than once in the day. With regard to climate, sea-air does not generally agree well with such patients; what is required is a dry, bracing, mountain air. Everyone is conscious of the exhilarating effect produced on the spirits by the ascent to even moderate altitudes; and a change from the heavy, smoke-laden, air of populous cities, to a dry hill-side air, is generally attended by the most gratifying results, both to patient and doctor.

In directing the diet of such patients, the first point demanding attention is to relieve the weakened digestion; to take care that all the food taken shall be of as light and nourishing a nature as possible, so that not only is assimilation readily carried on, but the important point of nerve nourishment is thoroughly maintained. With this object, milk, fish, eggs, farinaceous food of all kinds, are indicated, in preference to much meat fibre or the grosser or heavier articles of diet. For the same reason, frequent small meals are preferable to larger ones at longer intervals. I may mention especially, Benger's food, revalenta arabica, and many of the other artificial foods, as being admirably adapted to

these cases. What I have just said respecting diet applies with especial truth to those patients in whom the symptoms appear late in life. In many cases a radical change of diet in elderly persons makes all the difference between comfort and misery. A careful avoidance of over-fatigue, either mental or physical, is also necessary. Moderate exercise in the open air, twice on each day that weather permits, is amply sufficient; and on no account should brain-work of any kind be permitted.

If it can be proved that the Gouty symptoms which I have described are simply the result of nervous failure, it is evident that the best method of attempting their treatment is through the nervous system; and this, in my experience, has always been found a perfectly satisfactory method. Still, there can be no reason why, while endeavouring to restore the lost nervous vigour, we should not at the same time attempt to relieve the distress caused by many of these symptoms. One of the most effective systems by which we are enabled to accomplish this is by the use of the Pack, either complete or partial. Again, the dyspepsia may, to a certain extent, be relieved by careful dieting and the use of artificial digestives, such as pepsine. The inactive condition of the liver may be, to some extent, overcome by rubbing, soothing fomentations, or the use of the acid bath, the formula for which will be found in Squire's Companion to the Pharmacopœia; and endeavours

may be made to relieve the blood of its retained acids by the use of alkalies.

No doubt the chief benefit derived from the numerous baths and watering-places on the Continent, is the alkalisation of the blood which is there effected. All efforts to attain the same object in England seem to have failed, mainly because we have never used the same simple methods. For instance, patients constantly tell me that they take Karlsbad salts, but derive little or no benefit from them, except a certain amount of aperient action.

Now the right principle of administration of these alkaline waters is clearly to get them thoroughly into the blood. The patient rises early and drinks a small portion of the water, prior to starting on a half-hour's walk. He returns at the expiration of that time, drinks a second portion, and again walks for half-an-hour. This is repeated according to the patient's powers and necessities. The object of this is evident: the active exercise stimulates the circulation and determines blood towards the skin; perspiration ensues, and a consequent drain on the blood is set up; this, in its turn, is supplied by the alkaline draughts, so that the acids discharged by the perspiration have their place taken by the alkaline waters. Now, could we only induce patients to take the same waters here in England, in the same manner as they would take them in Karlsbad or Marienbad, the results would be equally satisfactory.

There is nothing specific in the air or surroundings of these foreign watering-places. No doubt the relief to the general system obtained by the use of these mineral waters only removes for the time the more prominent of the Gouty symptoms, and therefore, to some extent, clears away the clouds and gloom from the surface of the mental mirror, but the real position remains much the same; and so soon as the beneficial effect of the water—whereby an improved secretion has been secured from liver, skin, and mucous membrane—has subsided, there is a gradual relapse to the old condition of affairs. It is on this account that we see patients returning, year after year, to renew their so-called cures.

It would be impossible to conclude the “Treatment of Suppressed Gout” without some mention of eczema. This most distressing ailment will always be found amenable to measures which shall bring into action the functions of the skin. Judiciously applied, the Pack is, I may say, infallible.

## TREATMENT OF NEURALGIA.

THE treatment of this form of nervous disorder will depend very much upon the conditions under which the case may come before us. When it is of long standing, and the patient, worn out by the severe suffering, has taken to anodynes, the case is often very difficult and prolonged ; for not only have we to combat the neurotic ailment, which is usually of an obstinate character, but the anodyne habit has also to be overcome ; and, unless your patient has great resolution and determination, this is more difficult to get rid of than the original disease. Of course, we can on this point be guided only by the length of time during which the patient has been seeking the temporary palliation, and also partly by the will of the patient to give up this artificial relief ; but, as a rule, it is safer to leave off the habit gradually. In a very severe case, now perfectly well, where the amount of morphia injected was equal to 3 grains in the 24 hours, I adopted this principle with good effect. Of course, even before this weaning process is commenced, you must begin to build up the

nervous constitution of your patient, for without this you cannot hope to get rid of the original malady.

