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N E U R A S T H E N I A.

ITS ETIOLOGY, SYMPTOMATOLOGY, PATHOGENESIS, AND TREATMENT,

A STUDY OF CASES OCCURRING CHIEFLY IN PRIVATE PRACTICE.

(Thesis for the degree of M.D.)

BY

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"Physicians who pass by the obscure phenomena of the nervous system as unworthy of their notice, may be reminded of this, that modern science in all its branches, and particularly in biology, is constructed out of slight, trifling, and unnoticeable facts and phenomena of nature."

Beard.

C O N T E N T S .

F O R E W A R D.

There is no more distressing malady in the whole realm of medicine, nor yet one less adequately understood, and therefore more improperly treated, by the generality of medical practitioners, than that very prevalent and ever-increasing functional disease which has been designated "N e u r a s t h e n i a." It is regrettable in the extreme, and from the view_point of the public weal a matter for much concern, that a disease which appears to be a product, or at least, a concomitant, of the bustle of modern civilisation, and which claims so many victims among the population, should have so little attention bestowed upon it, even in the medical lecture_halls of our universities, where seldom, if ever, is it dwelt upon at any length, certainly never with the importance it deserves, although it can not infrequently be heard referred to, alike by practitioners and teachers of medicine, in language that too obviously reflects how little appreciation or knowledge of the terrible nature of this affliction is possessed. It is, indeed, to me most perplexing why more interest or study should be devoted to, say an organic disease like pneumonia, which often tends, even without much therapeutic interference,

by body reaction processes, towards natural and speedy abortion, than upon a functional disorder equally as prevalent, which can, and too often through inadequate treatment does, spell months, nay years, of indescribable misery and torture to its victims, and which, moreover, in the absence of efficient treatment will invariably persist, or become progressively aggravated. The reason for this, of course, is quite apparent. The teacher of medicine, having such an extremely wide field of medical science for his speciality, and his clinic consisting as it does practically wholly of cases presenting demonstrable pathological processes (dependent upon organic disease) for his consideration, comes to regard functional disorders as of little or no value from the clinical standpoint, though, be it said, a typical neurasthenic could scarce muster the nerve strength or courage to enable him to 'stand' for a clinical lesson. Anyhow his students are perpetually asked to discuss or observe with him, diseases of organic origin, to recognise their pathological significance, their symptoms or manifestations, and so on. Functional diseases they have neither heard discussed, nor have they had the chance to observe. They thus naturally carry with them into public life that disinterestedness in, and apathy for,

handling functional disorders — commensurate with their ignorance of the real nature of these — which was acquired in the lecture-room or hospital atmosphere. The result is that the neurasthenic meets with but scant sympathy from the average physician he consults; his symptoms, very real to him, are either made light of, or ignored by the physician, who has come to regard as real, and therefore as worthy of his careful consideration and attention, only symptoms or syndromes which point to the more or less definite existence of an organic lesion or lesions. The symptoms of the neurasthenic to him, therefore, are unreal, merely figments of the imagination, and he usually disposes of his patient by telling him he is nervous, or neurasthenic, (using both words in a synonymous sense, and therefore, wrongly), and by way of treatment, prescribing a bottle of medicine containing 'bromide,' or advising a holiday in the country, or a sea-voyage, or perhaps more frequent visits to the jovial, (yet not unexciting) atmosphere of a music-hall. The patient may consult a dozen physicians and get the same satisfaction (!) from each, until ultimately the feeling grows upon him, and quite legitimately so, that his malady is not sufficiently understood, that the physician is of little or no avail.

It is well time that this disease should be better understood and approached with a deep sense of the extreme suffering its victims have to undergo. Our enthusiasm to interest ourselves in, and understand any disease, should always, *inter alia*, be commensurate with the amount and degree of suffering for which that disease is responsible. The writer has encountered in his private practice chiefly, a series of cases of neurasthenia, about seventy in number, during the last three-and-a-half years; these were studied, in each instance, with great interest, care, and patience, as well as a whole-hearted sympathy for the depth of misery that was invariably complained of. The reward has been, I believe, a better understanding and appreciation of the nature of this malady, and how to treat it most effectively. The facts elicited on very careful enquiry into the history of the patients suffering from neurasthenia, that came under my observation, lead me to the conclusion, that much obscurity and confusion still exists concerning the real nature of neurasthenia; that its prodromal period, almost always of long-protracted duration, which I have ventured to dignify by the name of the 'pre-neurasthenic state,' has not hitherto been clearly recognised and differentiated from the typical and

well-defined syndrome which neurasthenia itself undoubtedly is; and that the precise causation of the disease has not yet been truly stated. I propose, therefore, in the following pages, to make an exhaustive enquiry, in the light of my own experience, into the nature of neurasthenia — its etiology, symptomatology, and pathogenesis, and at the same time to advocate a method of treatment which I have found to be more specific than any in general vogue, for the relief and 'cure' of the sufferings from this terrible affliction.

NEURASTHENIA

I propose to commence the study of Neurasthenia by presenting the histories of some of the cases of that disorder which have come under my observation, and upon which my views on that neurosis have essentially been founded, The perusal of detailed accounts of these histories affords us, I believe, sufficient data wherewith to establish the precise causation, pathogenesis, and symptomatology of the disease.

CASE I. R.C., a woman, aetat. 62, had been personally known to me for many years. For a decade and a half directly preceding her attack of neurasthenia she lived alone with a son whose occupation necessitated his being frequently absent from home, hence she often slept alone in the house. For seven years prior to her attack she busied herself with housework only and therefore had much leisure time at her disposal. She had something of a turbulent nature, was very outspoken and offensive at times, and in company the opposite of shy. Most of her days she had to work for a living, and therefore had enough to do in maintaining herself and her family, to be able to acquire the self-conscious nature; but the leisure which she enjoyed during the seven years previous to the onset of her trouble, coupled with her somewhat secluded mode of living, developed an introspectiveness in her which paved the way, as I believe it always does, for the onset of neurasthenia. This apparently appeared concomitantly with an attack of acute gastric and intestinal

flatulence,but from my personal acquaintance with the woman I was positive,and on careful enquiry it was readily ascertainable,that the alimentary derangement brought into greater prominence a previously-existing,slowly-oncoming neurasthenia. For her alimentary trouble she was put on a starvation diet by the physician she consulted at the time,but this only served,through resulting exhaustion and weakness,to aggravate her nervous condition. The latter,in her case was characterised by the following signs and symptoms:- (1) Endless vasomotor disturbances - flushings of the skin of the face and chest etc. (2) Pains in the body and limbs and general hyperaesthesia. (3) Formication —a sensation of insects crawling over the skin. (4) Insomnia. (5) Dryness of the tongue. (6) Restlessness. (7) Inability to get her mind away from herself (hyperselfconsciousness and introspectiveness). (8) A sensation of something eating away at her throat (9) Phobias - an inordinate fear of death and monophobia. (10) Frequent syncopal attacks due to emotional excitement. (11) Extreme emaciation,which eventually caused marked prolapse of the abdominal viscera as well as of the uterus; this enteroptosis,in turn,aggravated the neurasthenia. (12) Looseness of the bowels.

Physical examination revealed nothing abnormal save a slight enlargement of the thyroid gland,which during an interval of four months had undergone no increase in size. The thyroid

abnormality may well have been present for years; at all events I do not associate it as having any casual relationship to her neurosis. This woman consulted many physicians from whom she received treatment directed towards her alimentary disturbance (a regulated diet and gastro-intestinal remedies) and her nervous system (bromides),with absolutely no improvement in her condition. I personally saw her several times in a professional capacity and instituted treatment (which will be fully discussed when I come to speak of the treatment of neurasthenia later on) directed mainly towards her nervous system,whilst not,of course, neglecting her gastro-intestinal derangement. I also made her wear an abdominal belt for her visceral prolapse. She improved to some extent,although she did not faithfully carry out the treatment I ordered. On the several occasions she consulted me I took special pains to impress upon her the functitional nature of her trouble ,its purely mental origin,and this invariably had the psychotherapeutic effect of making her feel remarkably better for many hours afterwards.

CASE 2. J.W.K. -- a young lady, aetat. 23 years, came under my observation in May 1914. Six months previously she had left her parent's home in the country to take up the position of assistant in a bakery shop in Glasgow. Being second in charge of the management of the establishment she naturally

had a certain amount of responsibility. She maintained that she always felt very conscious of this, and it eventually prayed on her mind so much that when she commenced duties in the morning, she would feel exceedingly worried and anxious about how she would manage to get through her toils that day. It was this constant anxiety and worry she herself blames for the development of the attack of nervous breakdown for which she consulted me. The symptoms of her attack were:- (1) Frequent blushing and flushing of the face. (2) Restlessness (3) Starting readily on the slightest provocation — at a ring of the door-bell, or at a knock at the door, however gentle, (4) Distressing insomnia, (5) Phobias of various kinds — the fear of being left alone in the house, the fear of walking unaccompanied, the fear or belief that she would never get better, (6) Undue emotional excitement which was responsible for the last and most distressing symptom of all — (7) Palpitation and tachycardia, as well as occasional syncopal attacks. She had had an attack of nervous breakdown similar to this one, a year previously. She was one of a big family, none of whom suffered in this way, but a nervous heredity was not wanting. Note must be taken of the fact that when she consulted me first and during her attack, she looked the picture of health, being well-nourished and well-complexioned, and yet her life, on account of her emotional heart, was a veritable hell upon earth. Furthermore she had always been

a self-conscious individual, and as a result, was much given to blushing.

At first she dared not come to my residence alone, but by the end of a fortnight she came quite readily without being accompanied. By that time her condition had undergone a remarkable improvement, and she was anxious to go back to her country home, which she did. She subsequently sent me two letters expressing her deep gratitude for my careful and successful treatment.

CASE 3. Thomas B ---, aetat. 42, consulted me in April 1914 for an attack of nervous breakdown which began a year previously. This patient's nervous system was, by nature, such as to render it an easy prey to neurasthenia, and I am, therefore disposed to give an exhaustive statement of his history since a child, as demonstrating this. When a boy he was troubled with restlessness, being unable to sit in one place for more than half-an-hour at a time. He also often experienced, during his boyhood days, a strange feeling in his stomach region - a sort of sinking sensation, which was relieved by the taking of food, or by walking about. Constipation was always a troublesome complaint of his and has remained so up till the present. He started to work at the age of twelve. Between his fifteenth and sixteenth years, attacks of lapse of memory supervened, the attacks lasting from one to five minutes; whilst these were on him he used to imagine that he was

speaking to himself. These abnormal mental phenomena subsequently subsided. At the age of eighteen he started to keep company with a girl,but 'gave her up' at the end of three week's time; he was positive that the girl did not care very much for him,yet in spite of this he would get up at 5:30 in the morning to watch her leave home and stealthily accompany her to her work,lest she might do something to herself. During this time,and for many months afterwards he suffered from distressing insomnia and impaired appetite. He was always much given to blushing,especially in the presence of females,but also when talking to males. Up to the age of eighteen, he always seemed to be afraid, when arguing with anybody,that he might say the wrong thing,and offend the person spoken to; in his attempts to correct himself at times, he imagined he was making himself appear stupid. He never masturbated. It will readily be inferred that this patient's mental state just described,was,in great measure,expressive of a dominating self-consciousness,to which,indeed,the patient readily confessed. Between the ages of twenty and forty he wrought in "Singer's" (Clydebank); his occupation — that of setting up wheels and constantly supplying orders - involved much harassing worry and excitement (and,of course, 'sweated' pay). These conditions of existence coupled with the responsibilities of married life,naturally did not conduce to make him less of a potential neurasthenic. His self-conscious

-ness was for ever finding expression in an incessant shyness when in company, a marked tendency to introspection,with the resulting going and coming of phobias of various kinds. A raging epidemic would obsess his mind with the fear that he was sure to become a prey to the infection,or he must be the victim of intestinal tapeworm because a friend who had that trouble presented some symptoms not unlike his own. One phobia left him only to give place to another. Up till about a year before he consulted me he was able,in spite of the mental strain it caused him, to pursue his employment and to mix with people,but then excessive emotionalism supervened, which determined an acute attack of neurasthenia,so that six months later he had to cease work. The symptoms of his attack were, excessive emotionalism, hyper-selfconsciousness, restlessness, excessive blushing, anthrophobia, fibrillary muscular twitchings, insomnia and the phenomenon of momentary trance (described later) and many of the vaso-motor symptoms detailed later in my description of the symptomatology of the disease. He also sometimes experienced tachycardia in a mild degree. Further he often talked of committing suicide, which used to alarm his family, but he confesses that his threats were empty vapourings and only made so as to enlist much-needed sympathy.