In Neuralgia, which has, as I have endeavoured to show, many points of kinship with Epilepsy, it will be found wisest to proceed by a very gradual method, commencing by the use of very small doses of nerve tonic. I have often found that even minute doses of *nux vomica* (a drug upon which I rely very greatly in the treatment of these diseases) exacerbate the pain of Neuralgia, instead of relieving it. The reason for this probably is that the medicine in that dose supplies nerve power more rapidly than the thoroughly exhausted nervous system can dispose of it; so that the result is an addition to the irritability, and a consequent increase of pain. The same thing, as I have already shown, occurs in Epilepsy. The dose must, then, be carefully regulated and adapted to the nervous stability of the patient, otherwise an increase, not a diminution, in the severity of the pain is certain to occur; in short, you must nourish brain, not stimulate it.

There are, however, many methods by which you may relieve the pain temporarily, while the process of cure by steady restoration is in progress. Among others is the use of Chapman's ice-bag. I have found this especially of service in those cases of spinal pain, often more severe in the cervical and upper dorsal regions. It also seems to relieve the occasional unilateral pain in the head which

accompanies these cases. Again, certain forms of liniment, applied if possible to the part, will by external stimulation give a large amount of relief. The compound liniment of ammonia, with a proportion of belladonna or chloroform, is often very useful in this way. Menthol, again, combined with chloroform and belladonna, will often numb the affected nerve into quiescence. Anodyne colloid I have also found to give great relief. Cocaine I have not found of much service, as the parts are usually too deeply seated to be affected by it. Aconite will often afford long periods of ease. Warmth or heat applied to the part often gives relief; but I question very much whether it does not in many cases rather tend to increase the suffering afterwards. In some cases of excruciating suffering, anodynes are necessarily unavoidable, but should never, when it is possible, be commenced. When absolutely necessary, their use by hypodermic injection is the preferable method of administering them.

I have omitted here all mention of cases of Neuralgia which depend on the irritation arising from mechanical interference with a nerve, as from the presence of a foreign body, or, as in a case which has recently come under my notice, from the growth of a portion of the fang of a tooth from the alveolar process into the antrum. The removal of the foreign body in this case proved completely successful. Although these cases are rare, yet it is always wise

to remember the possibility of their occurrence, and to be on the watch for them.

In some very severe cases, full doses of quinine will produce excellent temporary results; but the pain is almost certain to return, possibly in an exaggerated form. This is much on a par with the action of full doses of quinine, or strychnine, in inhibiting the paroxysms of Epilepsy for a time—though the result in this case is also to cause a subsequent increase in the number and severity of the attacks. It is, indeed, another instance of the temporary effect of stimulation, in contradistinction to nourishment.

So far as medicine is concerned, I find the most benefit is to be derived from the more unstimulating forms of nerve tonic—cod-liver oil, avena, iron, quinine, and nux vomica. The two latter in very small doses, often repeated, and continued for a length of time, will generally be found the most useful. Indeed, our aim must be to procure a more perfect nutrition of brain.

Diet, again, must not be neglected. The most appropriate will consist of milk, fish, eggs, farinaceous matters. Meat—except in the form of extract or strong soup or broth—is not advisable, as in all those forms of disorder digestive power is sure to be more or less impaired, and the stomach is therefore intolerant of anything like strong meat. Food should be taken often and in small quantity, rather

than in full meals. Stimulants, in severe cases, are not advisable; but in the slighter and more recent cases, port-wine or Burgundy may be taken in moderate quantity with great advantage.

## TREATMENT OF HYSTERIA.

MORAL force in the treatment of Hysteria is apt to have quite as much efficacy as any general treatment. For, as I have already pointed out, this disorder has its origin purely in the strain involved in the suppression of emotion resulting from a high culture and civilisation. There is ample evidence of the truth of this statement. Rush, in speaking of the North-American Indians, contrasts their comparative immunity from nervous diseases with similar disorders among more civilised nations. Dr. Butler, who lived for twenty-five years among the Cherokee Indians, never witnessed a well-marked case of Insanity. Indeed, as I have already said, medicinal means, directed towards the alleviation of Hysteria itself, are useless; but the conditions which give rise to, and thus indirectly cause, the Hysterical status, may be overcome by the judicious use of remedies. It is the general constitutional default to which we must direct attention, not to the special manifestation of that condition.

As Hysteria is plainly a loss of control, an en-

feeblement of the will, originating in exhaustion of the nervous centres, either hereditary or induced, any endeavour to restore this lost balance must be directed not only towards the improvement of the physical state of the nervous system, but also to the hardening and consolidation of the moral force. We must, therefore, approach the case from both aspects, as it were, from the moral as well as from the physical. Now, as we find that Hysterical patients are apt to communicate their Instability to others who are similarly deficient in control, so the continued influence of a strong, stable will, does, without doubt, impart power to the vacillating, uncertain, disposition of Hysteria. This, therefore, is the first condition requisite in the treatment of this disorder, viz., that the patient shall be under the control of, or surrounded by, persons of undoubted firmness of mind. The moral support thus afforded is all-important.