For his attack he consulted several medical men who prescribed 'bromide' and advised him to make a prolonged stay in the

country,which he did,but without the slightest avail. It was with great difficulty he was persuaded to consult me,both owing to the intense emotional excitement which that involved, and his hopelessness of being relieved. He faithfully submitted himself to the treatment which I enjoined,and in less than three months' time had made sufficient progress to enable him to resume work. Six months after leaving off treatment he wrote me a grateful letter indicating that his recovery was such that he was engaged all day in guarding,with loaded rifle in hand, waterworks against contamination from spies.

CASE 4. J. W --- aetat. 38 was a friend known to me for several years. His attack of neurasthenia occurred when I was still an undergraduate. By nature he was always very introspective and for years had suffered from nervousness,headache, and constipation. He had a distinct nervous heredity. He himself ascribed his attack of neurasthenia, which occurred in 1913, to financial losses and business worry. His attack was characterised by (1) easy fatigue on the slightest exertion, (2) dyspepsia and flatulence (undoubtedly largely due to the defective condition of his teeth), (3) hyper-excitability of the emotional apparatus, (4) bradycardia (5) cerebrasthenia, (6) rachialgia, (7) tremors of the hands, (8) syncopal attacks, and (9) phobias of various kinds. His knee jerks were markedly exaggerated, there was an associated anaemia of a mild degree, and the urine was always phosphatic.

In connection with the last-mentioned fact it must be noted that the patient partook greatly of eggs and milk and was especially fond of fish bones. A marked feature of this case was the patient's inability to 'stand' company (although he was anxious for it); I repeatedly observed him bolster up an excuse and most abruptly leave the company he happened to be in.

CASE 5. M. R --, a domestic servant, aetat. 24, consulted me in the Spring of 1914. She complained that during the last few months her heart had become exceedingly irritable, palpitation and tachycardia being easily brought on even without much cause. These symptoms she experienced most when left alone in the house, or walking alone in the street, or having a walk with a gentleman acquaintance. The reason she herself assigned for her heart giving her the most trouble on those occasions, was, peculiarly enough, the possibility of being sexually tampered with then. It appears that on a previous occasion when left alone in the house, a gentleman (an inmate of the house presumably) asked her to have sexual intercourse with him, whilst when walking alone in the street she was afraid that she might meet a gentleman friend who would try to molest her in a sexual sense. She was well-nourished and well-complexioned; her pulse was of low tension and her temperature somewhat subnormal.

CASE 6. Mr McL.-- aetat.26, consulted me in April 1914, complaining of symptoms foreboding an attack of neurasthenia. He stated that at the age of 14 he suffered from nervousness, which had been so bad as to confine him to bed for a period of about two years. His symptoms then were nervousness, easily induced neuro-muscular fatigue, tremors and tremblings, headache, and body pains. His symptoms when he consulted me in April were, 'helmet' headache, impairment of memory and of the faculty for sustained intellectual effort, the phenomenon of momentary trance (descrived later), and absentmindedness. The tâche cérébrale could be elicited. Although he was able to pursue his vocation this was gradually becoming more and more of a strain. He had a low tension pulse, a subnormal temperature, a nervous heredity, and a slight degree of anaemia. He improved very rapidly under treatment.

CASE 7. Mr. K.--p. aet. 45, consulted me in March 1914. All his life he had been a very shy and self-conscious individual and in consequence was wont to avoid company. For years he suffered from headache (the 'casque neurasthenique') and constipation. His present attack commenced about a year before I first saw him. He complained of very easily induced neuro-muscular fatigue, impairment of memory, insomnia, sexual weakness, but most especially of distressing cardiac symptoms— indescribable sensations of extreme weakness in the cardiac

region, and occasional tachycardia, and syncopal attacks. He had also certain phobias —the most distressing of which was that he would one day die from cardiac failure. He was anaemic, somewhat emaciated, had a subnormal temperature, a low tension pulse, and exaggerated tendon reflexes.

CASE 8. Mrs.B——, aet. 42, was nervous, self-conscious,shy, and the victim of blushing all her days. I saw her first in August 1914. Her 'condition' began to worry her when her menopause supervened (at the age of 36). There developed then intolerable headache of the 'casque neurasthenique'type, a severe pain over the bridge of the nose, general debility, and a marked tendency to become exhausted on the slightest provocation. These symptoms gradually increased in severity and blushing became of very frequent occurrence. Company, especially that of strangers,made her irritable and emotional. She complained of flushings of the skin,formication, and other vaso-motor disturbances. She had never suffered from constipation, and her appetite had never been much impaired. The tâche cérébrale could readily be elicited, the knee jerks were markedly exaggerated, the temperature was subnormal,and the pulse of decidedly low tension. She had several times experienced the phenomenon of momentary trance. Insomnia was not very troublesome, the urine was phosphatic,and the blood,

on histological examination, showed signs of a mild degree of (associated) anaemia.

CASE 9. Alfred B --, aet. 26, had always been a very self-conscious individual, a sufferer from headache (of the 'casque neurasthenique' type), and obstinate constipation. I saw him first in July 1915, and he was then what I would call a borderland case between the pre-neurasthenic state and actual neurasthenia, inasmuch as his symptoms, whilst somewhat harassing at times, did not interfere with the performance of his usual duties. He complained of a diminution in his capacity for sustained intellectual effort (reading etc.), ready fatigue on exertion, insomnia, tinnitus aurium, giddiness on stooping, dermatographia, blushing, and frequent 'blotching' of the skin. The knee jerks were somewhat exaggerated. The blood was normal, and the urine slightly phosphatic.

CASE 10. Mr. B --- , had been a shy and self-conscious individual all his days, and had suffered for years from helmet headache and constipation. He consulted me in September 1914, and complained then, of palpitation and occasional tachycardia, various vaso-motor disturbances, rachialgia, and queer sensations referable to his heart region and abdominal viscera. He was the victim of premature baldness, and suffered from cold hands and feet. Dermatographia could easily be demonstrated. The blood and urine were normal, the temperature was subnormal,

the pulse of low tension, and sleep very much disturbed. The knee jerks were markedly exaggerated. He was 34 years of age, and was of a nervous temperament. Although in very comfortable circumstances, he was much given to worry. He made a rapid recovery under treatment.

CASE 11. J.W---- , aet. 33, married, suffered from constipation and helmet headache, for years. He was innately shy, always blushed very much, and from these considerations, he felt very uncomfortable in, and avoided, company. It was always a source of worry to him that he could not behave as a normal individual. When he consulted me, he had been suffering from neurasthenia for three months. He began to go off his food and experienced various nervous sensations. He complained especially of ready fatigue on exertion, shortness of breath, pins-and-needles sensation, tinnitus aurium, cardialgia, rachialgia, pains in the legs, palpitation of the heart, and occasional tachcardia. He still had helmet headache, but this had become distinctly mitigated in severity since the neurasthenia proper developed. The tâche cérébrale could readily be elicited, twitchings in the orbicularis palpabrerum (right side) and in the muscles of the arm, chest, and legs, were of frequent occurrence, and there were tremors in the hands, and tremblings in the legs. He could enjoy jokes, stuttered when excited, had a subnormal temperature,

a low tension pulse, exaggerated knee jerks, and cold hands and feet. The faculty for attention and sustained intellectual effort was markedly diminished, and the memory distinctly impaired.

CASE 12. Pte. G ----m, aet.23, was sent home from France labelled disordered action of the heart, towards the end of 1915. He was the worst case of neurasthenic tachycardia one could possibly encounter. The presence of the medical officer in the hospital ward was sufficient to start the tachycardia, and further, attempts to examine him, or even the mention of the word 'examine' caused such tachycardia and palpitation, as to render the heart rate uncountable. The patient had always been very self-conscious, shy, and much given to blushing. He had also been a victim to headache and constipation for years. His present state was simply an extreme aggravation (brought on by the exciting conditions of life in France) of a ready emotional excitability of the heart, which had been coming on gradually, previous to 'joining up'.

CASE 13. Thomas E——, aet.30, had always been a very shy individual, and much given to blushing. He suffered from headache, constipation, as well as from cold hands and feet, ever since he could remember. In 1909, he developed an attack of neurasthenia which was characterised by the following signs

and symptoms:- rachialgia, pseudo-angina pectoris (and the resulting phobia that he had organic disease of the heart), tachcardia and palpitation, pins-and-needles sensation and formication over the whole body, insomnia, and other disturbances of sleep, and phobias of various kinds. The patient was ten months at work with this attack, and although he improved much then, he had never been absolutely right since. During December 1914, whilst doing military work in the trenches in France, he got a recurrence of his former neurasthenia. When I saw him shortly afterwards he presented some of the foregoing signs and symptoms (the cardiac ones chiefly) as well as tremors in the hands and fingers; he had neither headache nor rachialgia.

CASE 14. Pte. P. T———, aet.22, a musician in civil life, had always been shy, constipated, and a victim of helmet headache. (The headache was invariably relieved by firm pressure exerted on the crown of the head, or by the passage of breezes of air over the uncovered head). He comes of a nervous family. He developed a typical attack of neurasthenia whilst in civil occupation in 1914, but subsequently recovered sufficiently well to enable him to return to his work. Some time later he joined the army. The exciting conditions of life on Active Service (in France) speedily engendered a recurrence of his former trouble. The symptoms and signs of his present

attack are:- red blotching of the skin, formication, mild headache, rachialgia, cardialgia, palpitation, occasional tachycardia, heat flushes, cold hands and feet, phobias of various kinds, occasional syncopal attacks, the sensation of something bursting at the root of the nose, breathlessness, the phenomenon of momentary trance, tremblings, exaggerated tendon reaction, marked introspection and self-consciousness, impairment in the faculty of attention (e.g.he cannot listen to a speaker, or read for any length of time), insomnia, and intense neuromuscular asthenia. The tâche cérébrale could readily be elicited. His palpitation is so intense at times that he taps his heart region with his fingers so as to try and diminish the conscious feeling of intolerable cardiac pulsation. Whilst in France the medical officers extended no sympathy towards him and one, indeed got him sent to C.B. for complaining of symptoms which he believed the patient was malingering. Eventually a more careful medical officer recommended his transference to England as a case of D.A.H. (disordered action of the heart). The patient was a genuine case of neurasthenia, and of as severe a type as it is possible to encounter.

C H A P T E R 2.