Outside medicinal treatment, there is in such cases no means so powerful as the use of cold water treatment; for in all these cases there is marked deficiency of strength of circulation, both of blood and nerve force, which is indicated by the cold hands and feet, anæmia, and general lack of skin action. A course of reactive cold, followed by rubbing, to the surface generally, but especially to the extremities, will soon promote increased vigour of circulation and a better distribution of blood and nerve force. This,

by derivative action from the brain, places that organ in a far better position to perform its functions regularly and vigorously. The patient must now be placed on a regular system of diet, exercise, and general hygiene. Active exercise in the open air, always stopping short of fatigue, is very essential. By this latter, digestion and assimilation are ensured, which, in their turn, tend towards increased nourishment.

But, above all things, the patient must be taught to educe and strengthen the natural powers of control. She must be shown how much depends on herself to help herself, and any symptoms of yielding to undue emotional sensations must be checked and restrained; unbending firmness, with never-failing kindness, is essential in the superintendence of these cases.

Undoubtedly the medicines which have been most used in the treatment of the symptom, Hysteria, are the different salts of bromine. That these do, by numbing, as it were, the hyper-sensitiveness of the brain, temporarily induce a state of repose, instead of the restlessness and excitability of the Hysterical state, is quite true, but they do it at the expense of the stability of the nervous system; for, as I have shown in the treatment of Epilepsy, all the bromides are depressant of nervous vigour, and in their after results increase the tendency to Instability, which is the principal factor in the production of the dis-

orders. Of the other vaunted remedies for this status hystericus, I agree with Weir Mitchell in putting them down as useless.

The only real method of procuring success is in treating the conditions which give rise to, and permit the existence of, the disorder, viz., Nervous Exhaustion. The best means of raising our patient from this condition will be found fully dealt with in the remarks on Treatment of Nervous Exhaustion Generally.

## TREATMENT OF INSOMNIA.

WHAT I have already said in speaking of the treatment of Neuralgia applies equally here, viz., that much depends on the stage at which the case comes under our care. When the use of narcotics has been indulged in, a double process of cure has to be undertaken, viz.: (1) of the habit of taking narcotics, (2) of the Insomnia itself. Supposing the patient to have already had recourse to the use of hypnotics—whether it be morphia, chloral, or the less harmful sulphonal—the first step towards cure must be the abolition of these artificial aids to sleep. If large or repeated quantities have been taken, it will probably be found impossible to leave them off entirely and at once, in which case the doses should be gradually lessened in amount and frequency. At the same time it is wise to substitute one or other of what may be termed the mechanical aids to sleep. One of the most effective of these will be found in the use of the hot or cold sitz-bath. In using this you must be guided by the nervous strength of your patient; if he is fairly vigorous, so that there is a

possibility of his getting a good reaction, the cold sitz-bath—for only a second or so, just a plunge into the cold water and out again—followed by active rubbing with a rough towel, will be found often very efficacious in procuring sleep.

If, on the other hand (as is commonly the case where Insomnia is of long standing), the nervous failure is more complete, a hot or warm sitz-bath should be used, varying according to circumstances from 70 to 100, or even more; in this case the patient must sit in the hot water for from 1 to 10 minutes, covered round with blankets, after which he should be placed at once in a warm bed, so that there should be no danger of a chill. In some cases sponging the head and face with cold water is found useful, but only, I imagine, in the slighter or more temporary forms of Insomnia.

Should these plans fail, it will often be found that rubbing the spine with some stimulating liniment will induce sleep. This must be done gently, not on the bony ridge of the spine itself, but about one inch on each side of it. It must not be continued long enough to make the spine sore, a result which may often be attained without much expenditure of force. Again, a compress either of simple hot water, or, better still, of belladonna liniment, to the epigastrium, is often markedly useful, as in many cases of Insomnia, indeed, in almost all these states of nervous collapse, an uneasy feeling of sickness, or faintness, is apt to

arise from this source. The compress effects its object, no doubt, by soothing and at the same time relieving the congestion of the solar plexus. These sensations, which neurotics will constantly describe as arising from this point, are not dissimilar to the dreadful sinking which occurs in sea-sickness, or that particularly unpleasant feeling which is caused by the sudden jerk of the railway carriage when the vacuum brake is put on too suddenly; indeed, they originate in the same sensitive portion of the nervous system.