Eulenburg defines neurasthenia as " a widely distributed, extremely chronic, neuro-psychosis, which is chiefly characterised clinically,by pathological disturbance in the equilibrium of innervation and by changing relations between the sensory and motor as well as between the higher cerebral (psychic) neuron systems which bring about association, these pathological disturbances being nosologically revealed by extreme irritability of the sensory and psycho-sensory neuron systems and excessive exhaustion of the motor and psycho-motor (intracentral) neuron systems."[1] This definition, the best I have come across, I regard, as far as a definition can be,as being a fairly comprehensive resumé of the characteristic and leading symptoms of the disease. The expression " irritable weakness " employed by Savill[2] and others to define neurasthenia, is, in my view, but empty phraseology unjustified by clinical considerations,or by any known pathological data; it would be better to substitute the phrase'aberrant functioning' which characterises the state of the nervous system in neurasthenia if not from the pathological, at least from the clinical,aspect. The word'neurasthenia' has acquired quite a popular use nowadays among the profession, but it is employed almost invariably in the loose sense of nervousness, or as " a rag-bag for heterogenous collection of nervous symptoms of complex causation," but seldom to

1 A. Eulenburg,on " Sexual Neurasthenia " in " Diseases of the Nervous System" edited by Church. (New York,1908).Page 977.

2 T.D.Savill,"Lectures on Neurasthenia" (London,1908) Page 25.

comprehend the distinct entity embraced in the foregoing definition. It is important at the outset, to draw a distinct line of demarcation between neurasthenia and what is ordinarily called nervousness. We say that a person is of a nervous temperament, who exhibits a special susceptibility to pain, to emotional excitement, or whose sensorial impressions from from unpleasant or unexpected stimuli cause undue fear or anxiety The word 'nervous', thus, refers to a quality of nerve tissue which in most cases is inherited. As we all differ in the quality of the nerve tissue we possess, the term 'nervous' when applied to the temperament of individuals, cannot be regarded as denoting a physiological aberrancy. It is a characteristic of nerve tissue to be responsive, so that a hyper-responsiveness of nerve tissue in any given individual, need not imply disordered nerve function or a pathologically-acting tissue, since for that individual the nerve responses are expressive of the quality of his nerve tissue. 'Nervousness' is perfectly compatible with a soundly-working constitution — well-regulated metabolism, undisturbed mentality, and general well-being. That is the point that I desire to specially emphasize. The intrinsically nervous person may be quite capable of great efforts, intellectual as well as physical, and may thus be a perfectly useful citizen. He can toil with impunity, earn his own living, and find happiness in the pleasures of life, differing from his stronger nerved brother solely in respect that exciting, unpleasant, or unexpected stimuli produce much greater and more lasting perturbation of his peace of mind.

We are, most of us, nervous in greater or less degree, hence to regard neurasthenia even as an extreme form of nervousness, is to suffer the implication that the majority of the population are potential neurasthenics. This, I stoutly maintain is not the case. Neurasthenia is not an extreme degree of nervousness. The former implies what is popularly, though vaguely conceived under the expression 'nervous breakdown'; it is a disease — a symptom-complex or syndrome (of which nervousness is only one of the many symptoms) which presents a series of morbid phenomena, and which transforms its victim into a more or less useless member of society. The pleasures of life are no longer for the neurasthenic, work he performs with difficulty or not at all, and he becomes a veritable burden to his household and himself as well. In the following pages, I propose to use the word 'neurasthenia' and its adjective 'neurasthenic' always strictly in its specific sense, that is, in reference to the syndrome embodied in our definition. Indeed the expression 'neurasthenic syndrome' would, to my mind, have a more legitimate sanction than 'neurasthenia,' in that it would admit of less laxity of use or conception. Having defined neurasthenia and dwelt at some length on the difference between neurasthenia and nervousness, which even recent writers on neurasthenia are prone at times to employ synonymously, let us establish the precise mode of onset of the disease and its manifestations from its earliest commencement.

It is generally acknowledged by writers on the subject that neurasthenia takes a long time to develop, but so far as I am

aware, the existence in practically every case of neurasthenia, of a prodromal period characterised by definite and well-defined morbid phenomena, and the casual relationship of these morbid manifestations to the actual disease, have hitherto, not been sufficiently understood or recognised. I have invariably found that to elicit an accurate and detailed account of the morbid happenings, both during an attack and during the long prodromal period that precedes it, it was necessary to cultivate the confidence of the patient, by showing a profound sense of sympathy for, and interest in, his condition, for the neurasthenic, more so, perhaps, than any other patient, knows, and rightly so , that many of his distressing symptoms, if voluntarily told, would form a source of ridicule and belittlement to the average physician. But careful attention to details is imperative to enable us to arrive at a correct symptomatology, and to accurately determine the precise sequence of the morbid events.

THE PRODROMAL PERIOD OF NEURASTHENIA OR PRE-NEURASTHENIC STATE.

Nurasthenia is almost invariably preceeded by a long prodromal period, which I venture to dignify by the name of ' the pre-neurasthenic state.' What then is the morbid picture that constitutes it ? Firstly, there is an incessant feeling of self-consciousness, which is a source of intolerable discomfort to the patient; he cannot speak to a friend, male or female, without blushing or experiencing a sense of embarrassement, so that whilst he is not unanxious for company, and in fact may seek it, the latter produces considerable mental upheaval or

excitement and subsequent mental exhaustion, as well as neuro-muscular fatigue. The blushing, from its excessive frequency, must be regarded as pathological; but though an exceedingly common, it is not an absoultely invariable accompaniment of the self-consciousness of the pre-neurasthenic. Every day lived through produces its quota of mental disturbance, so that as time goes on mental fatigue becomes more and more easy of inducement. These psychic disturbances, it is, which occurring day daily for years, pave the way, I maintain, for the neurasthenia proper that may ultimately supervene. In those who develop an attack of neurasthenia in middle or later life, self-consciousness takes the form of morbid introspection, and shyness may not be conspicuous or even characteristic. Secondly, constipation is present in a proportion of cases and may be very obstinate in some. Shreds of tenacious mucus are usually passed with hard masses of faecal matter. Sometimes on attempting to defaecate shreds of tenacious mucus alone are expelled. The mucus in these cases is probably due to the irritant effect of stagnant scybala, causing an excessive secretion from Luberkhüns glands ('membranous enteritis'). Thirdly, headache occurs in nearly every case and as a rule is of the type described by Charcot as the 'casque neurasthenique' a sensation of a tight-fitting helmet pressing on or constricting the head (helmet headache). There is, in addition, an accompanying sensation of warmth. The headache is usually dull and oppressive, seldom painful, and generalised all over the top of the head. A band passing through a point about an inch

above the external occipital protuberance posteriorly, embracing the temples laterally, and passing through a point about an inch-and-a-half to two inches above the eyebrows anteriorly, fairly accurately delimits the area of the crown of the head where the headache is felt. I have elicited the fact that considerable relief (temporary, I mean) is very often obtained by the patient pressing with one or both hands on the crown of the head, or when breezes of cold air (the outside atmosphere) pass over the uncovered head. Clifford Albutt similarly observes that the placing of a pad at the back of the chair to support the head often relieves it.[1] Less commonly the headache is felt more intensely at some special situation, e.g. in the occipital or frontal region. This pre-neurasthenic headache is practically always persistent throughout the waking hours, and is of more or less uniform intensity throughout the day, excepting that in the mornings the headache commences not at the moment of awakening but when the patient gets out of bed and begins to walk about. Excepting then, however, the recumbent posture affords but little relief. The headache is invariably aggravated by any effort, mental or physical, however trivial, or after emotional embarrassment or excitement. Often it constitutes a most distressing and obstinate symptom, although it is never so severe as to keep the patient awake at nights. Owing to the intolerable character of the headache, the faculty of concentrating the mind on anything requiring mental effort suffers considerably.

Fourthly, pains and aches which affect the back, chest, and

[1] Albutt and Rolleston, "System of Medicine" Vol viii, Page 745.

limbs. Most frequently they occur along the spinal column — rachialgia (a form of spinal irritation of the older authors) — and in character are either dull and boring or sharp and shooting. The most favourite situation of this rachialgia is in the region of the last cervical vertebra, or of the thoracic vertebrae. As a rule it is diffusely felt; less commonly the affected area is limited to a small spot the size of a shilling or so. Sometimes it takes the form of a vague discomfort or stiffness along the region of the whole of the cervical vertebrae, or a sense of pressure and heaviness (as if a weight were being supported) in the same situation, or elsewhere along the vertebral column. Accompanying the rachialgia and aggravating it there may be actual hyperaesthesia of the skin over the spine — spinal hyperaesthesia or so-called spinal tenderness; but it is not true, as most authors affirm, that actual tenderness to pressure over the spine usually exists; tenderness on tapping over the spinous processes is not usually present, and if it can be elicited is never very severe. The rachialgia and other pains are only of occasional occurrence, but nevertheless they constitute a source of considerable worry and fear to the pre-neurasthenic; he imagines they are the expression of serious internal organic disease undiscoverable by the physician, and as a result becomes morose and introspective.

Fifthly, there is a gradually increasing tendency towards neuro-muscular fatigue on exertion, or even after gentle exercise (e.g. walking short distances).

Sixthly, the tendon reflexes, especially the knee jerks, are exaggerated.

Seventhly, the temperature is,as a rule, subnormal, and cold hands and feet are a common complaint.

It may be noted that during the pre-neurasthenic state the memory does not suffer impairment as a rule, and sleep is almost always undisturbed.

Mention may here be made of a symptom,(which I have not seen described anywhere), which may be encountered in the pre-neurasthenic state, especially after it has been in existence for some considerable time, much more commonly during an attack of actual neurasthenia, as well as in healthy people but of nervous temperament. It is this: often on retiring to bed, and feeling very much inclined to sleep, the patient instead of passing as usual into the unconsciousness of sleep,falls into a subconscious state. Whilst in this condition the patient is fully aware that he is not asleep; he is anxious to shout for help to get him out of this, but finds himself deprived of the power of speech. Whilst it lasts, the mental agony he passes through is indescribable, his most distressing feeling being that he will never be able to awaken. He endeavours to'wriggle' out of this state — I use the word 'wriggle' because the patient experiences the sensation that he moves his body and especially his head in the attempt — and eventually by some sort of mental effort he manages to pass into the conscious state again.

The patient may feel quite sleepy now, but the fear that he may again slumber into this subconscious state might actually cause him to try and prevent falling asleep, in spite of his sleepiness. He may, however, again try to fall asleep, and again pass

into this subconscious state. This may even occur four or five times in succession, though usually when the patient has had two experiences of this in one night, he is so terrorised that he might not get out of this state if he again passed into it, that he will rise out of bed or do his utmost to keep awake in bed. As a rule, however, in spite of his efforts, he will ultimately fall asleep normally. Again the phenomenon may occur reversely. The patient may fall asleep without trouble, but in the morning, instead of awakening into the fully conscious waking state, he passes into the subconscious state already described and ultimately into the waking state. The phenomenon, which I take to be a momentary trance, lasts, so far as the patients can judge, about a minute or two. Whilst in itself of no serious import, the phenomenon is of sufficient importance to be recognised and its meaning understood. Beard states that some of his patients suffered from convulsive movements being "suddenly and painfully awakened by a violent spasmodic movement of an arm or leg or of the whole body."[1] This is the nearest approach I have read to the phenomenon of momentary trance just described.

The foregoing constitute the morbid manifestations characteristic of 'the pre-neurasthenic state'. Regarding their frequency of occurrence, the hyper-selfconsciousness with its implied emotional disturbance is invariably present in every case of neurasthenia for years directly preceeding the onset of an

[1] G.M.Beard, "A practical treatise on Nervous Exhaustion (neurasthenia)" 1890. Page 88.

actual attack; I have never failed to elicit its existence. Of course I am here speaking of pure neurasthenia, and not of the many neurasthenoid states which constitute the prodromal periods of various psychoses (e.g.melancholia) ; or which may result from the abuse of stimulants and drugs(alcohol,tobacco, opium) ; or which come under the category of neurasthenia symptomatica — i.e. asthenias of the nervous system accompanying and dependent upon other diseases, e.g. disturbances of the nervous system which may occur in (a)diabetes, (b)chlorosis, (c)the various anaemias, (d)organic disease of the stomach or bowel, (e)phthisis, (f)conditions where the processes of nutrition are gravely interfered with,such as carcinoma, (g) in toxaemias due to infection, or metallic poisoning (from mercury, lead,etc.). In all these conditions the nervous disturbances do not conform to the symptom-complex of true neurasthenia; they are of a neurasthenoid character and merely symptomatic of one or other of the diseases enumerated.

Of the other associated morbid phenomena, the rachialgia, the tendency to neuro-muscular fatigue on exertion, and exaggerated tendon reaction, are practically never absent. The headache is almost always present. The alimentary derangement is exceedingly common, but in some cases it is inconspicuous or even absent. The headache and alimentary disturbance(constipation etc.) often coexist,but sometimes the one is present without the other.

Concerning the time incidence and sequence of occurrence of these manifestations, the hyper-selfconsciousness with its

accompanying emotionalism is the first and fundamental symptom; its origin can often be dated back to the period of puberty, in some cases it is an inherited proclivity, and may show itself even earlier, but it distinctly manifests itself, in most cases, at least, from about the age of fifteen or sixteen and onwards, when the mental faculties commence to mature more rapidly, and the system generally is subjected to its maximal developmental strain. It is present throughout the entire duration of the pre-neurasthenic state. After the lapse of months or years the alimentary derangement develops, and concomitantly with it, or succeeding it, the pre-neurasthenic headache. Then comes the easily induced neuro-muscular fatigue on exertion and exaggerated reflexes; and lastly, towards the termination of the pre-neurasthenic state and always foreboding an attack of actual neurasthenia, the rachialgia supervenes.

The pre-neurasthenic state usually lasts for years; it may terminate with the death of the individual, i.e.a person may live and die a pre-neurasthenic; or the patient may undergo temporary recoveries and relapses, but the usual termination is in an actual attack of true neurasthenia. Such factors as environment, sphere of life, position, heredity, etc., will naturally determine the ultimate sequela in any individual case. During the pre-neurasthenic state, in spite of the discomforts from which he suffers, the patient can discharge his duties to himself and to others; in other words, he remains, more or less, a useful citizen. With the advent of true neurasthenia, however,

(which is usually ushered in more or less suddenly by some cause or causes always intrinsically mental in origin), there develops a well-defined and unmistakeable set of symptoms or syndrome, which makes the patient's life a veritable hell upon earth, rendering him more or less incapable of following his usual occupation and pursuits. We shall now proceed to describe in detail the symptoms which make up this syndrome.

CHAPTER 3.

THE NEURASTHENIC SYNDROME, OR THE SYMPTOMATOLOGY OF NEURASTHENIA VERA.

The clinical picture of typical attacks of neurasthenia is as well-defined as that of other nervous diseases, for though we are here dealing with a malady, the manifestations of which are mainly subjective in nature, the close resemblance and agreement of independent descriptions by individual patients is so striking, that the morbid entity, when we meet with it should never escape or fail our recognition. I may state, at the outset, that, contrary to the view universally entertained, I hold that headache is not a usual, and therefore characteristic, symptom or stigma of true neurasthenia. Why it invariably figures among the stigmata of neurasthenia, is, I maintain, due to the fact that the prodromal period of neurasthenia has never been differentiated from the actual disease itself. I have observed , in most cases, that with the precipitation of an attack of actual neurasthenia, the headache either altogether disappeared, or became so distinctly mild or attenuated in character, as seldom to form the subject of much complaint. With the exception of the headache, however, the other pre-neurasthenic symptoms persist, usually with increased severity, throughout the attack of actual neurasthenia. The symptomato-logy admits of a simple classification under certain headings.

A. Mental or psychical disturbances.

(a) Hyper-selfconsciousness and introspection (which is

even more marked than that observed during the prodromal period), with associated intense emotional excitement. In some cases blushing of the face is of very frequent occurrence. The hyper-selfconsciousness often so dominates the patient's mentality as to render it well-nigh impossible for the neurasthenic to indulge in conversation with strangers,or even friends, for any length of time; if he attempts to do so, he becomes immediately overwhelmed by sensations of a most intolerable character (all expressive of psychic instability) such as, for example,a feeling that his heart will stop beating,or that he will die if he cannot escape the conversation, and these are often accompanied by actual syncopal signs and symptoms. Hence the neurasthenic will often bolster up an excuse to break off a conversation and suddenly and abruptly leave the party spoken to; for a like reason also, the neurasthenic deliberately avoids theatres, assemblies, and the company of strangers. The emotional excitement which is present,is manifested, inter alia, by patients starting readily on the slightest provocation (e.g. on hearing a voice unexpectedly, a ring at the door bell,or a knock at the door,however gentle); and sometimes by a varying degree of restlessness. The selfconsciousness leads to a marked tendency to introspection, depression, and worry over small matters, the physiognomy being in keeping with this morbid mental state.

(b). Cerebral fatigue. This manifests itself by (1) a weakening of the memory, which in some cases amounts to total loss; (2) enfeeblement of the will or aboulia,as is evidenced by a marked irritability of temper provoked often by the most

trifling causes, and exhibited especially towards the nearest and dearest relatives; (3) a marked diminution in the capacity for sustained intellectual effort, that is, the power of voluntary attention (attention requiring the exercise of the will and judgment) is impaired. The faculty for spontaneous attention, however, is only slightly affected as a rule,so that a patient can,and occasionally does participate in simple pleasures, such as, for example,laughing at or enjoying a joke,or singing,etcetera; it is this fact, indeed, coupled,at times, with the maintenance in many patients of a perfectly healthy appearance and unaltered physique, that serves to engender suspicion as to the reality of their sufferings in the minds of relatives and friends, and even to alienate the much-needed sympathy of these; (4) the presence of morbid fears or dreads — phobias or panics as they are called. The commonest of these are agaraphobia (the fear to be in open places), claustrophobia (the fear of being in a narrow or confined place,e.g. a room or a railway carriage compartment), anthrophobia (the fear of company), the fear of being too far away from home, the fear that recovery will never occur, the fear that death is momentarily a probability, the fear that the heart will fail or 'burst' (in cardiac neurasthenics) the fear,experienced on retiring to bed at night,to fall asleep lest death should occur during the unconsciousness of sleep, nosophobia (the fear of catching disease), etc. It may be noted, however, that actual delusions or hallucinations never occur in pure neurasthenia, and further,that the neurasthenic,although he very often talks of committing felo de se, (and may even go the length e.g. of lifting a knife to carry out his threat),never

really contemplate suicide, for despite his extreme sufferings he values his life and is very anxious to recover; he is too much of a coward to face death, and his threats are only an expression of his awful misery, which are made usually so as to impress his household with the reality of his affliction, and to enlist or retain their sympathy. Dowse remarks[1] " it is not an uncommon thing for my patients to express the idea that their lives are so wearying, so distressing, so full of vague fears and dreads, so hopelessly intolerable, and yet in the same breath they are specially anxious concerning the future. " I don't think I shall ever get better" followed immediately by " You are quite sure that the medicines you are giving me will not injure my constitution", are remarks frequently made to me in the same breath. This is but one feature of the inconsistency which is so common in neurasthenia".

I have experienced similar remarks from my patients time and again but I can hardly agree with Dowse that they prove inconsistency,(a symptom, by the way, which I have not found to be characteristic of the neurasthenic state), since they merely indicate the patient's desire to live on, that the hope of cure ' springs eternal in the human breast ' however intolerable life may be and however dismal the prospects of relief or recovery.

[1] Dowse " The brain and the nerves " Page 102,(1892).

B Neuro-muscular asthenia.

Neurasthenics suffer from ready and sustained fatigue on exertion, or after exercise, however gentle, the asthenia being much more intense than that occurring during the pre-neurasthenic state. The grip is weakened, more or less, in most cases, and more especially in women; it may be normal to begin with, but successive tests with the dynamometer soon records the phenomenon of ready exhaustion. The neuro-muscular weakness, whilst more or less general, is specially referred to, and complained of in the legs. The fatigue of the neurasthenic, it should be noted, is much more lasting and more readily induced than ordinary fatigue, in other words, the same stimulus will produce fatigue more rapidly and more sustained in neurasthenia than in health. The asthenia varies in intensity from day to day, and even during the course of the same day, being dependent upon the degree, nature, and frequency of the psychical disturbances that harass the patient's mind. True paralysis, be it noted, never occurs in neurasthenia. As an expression of the muscular fatigue, and nervous instability, tremors and twitchings commonly occur; they may be seen (a) in the hands, by making the patient stand erect with outstretched hands and fingers, as a fine tremor consisting of short, rapid, rhythmical oscillations closely resembling those observed in exopthalmic goître, or (b)

as a quivering of the eyelids due to spasmodic twitchings in the orbicularis palpabrerum, or (c) as recurring, irregular twitchings in small bundles of fibres in the muscles of the face, trunk, chest, and extremities. Partly,perhaps, as an associated phenomenon of the neuro-muscular asthenia, and partly,possibly, as an expression of vascular disturbance, pains and aches of various kinds may occur(anywhere in the body), as well as the rachialgia already alluded to.

C. Disturbances in the circulatory apparatus.

(a) The heart. The nerves of the heart, like the other nerves of the body, usually suffer in the general nervous hyperexcitability which is present. Palpitation is, therefore, a very common complaint; sometimes it is very intense, and constantly present throughout the waking hours. It is usually aggravated by emotional excitement, physical exertion (however gentle), and change of posture (e.g. on rising up from the sitting position). Associated with the palpitation there is tachycardia; this is paroxysmal in character, being dependent upon the frequency of the psychical upheavals that occur during the course of the day. As these upheavals are often very recurring, palpitation constitutes, in many cases,a most distressing complaint indeed. The cardiac action, during the paroxysms, is, as a rule, regular in force and rate. The cardiac nerves and musculature are perpetually working overtime, so to speak, with the result that there may be constantly present in neurasthenia (and always in cardiac neurasthenia), a feeling of extreme weakness, dull aching, or fatigue in the praecordial area. The persistent palpitation, tachycardia, and resulting

cardiac discomfort, engender the belief in the mind of the patient that he is the victim of serious organic disease of the heart, and even when the assurances of the physician to the contrary dispel that erroneous belief, the patient often cannot be convinced, that because his cardiac disturbance is functional in nature, it cannot cause death. Hence develops the fear that his heart will some day fail him, that he will die during a paroxysm, and the fear is all the more intensified as time goes on, because the paroxysms may sometimes, in the absence of adequate treatment, partake of the nature of flutterings of the heart, during which the beats may be so feeble and hurried as to be almost imperceptible. These circulatory disturbances are present in varying degree in almost all neurasthenics; in some they are mild, in others severe, and in others again they constitute the dominating features of the case ('cardiac neurasthenia'). Gilbert Ballet holds[1] that neurasthenic tachycardia is habitually observed in those cases of nervous exhaustion in which cerebral depression is profound, and in which intense or persistent digestive disorders have brought on general enfeeblement or wasting. This view is very much in conflict with my own experience; the worst forms of tachycardia I have met with in neurasthenics who looked healthy and robust, and who presented but little digestive derangement, and further, as a severe or harrassing symptom, it was often conspicuous by its absence in neurasthenics who presented profound cerebral depression, alimentary disturbance and wasting.

[1] "Neurasthenia" by Gilbert Ballet (transl. by Smith) 1911, Page 82.