If narcotics are found to be imperatively necessary, sulphonal will be found the least harmful, though it acts, I imagine, by inducing the sleep of congestion, which is very different in its effect from the anaemic sleep of health. Sulphonal should be taken 2 or 3 hours before bed-time, in hot milk or water, as it is slow in action, and at times better results are obtained from it on the second than the first night. The only evil result I have found from its use is in lowering the motor power of the lower extremities. I have noticed this more especially in the cases of elderly people; but it was in one or two instances very marked.

I come now to the use of nourishment, either last thing before sleeping or during the course of the night. Patients often find a little stimulant, either whisky or brandy and water, procure sleep; but I am strongly opposed to this habit, on the principle that the sleep thus procured is not the healthy sleep

of anæmia, but one of congestion, and therefore less refreshing and restorative. The action of the stimulant may be cited as a parallel effect to that of quinine in neuralgia. Ultimately a healthful sleep will be procured by persevering with the nourishing and restorative plan of treatment. The best form of nourishment, to be taken either late in the evening or during the night, is a light milky food of some kind. I find Benger's food admirably adapted for this purpose: it is extremely nutritious, and, being peptonised, is very rapidly digested; moreover, it is easily kept warm in one of the small etnas with a night-light under it.

I have recently succeeded in curing a very old-standing case of this kind, in a patient who had been unable to sleep without sedatives for many months. He was a man in large business, in which he had great difficulties to contend with, with many cares and anxieties. Perfect return of sleep has been brought about by a more thorough nourishment of the brain.

Position during sleep has often some effect in aiding its on-coming and tranquillity. I find that many patients sleep better with the head a good deal raised, not so much by a higher pillow as by having the whole body raised from the hips upwards. At any rate, change of position is always worth a trial. There is very much in the habit of sleep; it should always be sought at the same hour, for once

lost it is with great difficulty restored. In all cases of Insomnia resulting from over-work of brain, whether from study or business, entire mental repose is most important. Rest, as in all these forms of Nervous Exhaustion, is the first and most imperative condition, if cure is to be obtained. Perfect rest, if possible, but if entire relief from mental strain is found to be impossible, then it must be arranged that the hours preceding the effort to sleep must be entirely free, so that no exciting thoughts, or the continuance of mental activity, shall disturb the quiescence of brain which goes before sleep. Warmth to the feet is very necessary at bed-time, and its value is found in the use of the hot mustard foot-bath, which will often induce sleep.

It is well known that any intense cerebral activity attracts blood to the brain, at the expense of the lower extremities, and this very activity of the vascular circulation of the brain is the key to the existence of a very large number of cases of Insomnia. After fixing the attention on mathematics, or any work which entails great strain on the mental faculties, it is well known how unsatisfactory and unrefreshing is the sleep that follows, and how the same thoughts are carried on in a vague and disjointed manner throughout the dreamful sleep.

We have, then, two methods to apply to the cure of Insomnia, first the ensuring of the absence of all

stimuli of the senses, next the production, as far as we can, of that state of brain which is found most conducive to normal sleep, viz., a lessened activity, not only of the vascular, but, still more imperatively, of the nervous circulation.

## TREATMENT OF CHOREA.

OF the treatment of Chorea I need say but little. It is so completely dependent on the primary state of exhaustion that what I have said under the heading of treatment generally will apply specifically to this disorder. When, however, there is any suspicion of climatic influence—for atmospheric conditions, especially damp and cold, will be found to be largely conducive to this form of neurosis—change of locality is at once imperatively demanded. The patient should be removed to a dry, high, sunny situation inland. Malvern, Buxton, or Harrogate are all places fulfilling these favourable conditions.

The point upon which I should feel inclined to lay the greatest stress in the treatment of Chorea, is the use of cold and friction. Of course, with many of the delicate children who become subject to this disorder, great care has to be used in commencing this form of treatment, more especially as it is noticeable that rheumatic affections commonly accompany the Choreic condition ; but if commenced cautiously, and watched carefully, benefit is sure to

attend its use. In short, we are often able to educate our patient to the use of cold, so that ultimately the neurotic diathesis is quite got rid of. In beginning to treat such delicate children as I have described, I commence first with an ample douching with hot water, gradually cooled down to about the temperature of the air of the room; this is, after a time, followed by a very short, sharp, dash of quite cold, succeeded by active rubbing with a rough towel. As reaction improves, so is the amount of cold and friction to be increased, until at last the patient is able to bear an entirely cold rapid sponging, with its after friction.

## TREATMENT OF EPILEPSY.

WE come now to the treatment of Epilepsy. In proceeding to the consideration of this, we may first remark that the treatment of the exciting causes of the disease is, in the majority of cases, of little or no value unless we can previously or simultaneously remove the predisposing cause; and it is to effect this that all our efforts should be directed. With regard to the principal predisposing cause—viz., the deficient power of control of nerve force—it might almost be looked upon as a matter of doubt how far it is possible to increase, or revive, this when it is deficient or absent; but I propose to show that this may be done.