On the contrary, disturbance of the cardiac rate in an opposite direction, an habitual bradycardia as low as fifty beats per minute, which may be encountered in neurasthenics, I have often met with in those who showed bodily enfeeblement and emaciation. Between the paroxysms of tachycardia the heart is regular in force and rate.

(b) **The vascular and vasomotor system.** (1) The arterial tension in neurasthenia is almost invariably lowered. (2) Pseudo angina pectoris (cardialgia) is very common, and usually a conspicuous symptom in cardiac neurasthenia. It almost invariably takes the form of a sudden, sharp, stabbing pain, with an associated sense of constriction (sometimes), in the heart region. It is of momentary duration, and occurs only occasionally — two or three times per day, or once in so many days or weeks. When it comes on the patient is thrown into a sudden paroxysm of anguish and terror, and syncopal manifestations often follow as a consequence. The angina helps, in those that experience it, to still further weaken the self-confidence and to foster the fear that sudden death from cardiac failure is sooner or later doomed to occur. (3) Epigastric and hypogastric pulsation is often visibly present on inspection or readily elicited on gentle palpation. (4) A sensation of throbbing in the head or pulsation in the legs is very commonly complained of, the patients experiencing it being able to accurately count their pulse rate by the (vascular) pulsation they hear in the head, or feel in the legs. (5) A feeling of the brain being loose and moving ('jolting') inside the cranium is

a complaint frequently encountered in neurasthenia, as is also a sensation of fullness or increased tension (as if there were too much, or an overflow of, blood) in the brain, with an associated feeling of bursting — that the blood in the brain is attempting to escape — at the root of the nose. (6)Vertigo, or a 'swimming in the head' is of occasional occurrence in some neurasthenics; it is usually of momentary duration, and seldom so severe as to make the patient actually lose balance. In this connection may be mentioned the peculiar sensation experienced by some neurasthenics whilst lying in bed, of sinking through space. (7) Symptoms indicative of disturbance in the peripheral circulation are constantly present. The commonest of these are (*i*) habitual coldness of the hands and feet (the result of vaso-constriction), (*ii*) the tâches cérébrales (*iii*) formication — a sensation of insects crawling over the skin, (*iv*) frequent blushing and flushing of the face and the occasional occurrence of blotches of redness on the chest and back, accompanied often by a most irritating pins-and-needles sensation and a feeling of warmth; these are vaso-dilatation phenomena and not urticarial in nature, which may occur whilst the patient is at rest, but are much more liable to occur when he is up and active.

D. Disorders of Sleep.

This usually takes the form of a marked inability to fall asleep until several restless hours have been spent in bed, and again of a tendency to awaken at an early hour of the morning, and for somnolence to vanish then, the sleep, therefore,

being insufficient and unrefreshing. Some patients, however, experience but slight difficulty in falling asleep, but exhibit a ready liability to awaken after a short interval, the night being passed in alternating periods of restless wakefulness and sleep. But even when the patient gets a sufficiency of sleep, it is never very refreshing, and moreover, is apt to be disturbed by disagreeable or distressing dreams. Further, there may be the phenomenon of momentary trance already described, with, or without, actual insomnia.

E. Alimentary Disturbance.

The vast majority of cases present alimentary disturbance of some kind. Constipation, flatulence (gastric or intestinal), and dyspepsia are the commonest. Some patients have flatulence without knowing or complaining about it. The appetite may be impaired, but often is quite good.

F. Disturbances of the Special senses.

(a) Vision. Patients often complain that they cannot read for any length of time, owing to the extreme readiness with which fatigue of the eye (neurasthenic asthenopia) occurs or headache is produced. This easily induced fatigue of the eye is possibly the result of exhaustion of the muscles of accomodation, of the retina, or of the cortical centres. Further, some patients present the anomaly of specks floating before the eyes; others complain of an intolerance to strong light (possibly due to retinal hyperaesthesia).

(b) Hearing. Auditory hyperaesthesia may occur, and is manifested by an extreme sensitiveness not only to noises but to musical and pleasant sounds as well. and also by the hearing of arterial pulsation in the head (already referred to). Tinnitus aurium sometimes occurs.

G. Exaggerated tendon reaction.

The reflexes (tendinous and superficial), especially the knee jerks are exaggerated in practically all cases. Increased excitability of the muscles to percussion is also observable, blows upon nerve trunks or motor points producing immediate responsive contractions of the muscles which they govern.

H. Disorders of Common Sensation.

Hyperaesthesia is the most common sensory disturbance, and is manifested chiefly by tenderness to pressure, extreme susceptibility to atmospheric changes (heat, cold), as well as by hypersensitiveness to pain. There may be special hyperaesthetic zones in various parts of the body (e.g.sensitive scalp, facial tenderness). Paraesthesia — a subjective sense of numbness or tingling, may occur (e.g. in the limbs), but actual anaesthesia, never. Besides these disorders of superficial sensibility, disturbance of deep sensibility is frequently encountered, that is,sensations related to internal organs; some of these are painful and distinct, others are vague and almost indescribable.

I. Other symptoms.

Visceroptosis (only in those who have emaciated) ;

sexual disturbances — the act is very exhausting, weakly performed, and accompanied by great cardiac excitability; thermal disturbance — the temperature is almost always subnormal 96° F or 97° F; respiratory disturbances — patients often complain of an inability to take a deep breath (' to get at the bottom of it ') and sometimes of a sense of suffocation, the breathing is shallow but dyspnoea never occurs; dysphagia; Lastly, the hair in neurasthenia, (and even during the prodromal period that precedes it), is apt to be dry, and there is a tendency for it to become prematurely grey. The skin, too, save during moments of excitement when it is clammy and moist, is usually dry, and patients often complain that they cannot perspire as they used to do. Dryness of the mouth and throat is also a common complaint. Further,as regards the personal appearance, some patients (especially young adults) present little or no alteration, whilst others (especially older patients) look haggard, worried, and aged. Similarly, the state of nutrition of the body varies within the limits of absolute normality (i.e. the maintenance of the usual state of body health) and extreme emaciation.

Haematological and Urinary findings in neurasthenia.

As a result of histological examination of the blood of many neurasthenic patients, I have been unable to detect any

deviation from the normal, and I am thus of the decided opinion, that the R.B.C., W.B.C., and differential leucocytic, counts, as well as the colour index, do not exhibit any physiological aberrancy in neurasthenia, excepting in a few isolated cases, where anaemia exists in association, and in which, therefore, no pathognomonic value can be assigned to the haematological abnormality.

Concerning the urine in neurasthenia, phosphaturia was intermittently present in about fifty per cent of my cases, a clinical finding, which, in many of these, I am convinced, was directly attributable to the dietary (the ingestion of an abundance or preponderance of articles of food containing phosphorus). Further, employing Stokvis' modification of Jaffe's test for indicanuria, I have found only in two cases of pure and uncomplicated neurasthenia, more than the normal small trace of indican in the urine. In some neurasthenics, the amount of indican in the urine was indeed even below the average physiological trace, a fact possibly dependent upon, in these cases, the exhibition of a milk instead of the ordinary mixed diet.

The foregoing constitute the clinical phenomena I have met with in my cases of neurasthenia. Naturally, here, as elsewhere, patients have not the same uniform, unvaried, tale to tell, but few pass through an actual attack of the disease without experiencing most of the symptoms detailed, which collectively constitute the symptom-complex embraced in my conception of neurasthenia vera et pura. Of course one particular symptom may predominate and overshadow the others, but with very patient and painstaking enquiry it is often surprising, how much of the symptomatology just described, can be elicited in any particular case. Although the syndrome of neurasthenia is built up mainly of subjective symptoms, objective signs are seldom wanting, the most constantly occurring of these being, palpitation, tachycardia, and dermatographia. But the possession of a clear understanding of the meaning of the subjective symptoms, will despite their multiplicity, remove any source of difficulty or confusion in arriving at a definite diagnosis.

The Varieties of Neurasthenia.

Much disagreement exists among authors on neurasthenia as to the number of varieties into which the disease should be divided. Many classify the disease into a great number of varieties, some of which are based upon the supposed predominance of certain alleged etiological factors (e.g. ' genital neurasthenia', 'sexual neurasthenia','hereditary neurasthenia') others because of the predominance of symptoms referable to certain organs (e.g. 'gastric neurasthenia', 'cardiac neurasthenia', 'visceral neurasthenia' etc.,), others again because of the preponderance of symptoms expressive of marked functional impairment in one or other part of the nervous system (e.g. 'cerebral neurasthenia', 'spinal neurasthenia', 'cerebro-spinal neurasthenia', 'angiopathic neurasthenia'), and yet others, such as,'neurasthenia of women', 'neurasthenia gravis'(in cases presenting profound weakness), 'neurasthenia terminalis'(where actual tissue changes have followed upon derangement of function), and so on. On the subject of dividing neurasthenia into varieties Savill[1] remarks, "it does not seem to me scientific, for it is undoubtedly a general disorder and all of its symptoms are manifested through the nervous apparatus which permeates the whole body". But a classification into varieties is permissible and advisable if based upon differences in the clinical picture of the disease, and as we undubtedly can distinguish clinically cases presenting special distinctness

[1] Savill "Lectures on Neurasthenia," Page 25.

of their own, I do not share Savill's view. But I certainly do object to recognise,(as unscientific classification,) such varieties, inter alia, as sexual neurasthenia, visceral neurasthenia, etc., as distinctive forms, (because of the alleged causation of the disese by excessive sexual indulgence or masturbation on the one hand, or associated alimentary disturbance on the other), since they do not imply special characteristics whereby the neurasthenia itself can be identified. In my view a convenient classification would be to divide neurasthenia into two varieties, (1) cerebro-spinal neurasthenia (with its subdivisions cerebral neurasthenia — cerebrasthenia, and spinal neurasthenia — myelasthenia), and (2) cardiac neurasthenia. Cerebro-spinal neurasthenia is the ordinary form of the disease; as a rule the cerebral symptoms predominate, sometimes, however the spinal, but they always occur in combination. Furthermore all cases of neurasthenia are intrinsically cases of asthenia of the cerebral and spinal system of nerves. Regarding cardiac neurasthenia, most authorities do not recognise this as a distinctive clinical variety, or at least do not see the necessity for doing so. But from the viewpoints both of diagnosis and treatment I am strongly convinced (from my experience of cases that come under this category), of the need for emphasizing this form of the disease. Moreover it undoubtedly possesses clinical distinctiveness of its own. The cardiac neurasthenic, after passing through the usual

prodromal period, developes the circulatory disturbances detailed under the symptomatology of the disease — palpitation, tachycardia, pseudo-angina etc., especially the first two. These in their turn intensify the slowly oncoming, previously existing cerebrasthenia and myelasthenia which is present. A vicious circle of events is thus set up (of which the cardiac symptoms were, in great measure, the starting point) which in the course of time results in a widening of the clinical picture, so as to embrace the symptomatology of the disease already detailed, more or less. The justification in recognising cardiac neurasthenia, then, lies in the fact that the cardiac disturbances are the initial and leading symptoms, and from the patient's pointof view, the most alarming and most distressing.

I am not in these pages concerned with a discussion of what has been designated 'traumatic neurasthenia.' My experience of this class of case has been limited, but judging from the cases I have encountered, and also from descriptions of cases by writers on the subject I am of the view that so-called traumatic neurasthenia is not a distinctive clinical individuality. The victims of traumatic neurasthenia appear to be highly neurotic or neuropathic individuals in whom the existence of a long-standing pre-neurasthenic state is often traceable. Hence the term neurasthenia of traumatic origin would be, in accordance with my view previously stated, a more appropriate designation to this class of case.

P A T H O G E N E S I S .