There is no doubt that at certain times, and under certain circumstances, this power of nervous control exists more strongly, and exerts more influence, than at others. And we shall find that the strength or weakness of this power depends, to a great extent, upon circumstances which tend to improve or exhaust our physical strength.

We have seen that, up to the period of pubescence, there is a gradual increase and strengthening of this

power. We find also that it is manifestly deficient after exhausting illnesses, after venereal excess, or over-stimulation. We also see it diminished at and after the catamenial epoch. It follows, therefore, that any measures which are calculated to exercise a favourable influence on the general physical condition of our patient will have a corresponding effect in increasing and perfecting his power of nervous control. Again, it is, I think, probable that this power may be greatly strengthened and increased by force of mind directed towards it, and by habit. Thus, it is well known that we can more strongly resist the reflex action of drawing up the legs, when the feet are tickled, by an exercise of a strong effort of will. Darwin notices this fact, and remarks that he could in all cases markedly influence reflex action by exercising his power of control, except in the one instance, that of withdrawing his head when the cobra struck at the glass of the cage, in which case he was unable to restrain this backward movement.

Now, if the remarks which I have made in a former chapter, strengthened as they are by the observations of some of our most intelligent observers, have any truth in them, it is evident that man is able to exercise considerable influence over the direction of nerve force, and it is equally evident that this faculty may be increased by cultivation, and concentration of mind towards it.

I cannot do better than quote Darwin's summing-

up upon this point; he says "Experience shows that nerve force is generated and set free whenever the cerebro-spinal system is excited. The direction which this nerve force follows is necessarily determined by the lines of connection between the nerve cells with each other and with various parts of the body; but the direction is likewise much influenced by habit, inasmuch as nerve force passes readily along accustomed channels." That is to say, direct the will or control steadily in one direction, and you will increase the facility with which a nerve current can flow towards that part; continue this steadily, and the action will become habitual. Governed by this principle, I have for some time induced my patients to remove their attention as far as possible from their ailment and its seat, and to concentrate their will on some distant point. As epileptics very commonly suffer from cold feet, it is an excellent plan to impress on them the importance of constantly bearing in mind the condition of the circulation in their lower extremities, and to endeavour by every means to render the circulation in these parts more equal. If you can sufficiently inculcate this upon them, it has the two-fold advantage of withdrawing the attention from the real seat of mischief and concentrating it on a portion of the body to which the nerve current is of great importance.

Again, it is a well-known fact that in many cases of Epilepsy the patient is able, by an effort of will, to throw off or postpone the attack, when a sufficiently long interval of warning is given. If the question be put, Have you any power of warding off or preventing seizures? the answer will very commonly be in the affirmative; for even in the most severe cases the attacks will be found to vary considerably in intensity, and the most sudden and severely convulsive paroxysms are often alternated with nervous sensations and premonitions of attack.

Now, when this possibility exists, it is always wise to encourage the patient to use and increase this faculty by every means. In many cases patients are apt to think that their medical man, or some other person, has power to help them to ward off this seizure. In this way many epileptics acquire a strong feeling in favour of so-called mesmeric influence. In some cases I have seen this force of will exercised for over an hour at a time, and in the end ward off the attack. In one case, I can without doubt attribute the ultimate recovery to the strong inhibitive power possessed by the patient; though it must, I think, be admitted that, as a rule, when a long period of warning elapses previous to an attack, the nerve centres of the medulla oblongata are not strongly excited.

Another fact which points strongly to the influence of mind on the epileptic, is to be found in

the manner in which faith in a new remedy procures immunity from seizure. It very commonly happens that the trial of a new drug, or of a fresh system of treatment, will have a marked influence in relieving the patient from his attacks for a greater or less time. Esquirol, in allusion to this point, says, "Toujours une nouvelle medication suspendait les accès pendant quinze jours chez les uns pendant un mois, deux mois chez les autres et même pendant trois mois." I am inclined to lay more stress upon this—the psychical plan of treatment, as it may be termed, as it seems to me to have been up to this time very much neglected and given over to the empirics. For recognising, as I do, the very powerful influence which the will is able to exercise over all vital functions, even those which appear most automatic, it seems to me that in neglecting its agency as a means of combating and checking disordered nervous action we are abandoning a most valuable weapon.

I have for some time adopted this plan as an accessory to the ordinary medical routine of treatment, and in many instances with marked success. And in all cases of Epilepsy I should advise that the most should be made of it by placing the patient under a regular mental training, withdrawing the attention, so far as may be, not only from his ailment and all the symptoms in connection with it, but also from the parts concerned in its develop-

ment. At the same time he should be impressed to use and strengthen, by every means, his natural power of control, resisting all nervous symptoms, more especially when they have any relation to the accession of an attack.