Numerous theories have been propounded to explain the pathogenesis of neurasthenia. Of these, the theory of gastric dilatation and auto-intoxication, of which the chief exponent is M. Bouchard, is perhaps the most generally entertained. I quote Gilbert Ballet's summary of Bouchard's teaching. " Under the influence of various causes, and in virtue of hereditary or congenital weakness of the muscular walls of the stomach, this organ contracts insufficiently in the intervals between different periods of digestion. The digestive fluids (saliva, mucus, and gastric juice), mingled with remnants of food, tend to remain in it, to ferment, and to putrify, all the more so that the gastric juice no longer contains hydrochloric acid in sufficient proportion to resist the action of the ferments. These abnormal fermentations continually produce soluble toxins, which when re-absorbed, go to impair in varying degrees the anatomical elements of the different organs and notably the nervous centres".[1] Savill, in this country, strongly believed, that in the vast majority of cases, neurasthenia was dependent upon gastro-intestinal derangement and resulting auto-intoxication. What are the arguments that have been urged in support of this gastric and auto-intoxication theory? Firstly, that many neurasthenics present gastro-intestinal derangement of some sort, which is antecedent to the neurasthenia in point of

[1] Ballet, "Neurasthenia" trans. by Smith, Page 127.

of time, and that often the cure or relief of this, cures or relieves the neurasthenia as well, and, secondly, that in some cases there exists a possible source of auto-intoxication such as, decayed teeth, pyorrhoea alveolaris, or chronic appendicitis. The criticism which I have to level against this theory embodies my own arguments as well as those of others. Firstly, too often we meet with cases of prolonged gastric disturbance (dilatation, stasis, dyspepsia, etc.) in whom the neurasthenic syndrome is altogether non-existent, and likewise, oral sepsis, long-standing and obstinate constipation, and chronic appendicitis are too often unaccompanied by neurasthenia. In this connection, I well remember in my student days coming across a female patient aged 50 suffering from bowel carcinoma, in the Royal Infirmary of Glasgow, who practically all her life got an evacuation of the bowels only once in sixteen or eighteen days, yet she never exhibited nervous symptoms, nor indeed suffered discomfort of any kind. Secondly, "exploration by means of the stomach tube has enabled the absence of any gastric stasis to be directly verified in a crowd of cases ..... On the other hand the absence or deficiency of hydrochloric acid which constitutes one of the essential elements of this pathogenic doctrine is frequently wanting in dyspeptic conditions ..... and it is not rare to encounter excessive secretion of hydrochloric acid."[1] Thirdly, in many cases, the normal state of body nutrition is maintained, the

[1] Ballet, "Neurasthenia" trans. by Smith, Page 128.

complexion is good, pyorrhoea alveolaris or other source of possible toxaemia has never been present, and in some cases the gastro-intestinal function is little if at all disturbed. Fourthly, I hold that an actual attack of neurasthenia is always ushered in by an exciting cause intrinsically mental in origin. Fifthly, the cure or relief of the neurasthenia by successful treatment directed towards an associated alimentary disturbance is not proof that the one is necessarily the effect and the other the cause, and it certainly does not afford any evidence of the occurrence of an auto-intoxication or toxaemia, which tends to deteriorate nerve tissue or nerve function. Sixthly, I have observed, in some cases improvement in, or recovery from, the neurasthenia without any improvement in the associated alimentary derangement. Seventhly, I have made repeated blood examinations in my cases, and have failed to detect, excepting in a few where anaemia existed in association, any aberrations from the normal state, which one might expect to, and does find, in chronic, general, intoxications, such as, pernicious anaemia, metallic poisoning, etc.

A failure to recognise what I have designated the pre-neurasthenic state might well account for the contention, which I believe to be erroneous, of Savill and others, that in most cases the gastro-intestinal disturbance is antecedent in point of time to the neurasthenia. I have met with patients who presented alimentary derangement, in whom the fact could be elicited, but only after the most painstaking enquiry, that

the alimentary derangement simply brought into greater prominence, a slowly oncoming, previously existing neurasthenic state. One has naturally, in great measure, to depend upon the patient's own testimony, and many, afraid lest their symptoms be stigmatised as imaginary, and to avoid this, willingly, or at least rashly and wrongly, connect their nervous symptoms with stomach or intestinal disturbance from which they may have suffered from some considerable time, but which, in fact, has not preceeded the nervous symptoms. Furthermore we must avoid conflicting nervous manifestations — a neurasthenoid state — (which may be encountered in many diseases which constitute a drain upon the system) with true neurasthenia. But the contention that auto-intoxication — absorption of poisonous products (chemical or bacterial) from the intestinal tract, which act deleteriously on nerve tissue or nerve function occurs in neurasthenia, has not yet advanced beyond the stage of an hypothesis ; it is unsupported by experimental or other conclusive evidence. If intestinal auto-intoxication is the sole and primordial determining factor in the causation of neurasthenia, we have still to be told why cases of long-standing histories of gastric and intestinal disease do not manifest the neurasthenic syndrome or sometimes nervous symptoms of any description. Then again, is it not universally held that the liver acts as barrier against the ingress into the general circulation of poisonous substances from the

intestinal tract, receiving as it does all the blood, with its contained products of digestion from the digestive organs? In support of this protective function of the liver has it not been shown (1)that trituration of liver substance with certain alkaloids diminishes their toxic properties, (2)that curare is harmless when taken by the mouth but powerfully toxic when administered hypodermically, and that this is due to its being carried to the liver and excreted in the bile ? It would therefore appear highly plausible that the prejudicial effects on the system of the products of protein disintegration (ptomains), or of bacterial activity (toxins), are in great measure thwarted by the depurative and protective function of the liver, which excretes, or destroys the virulence of these toxic materials.

Savill maintains that chronic suppurative conditions are capable of producing neurasthenia. But is the latter ever the direct result of the suppurative process ? If it were, we should, for example, have frequent opportunities to observe it in wounded soldiers, who present for weeks and months chronic suppurative lesions, where signs of general absorption are manifest. But during fifteen months experience with wounded soldiers, during which time hundreds of such cases came under my observation, I have not met with a single case exhibiting neurasthenia, or even distinct nervous symptoms of any kind, as a consequence of the suppuration. The argument may, perhaps, be allowed, from the contention of the toxaemists or auto-

intoxicationists, that acute toxaemias should be capable of effecting in a short time what it is alleged chronic toxaemias take months or years to produce. But in acute general toxaemias there are either no nerve symptoms at all, or the nervous manifestations resulting from a sufficiently virulent circulating toxin, take the form of delirium, convulsions, coma, or insanity (as for example, in uraemia, pneumonia, typhoid fever,etc.) . The neuro-muscular prostration resulting from infection with Pfeiffer's bacillus, though somewhat resembling in character the nervous asthenia encountered in neurasthenia, is entirely unaccompanied by the neurasthenic syndrome, and this coupled with the extraordinary rapidity of recovery from it, suggests to my mind that the underlying causes of the two asthenias are not the same.

According to Herter[1] neurasthenic symptoms may result from the continued administration of sufficient indol to give a constant and decided reaction for indican in the urine, but the presence of pathological amounts of indican in the urine is by no means a constant feature in neurasthenia[2], and may be unaccompanied by it (for example in catarrhal enteritis, suppurative conditions without free drainage, etc.).

That gastric or intestinal antifermentative measures were in some cases, as Savill affirms, the most successful means of curing or ameliorating the neurasthenia, is of course possible.

[1] Herter, Lectures on Chemical Pathology, Page 212.

[2] According to my experience it is not a pathognomonic feature.

But we must take into account firstly, the psycho-therapeutic influence of the physician, and the psychic measures which Savill himself confessed to have employed in his routine treatment of all cases of neurasthenia, secondly, the occasional occurrence of temporary or permanent improvement irrespective of any treatment, and thirdly, that the cure or amelioration effected, might easily have been the result of the patient's own unconscious auto-suggestion, inasmuch as the rectification of a long-standing alimentary derangement might remove an object of introspection and source of morbid impressions, and in that way raise the self-confidence and set agoing a circulus virtuosus of psychic events that would bring about improvement. To summarise, therefore, the constant occurrence of gastric dilatation and intestinal auto-intoxication in neurasthenia, must be regarded,at best , as an hypothesis, which, however, does not rest upon established evidence, clinical or otherwise, and in those cases where it is encountered it would appear to have the value of an associated condition, and not of an etiological factor.

The theory that neurasthenia results from defective assimilation of food due to dyspeptic states, has been put forward by Hayem. According to this observer, dyspeptic states, whether accompanied or unaccompanied by gastric dilatation, cause incomplete assimilation of food, in consequence of which

anaemia eventually supervenes with disturbance of the nutrition of the tissues generally, and the nerve elements in particular. Thus the supporters of this theory postulate the occurrence of an actual deterioration of nerve tissue from the absorption of the products of a faulty digestion rather than from an auto-intoxication, by toxins elaborated during gastric fermentation. This theory, like that of Bouchard, is but an hypothesis, and, to my mind, a very inefficient interpretation. For how are we to explain those cases, so commonly encountered, of typical neurasthenia in whom the digestive apparatus has never been disturbed, or in whom the general nutrition has suffered no perceptible impairment, or where, judging from the physiognomy and state of body nutrition, the appearances deceptively indicate good health. Further what of the innumerable martyrs to gastric and bowel diseases that present anaemia and other palpable signs of faulty assimilation and defective nutrition, but who have no neurasthenia ? "And then, cases are frequent in which a traumatic shock has provoked the rapid and simultaneous appearance of the digestive disorders and the neurasthenic symptoms" . In this connexion, I have repeatedly observed that neurasthenia is usually unaccompanied by impairment in the general nutrition in young adults, and that it is chiefly in patient's past middle life , in whom the katabolic processes are in the ascendency, and especially if there is an associated

gastric or intestinal derangement, that neurasthenia is accompanied by emaciation. Further, I hold it is quite probable that during the currency of the pre-neurasthenic state a dyspepsia may develop, which for a time fills the whole scene in the pre-neurasthenic's existence, which aggravates (but has not engendered) the onset of the neurosis, in virtue of the depressing influence it very plausibly exerts "on the moral state of the patient, and by its being rebellious to the most diverse modes of treatment, constitutes a distressing and irritating source of incessant discomforts and disquietude."

The theory, put forward by Glenard, that neurasthenia is due to visceroptosis (prolapse of one or other of the abdominal viscera) is now no longer entertained (and was even eventually discarded by Glenard himself). It is incontestable that in the vast majority of cases of neurasthenia there is no visceroptosis, and also that the latter may occur without neurasthenic symptoms. My experience is that visceroptosis may be encountered in neurasthenics who are past middle life and who have emaciated. In my view, therefore, when it does occur, it has the value of a symptom or of a sequela and not of a cause of the neurasthenia.

Weber's[1] angiopathic or vaso-motor theory comes nearest the true explanation of the pathogenesis. Anjel[2], before

[1] Weber, "A study of arterial tension in neurasthenia", (Boston Medical and Surgical Journal, May 3rd 1888).

[2] Anjel in the Archives für Psych viii, 2.

Weber, adduced clinical facts to prove that the disease is primarily a disturbance of the vaso-motor apparatus. Weber corroborated the contentions of Anjel, and proposed to designate neurasthenia a vaso-motor neurosis. This observer lays stress on the existence in all cases, of symptoms indicative of vaso-motor instability viz, habitual coldness of the hands and feet, frequent blushing and flushings of the face, fleeting and localised dermatographia, formication, etc, He also urges, and rightly so, that the disturbances of common sensation — the hyperaesthesias, the dyaesthesias, and the paraesthesias, are of vaso-motor origin. But the pathogenesis, obviously, remains insufficiently explained until we further enunciate the causa causans of this instability of the vaso-motor innervation.

Personally I regard the disease to be the outcome of a long-continued state of over-susceptibility of the brain (hyper-selfconsciousness or introspection), due to instability or increased excitability of the emotional centres, in other words, it is essentially a mental or psychical disorder. There is as a rule, but not necessarily, a morbid nervous heredity (probably an inherited exaggerated irritability of the sensory centres in the brain). The psychical upheavals acting over a period of months or years (during the pre-neurasthenic state) are accompanied by phenomena indicative of sensitiveness or irritability of the vaso-motor apparatus

in the brain[1] and elsewhere, which during the prodromal period of the disease are mostly confined to the head, (excessive blushing and paling of the face, headache,etc.). An actual attack of neurasthenia is precipitated by some cause or causes, of more or less acute duration, and producing intense emotional excitement and increased introspection. For example a pre-neurasthenic whose emotional and vaso-motor mechanisms have been becoming increasingly unstable for years, one day, let us say, finds himself at a dinner party and is called upon to give a toast; in proposing this he experiences intense mental and cardiac excitement. Later a pseudo-anginal pain may develop, and he begins to concentrate his attention on his heart, which becomes more and more irritable, until eventually an attack of cardiac neurasthenia develops, much of the symptom-complex of the disease supervening as a vicious circle of events.

Concerning the pathology of the disease I conceive that the variations in the normal relationships of the affected nerve centres bring about or are accompanied by vascular disturbances which probably induce a perverted metabolism in the nerve cells, and this, in turn, aggravates the aberrant functioning of the nerve centres. During the pre-neurasthenic state there probably exists a mild degree

[1] "There is some but not very definite evidence pointing to the existence of weak cerebral vaso-motor nerves". (Leonard Hill, vol. viii, page 19, Albutt System of Medicine.

of cerebral anaemia. We know that the tone of the blood vessels is directly dependent upon the state of the nervous centres which control or can influence the circulatory system. In confirmed neurasthenia the loss of vaso-motor tone is very apparent and has become a fundamental pathological factor. It permits of the ready occurrence (as a result of the psychical upheavals) of cerebral hyperaemias followed by cerebral anaemias. The ready contraction and dilatation of the vessels of the face may be accepted as external evidence of such internal occurrences. But generally, a chronic cerebral anaemia would appear to be indicated in neurasthenia by the existence of diminished arterial tension, a tendency to cardiac acceleration, respiratory shallowness, etc. It would appear to me as highly probable, that histological examination of the cells in certain parts of the brain of the neurasthenic, would reveal distinct morphological aberrancies from the normal state.

Having thus attempted to explain the pathogenesis of the disease as a whole, we may now evolve the pathogenesis of the leading individual symptoms, neurasthenic or pre-neurasthenic. Generally we may regard the secondary symptoms as being due to loss of control of the higher centres over the lower ones, which results from disturbance in the equilibrium of the former, and their consequent disturbed

metabolism and easy fatigability.

The **innumerable sensations of discomfort referable to the heart and other organs** might well be attributed to such unrestrained activity of the lower centres, especially those of the sympathetic and vaso-motor systems.

The neuro-muscular asthenia is, likewise, very probably the result of the marked instability of the emotional centres, and the vaso-motor apparatus in the brain(?), cord, sympathetics, and vasa nervorum. The nerves have probably lost their normal cerebral inhibitory influence, owing to emotional unbalance, and have to bear the brunt of the incessant oscillations in the vasa nervorum, resulting from loss of normal vaso-motor control. Hence the normal nutrition of the nerves , and, in turn, of the muscles which they govern, is interfered with, as is also the efficient removal of the effete products of muscular activity.

The pre-neurasthenic and neurasthenia headache admits of a similar explanation. Auerbach[1] holds that the neurasthenic headache is referred to the interior of the skull, whereas Binswanger[2] regards it as being due mainly to tension of the scalp muscles resulting from the accumulation in them during mental work of fatigue toxins. My patients have invariably referred the sense of pressure chiefly to the scalp muscles, although they indicate that there is a dural (deep seated)

[1] "Headache" by Dr.Siegmund Auerbach, translated by Playfair, Page 83 (1913)

[2] Binswanger, "Die Pathologie und Therapie der Neurasthenie" Jena, 1896. Page 303.

element as well. My observation, already mentioned, that temporary relief often results from placing the hand firmly on the head would perhaps seem to support the view that the pressure is mainly superficial. Most probably, therefore, the headache is due to defective nutrition of the nerve cells, pressure of the vasa nervorum on the nerve endings in the dura and scalp, and the ready production and accumulation of fatigue toxins in the scalp muscles, all of which occurrences might result from the incessant oscillations in the vasa nervorum. The ready tendency to blushing and flushing of the face(with its resulting variations in the quantity of blood flowing to the head) tends, I believe, to support this view.

The development of **phobias** in neurasthenia admits, in my opinion, of a simple explanation. A patient, for example, who has had repeated attacks of tachycardia, begins to foster the fear that sudden death from cardiac failure is, sooner or later bound to occur; hence he avoids going any distance from home, as he imagines himself safest there; he avoids company which too often has served to engender an attack; he dreads a railway carriage because travelling, company, and confinement excite him; he develops monophobia because he would be deprived of assistance if anything happened to him whilst alone, and so on. In other words I have almost invariably elicited that the phobias had a 'rational' basis developing as a vicious circle of events.

The pathogenesis of tachycardia and palpitation is readily explainable as a manifestation of diminished control of the higher centres over the lower ones. Moebius[1] has studied tachycardia in the human being and the physiology of the subject is fully and clearly stated by Hutchison[2], from whom the following observations are quoted:- "When the influence of the vagus nerve is removed, the rate and force of the heart-beat are both increased, but the former more notably than the latter. There are limits, however, to the increase of the rate observed as the results of vagus lesions in man. In no such case have the heart beats amounted to more than 160 per minute. Pulse rates above this, therefore, cannot be due to vagus paralysis alone. ..... Gaskell has described the sympathetic nerve as a katabolic one, for it tends to increase those chemical changes which lead to the beat, and he compares it to a vaso-constrictor. ..... Physiological evidence points to the fact that an increase in the rate of the heart is always due to a diminution of vagus tone, and not to an increased action of the sympathetic. ..... It might seem natural to suppose that cases of palpitation characterised by increased force and frequency of the beats were produced by an increase of the sympathetic influence; but this would appear to be not the case. The mere fact that such attacks

[1] Clinical observations on tachycardia by Moebius (Page37 Stuttgart,1895.)

[2] Applied Physiology, by Robt. Hhutchison,pages 123-125 London,1908.

may cease very abruptly would negative such a view, for experimental stimulation of the sympathetic always shows that the heart continues to beat rapidly for a long time after the stimulation has ceased. Even emotional increase in the heart's rate, then, is apparently due to a temporary diminution of vagus tone. ..... At the same time such temporary suppression of vagus control could not exert such an immediate marked influence upon the rate of the heart, were it not for the constant action of the sympathetic, which merely waits, as it were, for the opportunity afforded by the relaxed control of the vagus in order to assert its influence". The tachycardia and palpitation of the neurasthenic are invariably excited by psychical or emotional upheavals, a fact which precludes the possibility of their toxic origin.

E T I O L O G Y .

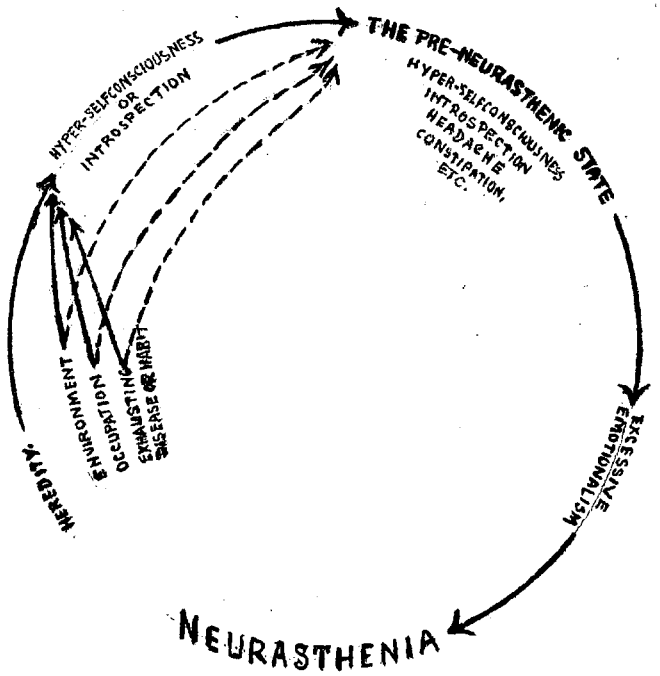
The etiology of neurasthenia will readily be inferred from my conception of the pathogenesis just stated. There exists nearly always a neurotic or neuropathic constitution, inherent or acquired, rendering the nervous system vulnerable. I am convinced that a family bias towards nervous disease is absent in some cases. And why, after all, should not the disease be able to appear de novo, in an individual without congenital predisposition, if it is due to repeated psychical excitations acting over a long period of time? The exciting factor of an actual attack is always some cause or combination of causes intrinsically mental in origin, which produces marked instability of the emotional apparatus, such as, excessive emotionalism, fear, 'shock'(in traumatic neurasthenia). The nervous phenomena observable as the direct result of excessive tobacco smoking, chronic alcoholism, metallic poisoning, phthisis diabetes, etc., constitute a neurasthenoid state, but never the picture of true neurasthenia. The latter may manifest itself in cases presenting long-standing histories of gastric or intestinal disorders, but the exact prodution of the disease is not, I hold, by way of an auto-intoxication or toxaemia, but in the manner previously indicated. Masturbation, excessive venery, chronic wasting disease, etc., alleged by some to be etiological factors, never, in my opinion, act as exciting causes, though they may aggravate an existing

neurasthenic or pre-neurasthenic state or, perhaps, help to engender the latter. I may here state that I had two patients in whom a severe attack of influenza supervened during the currency of a very virulent attack of neurasthenia without producing the slightest aggravation in the nervous symptoms either during the incidence of the influenza or during convalescence from it, a fact which does not support the view generally obtaining, that influenza can act as an exciting cause of neurasthenia. Indeed I have not met with a single case where it has done so, although, to be sure, the widespread prevalency of influenza nowadays, will occasionally render its occurrence a coincidental fact in the life-history of the neurasthenic, sometime before the precipitation of the neurasthenia.

The pre-neurasthenic state seldom commences before puberty, and progresses parri-passu with the maturation of the mental and emotional faculties. Actual neurasthenia usually occurs between twenty and sixty years of age. I agree with most observers that males suffer more than females, which is to be expected owing to man's more active and more militant life, intellectually, morally, and physically. Occupation, undoubtedly has a distinct etiological value, in respect that cerebral over-pressure exerts a deleterious influence on the congenitally predisposed. But I attach a much higher value, as a causative factor, to the environment

in which the patient moves, both publicly and privately, because, as previously indicated, it is the reaction of environment on the emotional and psychical apparatus which is the important determining and predisposing factor. Race, too, may have an etiological bearing, but this obviously, is to be regarded only as a phase of hereditary influence. Such effect of racial characteristics is exemplified in the Jews, who, in virue undoubtedly, of the oppression and persecution theyhave had to withstand for centuries, and their consequent need to live by their 'wits', are a highly nervous strung race, (and exhibit nervousness in a marked degree), and are especially prone to neurasthenia and other psychoses.

The etiology and mode of production of the disease, according to my conception of it, may be stated graphically as in the representation on the following page.



Graphical representation of mode of production of Neurasthenia.