Leaving this aspect of the question, and coming to more mechanical forms of treatment, it will be found that all measures which tend to the toning and strengthening of the nervous system generally, having regard more especially to the regular distribution of nerve force, add power to the control, and render it less likely to be upset. A strict attention to general hygiene will therefore be found to be of the utmost importance. Exercise should be taken every day, care being shown that it is not carried beyond strictly moderate bounds, as fatigue of all kinds is to be deprecated. At the same time the mind should as far as possible be diverted, and thought directed into healthy but non-exciting channels. The patient should also be kept studiously apart from all persons of weak mind or hysterical tendency; for as the mental sympathy is, as we have shown, strongly developed, a powerful will can produce a great mental influence. It is for this reason that I have generally found it better, especially with children, that they should be removed from within the range of family influence. This is more especially important where an hereditary neurotic disposition exists, so that not

only are they removed from the danger of too great sympathy, but I have always found that such patients will, when among strangers, be far more likely to develop and strengthen the power of nervous control. A fairly liberal diet, food being taken only in small quantities at a time; a moderate supply of stimulant of the most nourishing kind, good sound claret, or bitter ale, being the best. Excellent effects are to be obtained from the use of cold as a derivative and general tonic. The form which I find most useful is that of the cold sitz bath, either night and morning, or even oftener; regard being always had to the constitution, age, and sex of the patient, and also to the temperature. In all cases it should be followed by the use of active friction to the whole skin, either with horse-hair gloves or a warm rough towel.

In speaking of medicines, I most strongly advocate the use of nervine tonics, and among these *nux vomica* undoubtedly occupies the first place, and the manner in which it is tolerated by the epileptic, without producing any signs of its ordinary toxic effects, is remarkable, and seems to me to afford an indirect evidence of its suitability to the removal of the nervous conditions which precede and accompany the disorder. Although, as I have just remarked, it is in these cases tolerated to a remarkable degree, yet I prefer its exhibition in small frequently-repeated doses, thereby nourishing and not stimulating the nervous system.

With regard to the immediate treatment of the epileptic paroxysm, but little need be said ; beyond protecting the patient from injuring himself, and taking care that the throat and chest are freed from the tightness of clothes, so that respiration is as little impeded as possible, little only can be done ; it is, however, of great importance that the sleep, which almost invariably follows the seizure, should be left as much as possible undisturbed, the patient being placed on a bed, and the room darkened. By these measures the brain and nervous system are allowed to recover from the strain to which they have been subjected. It is a manifestly good sign when a patient recovers from the consecutive stupor more readily, and when the mental clearing is more rapid ; and these results will generally be the first recognisable effects of a tonic plan of treatment.

## TREATMENT OF MELANCHOLIA, HYPOCHONDRIASIS, AND LOSS OF NERVOUS CONTROL.

As attacks of these forms of Neurosis are liable to occur at regular intervals, and more frequently at certain times of the year, spring or autumn being particularly dangerous to the mental equilibrium, it behoves us to be especially watchful with all patients who have ever developed any tendency to depression, so that they may take measures to avoid the oncoming of the exhausted states which precede and accompany the Failure of Mental Control. It is true that the first positive symptoms of mental disorder may manifest themselves apparently with extreme suddenness; but on analysing the prior condition of the patient it will invariably be found that evidences of failure of circulation, loss of flesh, disturbance of function in one or more directions, have not been wanting. Very commonly the eliminative processes are those which default most seriously, and the gloomy mental tinge is commonly due to the presence in the blood of acids and other poisonous matter which should have been discharged

by the secreting organs. In these cases there is great difficulty in persuading these rebellious glands into energy. You may, for instance, give strong aperients with the result of obtaining a fair liver action, but only temporarily; the exhausted organ sinks back into a still more determined apathy, and the stimulating process is, from the natural reaction which follows, found to have done more harm than good.

By what measures, then, can we hope most readily to restore to our patient his lost mental vigour and balance? The first and most important point is to procure an entire change of climate, scene, and surroundings. Damp, relaxing, situations are more prolific in these forms of depression than dry, breezy, sunny elevations.

Everyone is familiar with the exhilaration of spirits which attends on the ascent of even a moderate hillside, and the mind is naturally diverted from its "loathed melancholy" by the sight of "fresh woods and pastures new." Again, remove such patient from the circle of his home and relations, and the very necessity for rousing himself has a most favourable influence on the dull monotony of his thoughts, dissipating his gloom and turning his ideas into natural and healthy channels.

As the mental disorder clearly has its origin in lowered physical vitality, we must never lose sight of the continued necessity for, not only nourishment,

but also, so far as it can be supplied, any increase of the digestive power. For this reason great attention should be paid to the patient's diet. Food the most digestible and most brain-feeding should be given in small, frequently-repeated, meals, and the assimilative process may be aided by very small proportions of alcohol. Milk, fish, eggs, farinaceous foods of all kinds, will be found to furnish the most appropriate dietary. Medicines, except those which build up and improve nervous vitality, are of little use; and sedatives are, from their lowering properties, often worse than useless; and narcotics must be carefully avoided, even when the sleeplessness is a prominent symptom, some of the more mechanical forms of sleep-production being substituted. Of those drugs which prove effective by steady restoration of cerebral vigour, *nux vomica* in minute dose will be found most effective, but it must be regularly given in continued small proportion. Great benefit is to be derived from the reactive use of cold. Sleep will often be gained by a quick sponging or douching with cold water last thing at night, followed by active, vigorous rubbing, with rough towels. The patient will almost invariably dislike and try to escape from the process, but it should be strongly urged and insisted on. So soon as more active circulation of blood is established, the bath may be repeated two or three times daily. Where the functions of the eliminating organs are sluggishly

performed, the artificial aid to the skin from the use of the Pack, as described in a previous chapter, will be found invaluable, as, besides ridding the blood of its abnormal ingredients it has also a delightfully sedative effect.

There are patients in whom the circulation is so enfeebled that cold water fails to procure any reaction. In such cases a warm needle bath, quickly cooled down to the temperature of the room, may be used, or a simple hot sponge bath at from 98 to 100 degrees may be followed by the free use of quite cold water to the spine. In all such cases great watchfulness is necessary. The patient must be under a firm and very careful attendant. A suicidal tendency is very apt to underlie the morbid depression, and too great watchfulness, even in the apparently least dangerous cases, cannot be exercised, as sudden impulses are liable to occur in such cases.

It will guide us, so far as treatment is concerned, if we regard these forms of mental disturbance as having their origin mainly in defective nervous states. Any changes which may occur in the circulation of blood come on after, and in consequence of, the nervous default.

## CURATIVE ELECTRICITY.

OF the value of electricity, properly applied, as a curative agent in nervous disease, there can be no doubt; but we must endeavour to distinguish those cases in which it may be useful, and separate them from those in which it may be either useless or even injurious. Properly used, it becomes a valuable adjunct to medicinal treatment, especially in combination with massage, but it is chiefly by improving the nutrition and tone of muscle and nerve that it is useful. We cannot supply defective nerve power by replacing it with electricity; for although there are normally electric currents constantly passing through nerves, and nerve currents in many respects resemble electric currents, yet they are not identical, or the treatment of nervous disorders would be much simplified.

In order that the various methods for the application of electricity may be clearly understood, it is necessary first of all to describe the different forms of battery which may be used, of which there are many; they may, however, be divided into three principal forms—first, the continuous current battery;

secondly, the interrupted, or Faradic, current ; and, thirdly, the magneto-electric battery.

Of the many forms of continuous current battery, the best, simplest, and least likely to get out of order, is the Leclanché type. These require no knowledge of electricity to manage, and will work without attention until the cells are exhausted, when they can be easily renewed. They may be procured of any strength, according to the number of cells, a battery of eight cells being perhaps the most useful size, and quite strong enough for self application ; anything over that strength should not be used except under the supervision of a medical man.

In the Faradic, or interrupted current, battery the electricity is generated by fewer cells than either the Leclanché or chromic acid batteries, but the power of the current is increased by passing it through a special form of coil, and at the same time it is rapidly interrupted, or broken, by a vibrating armature. Here, again, the Leclanché is the simplest form of cell, requiring no attention, but the chromic acid cell is also much used, and if care be taken to keep it clean it works very satisfactorily. Moreover, the construction of these has been much simplified lately ; one of the best is Dr. Spamer's battery ; there is also a very compact one made by Gaiffe, which has two chloride of silver cells, but these are rather difficult to get re-charged.

In the magneto-electric battery there are no cells

at all, the current being produced by rapidly revolving an electro magnet. These are much less likely to get out of order than either of the others, and last a long time, but necessitate a second person to work the battery, and consequently are not always so convenient for self application.

Now, in what way and in what cases are we to use electricity? Firstly, we must consider what the effects of the different batteries are, and what structures the different currents will affect. To begin with, we must remember that the resistance of the skin to the passage of electricity is very great, and so we must always keep the contact pieces, or electrodes, well moistened, either with warm water or salt and water, when we wish to affect deep-seated structures. When, however, we wish to Faradise the skin, we should keep the electrode comparatively dry.

The action of the different currents does not vary so much as might be expected, but, speaking generally, the continuous currents act more particularly on the muscles, and, through them, on the nerves, the Faradic current acts chiefly, and more directly, on the nerves and skin.

In continuous current batteries we notice at the binding screws to which the poles are attached either a + sign or P, signifying positive pole, and at the other a - sign, meaning negative pole, and the effect of the current is different at each of these: the

negative pole is the more active, and is used to stimulate and to increase nutrition of nerves and muscles; the positive pole is used to diminish spasm in muscle, or to relieve pain in nerves. As a rule, however, one does not keep the poles constantly localised during the administration; it is better to alternate the current once or twice, and as the negative pole is also the destructive one it should have a larger electrode, as, if a strong current is being employed, it may, if of too small surface, char or blister the skin.

With regard to the strength of current employed, we should always use the weakest current which we find will cause muscles to contract. If there is pain on pressure, or tenderness, along the track of the nerve, Faradisation should not be employed. The best way of employing either the continuous or Faradic current, if we wish to produce a generally tonic effect, is to employ it in conjunction with massage; and this can be done by placing one of the electrodes on the spine, and then the administrator, holding the other pole in one hand, applies the current by massaging or rubbing with the other hand; or a better plan is to have a wristlet which can be fastened to one wrist, thus leaving both hands at liberty for massage. The hands should be kept moist with warm water, unless we wish to act on the skin, then they should either be left dry, or the current should be passed through an electrode made of fine brass wire.

Generally speaking, the continuous current is more useful if there is structural disease of the nerve, and the Faradic if the disorder is only functional.

In exophthalmic goitre, or Grave's disease, I have found most benefit from the magneto-electric battery, the electrodes being applied on either side of the neck to the middle cervical ganglion. Two cases of this disease, usually considered incurable, I have seen much benefited by this treatment, one indeed being completely cured. It is perhaps in hysteria that the value of electricity is most clearly shown, and here the Faradic current is the most appropriate and may be used of greater strength than in ordinary cases, provided that it is ascertained previously that there is no organic or structural disease of nerve. I have certainly seen the most remarkable proofs of the value of the Faradic current in these cases, two of which I may mention as instances. In one, the patient, a girl of twenty-four, had been confined to bed for four years, and had wasted to an extreme degree; in two weeks after commencing treatment she was walking in the garden every day, although when she came under observation she was utterly unable to stand, owing to atrophy of the muscles. In another case the patient had been confined to bed for three years, and had an extreme degree of talipes equinus from hysterical contraction of the calf muscles, for which she had been advised to have tenotomy performed;

under the influence of Faradisation and massage she was able to walk well in six weeks.

When using electricity in any form there is nothing gained by prolonging the application beyond twenty minutes at one sitting; and in the majority of cases fifteen minutes is ample, except in hysterical cases, when half an hour of combined Faradisation and massage, followed by half-an-hour's massage, will not be too much.

The cases concerning which advice is generally sought, and in which the use of the battery is certainly of much value, are those in which there is loss of power, sensory or motor—more often the latter.

In giving an opinion as to the value of electricity in such cases, one has to ascertain first whether the paresis or enfeeblement of the part is the result of failure on the part of the brain, of the ganglia of the spinal cord, or whether it is the conducting portion of the nervous machinery which is defective, either from structural deterioration, or from loss of power in the carrying nerve to perform its functions energetically.

If it is the centre of the system, the Brain, which is the defaulting organ, no benefit will result from any methods which do not tend, by increasing the dynamic force of the organ, to enable it to perform its functions more vigorously.

But if it is the ganglia of the spinal cord (reservoirs, as they may be termed, of nerve force) which

are exhausted, stimulation by electricity may be of much service, by rendering them functionally more effective.

Again, there are certain states of the vasomotor, or sympathetic, system which are characterised by extreme atony. Such conditions will be readily recognised by the complete loss of contractility in the pulse and arteries generally, and by the flabby, cold, and moist skin. In cases such as these great benefit is to be derived from mild, gradual, and long continued use of the battery, with or without massage. If the loss of power be found on examination to depend on any organic lesion of any portion of the nervous system, by no means must electricity be attempted, otherwise grave, and possibly irretrievable, mischief may result. Electric baths have now been much improved in construction, and may in certain cases be used with good effect on the general system of nerves.

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Throughout the preceding pages, whether they treat of the causes of disease or its method of cure, I may here remark that all the facts have been derived from my own experience, from the careful watching of symptoms, and accurate observation of results. I have been, indeed, for over thirty years filtering facts from a somewhat wide sea of ex-

perience. My views are in no way based on mere theory. More especially would I point to those portions of my work which relate to the importance of regarding the influence of Heredity and prolonged Causation, and the consequent fact that restoration of nervous vigour and control can only be effected gradually, and by the use of minute unstimulating doses of nerve tonic.

No doubt there will be found throughout the work a certain amount of repetition ; this is to a great extent unavoidable, more especially when one has to emphasise facts. Another cause of this reiteration lies in the fact that in dealing with disorders the origin of which lies in precisely similar causes, a certain amount of similarity of diction and reasoning becomes imperative, whether we are simply detailing symptoms or directing methods of cure.

FINIS.