Explanation. Heredity, aided by, (in a few cases replaced by) environment, occupation, exhausting disease and habit, predisposes to the development of the self-conscious and introspective nature. Thus comes into being the pre-neurasthenic state; it may be not until the commencement of this, that environment, occupation, exhausting disease and habit play their etiological rôles. There comes a time when the patient passes through a period of intense emotionalism, and it is the acute and repeated psychical traumas which occur then, that engender the neurasthenic syndrome.

The Treatment of Neurasthenia.

1. General Prophylaxis.

Little or no attention is devoted to the question of prophylaxis in the treatment of neurasthenia in current text books, but my view that the disease (by which is to be understood the symptom complex already described) is essentially an acquired condition, predisposed to, though it is true, in the vast majority of cases, by a congenitally susceptible nervous system, strengthens my contention that in the direction of preventive treatment much may be done to stamp out this growing malady. The disorder being excited by a gradual and increasing instability of the emotional and vaso-motor centres, the result of a long-continued state of over-susceptibility of the brain or hyper-selfconsciousness, it is obvious that faulty educational methods, mental and physical, are very important factors in its causation; in my view these act more powerfully and deleteriously than faulty heredity. Prophylaxis must aim, therefore, at instituting a regimen of mental and physical training best adapted to conserve and raise the energy and resistance of the nerve centres, and if possible, to counteract inherited tendencies. To do this most effectively, we must go back to the plastic period of youth or childhood, when the seeds of mental character are sown and the nerve centres are more susceptible of educative

influences, and nip the self-conscious mentality of the potential neurasthenic in the bud. We cannot hope to eradicate hereditary characteristics, which as I have said constitute the basal predisposing factor in the causation of neurasthenia, but we may hope to check their baneful influences, and in a sense establish a resistance against them, by healthy methods of education. We must, therefore, first and foremost recognise that the maintenance and development of the physical health during childhood is of an importance far outweighing any other consideration, and that our educational demands from the child must be subservient to this fact. It is important, therefore, to state what methods ought to be pursued that will best conserve and develop the physical health and the intellectual health during childhood and adolescence, directing one's remarks especially (but not exclusively) to children with a morbid nervous heredity.

a. The Physical Health.

The factors which determine the state of the physical health are, heredity, environment, alimentation, personal hygiene, physical culture, habits, and rest. Leaving the first or intrinsic factor (which has already been dwelt upon) out of account, let us examine the remaining, and in a sense extrinsic influences.

Environment. Country life, with its pure and invigorating

air, its calm, and ideal and naturally interesting attractions, is, of course, from the health point of view, the life to be preferred, par excellence. In towns, these features are lacking, and children are obviously at a great disadvantage. Such children, therefore, ought to spend the annual summer school holidays in the country. At all events, as much time as possible ought to be spent in the open air, and in towns, weather permitting, in the purer air of parks in outlying districts. Our advances and improvements in sanitation, and our gradually increasing efficiency to prevent and to treat the diseases akin to infancy and childhood, that often inflict serious and lasting injury to the system, are factors of no mean value helpful towards the maintenance and cultivation of the physical energy. On the other hand, I hold, that the present system of compelling children to commence their 'schooling' at the tender age of five, is in great measure, subversive of the principles upon which the development of a healthy mind in corpore sano depends, and this remark is specially applicable to children with a neuropathic taint, and a hereditary predisposition towards nervous asthenia. To take the child of five away from its natural pursuits and inclinations, its sportful and ever inviting toils, and to keep its mind under restraint as our present system of education compulsorily demands, forcing upon it a discipline and a teaching which, at such

tender years is little short of a punishment and too often a mental burden and boredom, is to diminish rather than to raise the resistance to those injurious influences — hereditary nervous defects, unhealthy environment, the stresses and strains of the conventionalism and over-civilisation of present day life etc., —, that conduce to mental insufficiency, instability, or vulnerability. This particularly applies to children born of neurotic or neuropathic parents and congenitally predisposed to nervous asthenia, and ipse facto, though not to the same degree, to children without inborn nervous defect. Rather ought we to let the child's mind run loose, so to speak, until about the age of seven or eight. Instead of keeping the child confined in the stuffy atmosphere of the class room, however well-ventilated it may be, for five hours — the sunniest and therefore the best hours — of the day, between the ages of five and seven, the school hours during these years ought to be spent in well-regulated physical exercise, in the open air whenever possible, under school supervision, it may be. But in spite of the many educational reforms (so-called) that have been introduced in recent years, our present scholastic system still presents many features, besides the one just indicated, inimical to the physical well-being of the child. The indoor confinement, and the sedentary life associated with it, the overcrowding in class rooms with its

attendant evils (vitiated air etc.), and the excessive duration of class room hours — all these are dangers to the physical health which our reforms have neither eliminated, nor materially attempted to eliminate. But can they be ? It appears to me reasonable to suggest that these dangers would in great measure be removed if the school hours were somewhat shortened, particularly in the earlier years of school life, and if our schools were built in the outskirts of towns instead of in the heart of them, with verandahs so as to permit of open air tuition in fine weather, and possessing for purposes of recreation, four or five acres of actual field, instead of half-an-acre of stoney playground. Under these circumstances, the increased distances between school and home could be adequately met by a special school tramway or other vehicular service, where the distances are too great.

Alimentation. Strict regularity in the taking of meals, a sufficiency of plain and nutritious food, proper mastication, an avoidance of excess of carbonaceous (that is, fermentable) foods, are dietetic principles which ought to be rigidly insisted upon and observed. The practise of children to devour sweet meats, pastries, and ices, though pleasing to the palate, is as dangerous to their health as it is prevalent; to it, in great measure, are undoubtedly attributable, the decayed teeth, the impaired appetites, the

bowel derangements, and the consequent malnutrition too often met with in children.

Personal Hygiene. The regular practice of hydrotherapy ought to be insisted upon from infancy. Appreciating the well-recognised sedative and tonic effects of hydrotherapeutic measures, and the awful neglect — sometimes unavoidable through want of facilities — of mothers, (especially among the working classes), to enforce hydrotherapeutic practices among the children, we have all the more reason to lay stress upon the immense benefit to the physical health which children would derive by getting a daily warm bath. Obviously there ought to be a bath in every house, and some sort of legislation to compel proprietors to institute this hygienic necessity in their dwelling houses.

Attention to the bowels is of prime importance, and children ought to be made to understand that. In this matter, mothers ought to be very careful with their children.

Physical Culture. A well-regulated amount of physical exercise, in the open air whenever possible, is essential for the physical well-being of the child. Such exercises must possess the following characteristics:- they must (1)be easy of accomplishment and easily learnt, (2)involve little intellectual effort, (3)stop short of the limit of muscular fatigue, although require a fair amount of muscular effort, (4)not excite the emotional faculties, (5)not cause too much

pulmonary embarrassment, (6)be pleasant and attractive. Hence such exercises as fencing, gymnastics performed on apparatus (horizontal bars etc.), may act injuriously,whilst walking, cycling, skipping, etc. that is exercises in which the movements are more or less automatic are to be recommended.[1]

Rest. There is no better sedative and tonic to the system, and especially to the nervous system (of the healthy individual) than a wisely portioned amount of rest, particularly in its absolute form — sleep. Iwould enjoin for children between five and ten, at least twelve or thirteen hours in bed, and eleven or twelve hours for children between the ages of ten and sixteen. Children very often do not take or get a sufficiency of sleep, so that their daily expenditure of energy is not adequately neutralised by their daily rest; the most delicate and most highly developed system — the nervous system,-may suffer in consequence. A propos, the pernicious practice of allowing children to carry milk in the early mornings, so prevalent in big towns, should be prohibited, inasmuch as the climbing of stairs is very fatiguing, the child is deprived of its requisite amount of sleep, and has, perhaps to bolt its breakfast to be in time for school. Similarly, children should not be permitted to work after school hours.

[1] Vide, " Physiology of bodily exercise "
By Ferdinand Lagrange M.D.
International Science Series.

b. Intellectual and moral education.

The state of mental character and health and the power of the mind to resist emotional stresses, are largely determined by the nature of the intellectual and moral education we receive from early childhood, and the degree and kind of reaction this has on inborn nervous defects when these are present. Hence the great importance of a rational system of intellectual and moral education. A healthy mental and moral training must aim at the cultivation of a strong will power, and of the faculty of facing and resisting emotional disturbances, and the crushing of any disposition towards shyness and self-consciousness. Most sufferers from true neurasthenia will confess to having passed through the successive stages leading to loss of emotional control, viz, shyness, self-consciousness, introspection, and excessive emotionalism. How then has the education of the child's mental and moral nature to be conducted so as to produce the maximum amount of good, the maximum amount of mental and moral strength ? In the first place, I would say generally, that our treatment of the child, whether at home or at school, must be very gentle and overwhelmingly sympathetic. During the earliest years I believe it is a mistake which parents not infrequently make, to repress the natural wildness of the child's mind by corporal punishment and the fear which it engenders, or even by scolding; in so far as it is

natural, the unruliness of children ought to be tolerated, within limits, of course. By degrees the child's mind becomes more and more amenable to the influences of suggestion, which must, of course, be inculcated with great patience, gentility, and sympathy, and above all slowly. The child ought to be made to cultivate the faculty of self-confidence and overcome any inherited tendency towards timidity; we may help him in this direction by encouraging him to speak and act, and by welcoming his remarks and deeds with a certain amount of praise, even when unmerited, correcting, of course, at the same time, any stupidity or errors by gentle and sympathetic reasoning. Exceptionally, however, strict and firm handling becomes a necessity, as when we wish to suppress such perversions of character, as irritability, violent explosions of temper, sulking, and selfishness. As previously stated, the actual intellectual or educational training should not commence until the age of seven, or thereabouts, the duration of class room hours should not be excessive. There should be no homework until the child reaches the age of twelve or so, and what homework there is after that should be easily mastered in an hour or two. Corporal punishment in schools should be entirely abolished, as it means correction by brute force and not by reason, and to that extent may act injuriously upon the nervous system.

The vast majority of true and typical neurasthenics are recruited from the ranks of children and adolescents who are inherently timid and self-conscious, and who are usually very much given to blushing; at school I believe it possible to combat, and perhaps overcome such tendency to easy excitability of the vaso-motor and emotional centres, by making the pupil, from his earliest school years, come out to the class room floor and face the class to do his poetical recitations, his reading, etc. instead of doing these from his bench with his face to the backs of the pupils, or his back to their faces. In this way, we might gradually break him in, so to speak, to face company without experiencing mental distress, and in time the habit may become second nature to him. Of course children exhibiting a marked emotional temperament ought to be treated by the teacher with special gentleness and sympathy, or even, perhaps, in a class by themselves. In the earlier school years, the intellectual tasks the pupil is asked to perform should be somewhat below his intellectual powers, and should only increase in proportion to his development. If this condition be not fulfilled, if the child always feels that he is not able for his work, then the task set him, instead of being a salutary exercise, a training of his will and attention, will only serve to convince him of his powerlessness and to discourage him.

Little by little he will lose all confidence in his abilities and will mistrust himself; and this sentiment, once it has grown up and installed itself in his consciousness may give rise in him to that moral paralysis that is called aboulia". The child should not be permitted to expose himself to causes that are likely to excite or agitate his mind. Up till about the fifteenth year, whatever reading he does ought to be regulated and carefully selected for him by the teacher or parent. The reading of terrifying stories should be forbidden, as well as the witnessing of dramatic performances. Even attendance at music-halls during these years ought only to be sparingly allowed.

At the period of puberty the child ought to be under our strictest supervision, and precautions, by good feeding and avoidance of undue mental work taken, so as to guard against the special strain thrown upon the nervous system at that time. Where the evil practice of masturbation is indulged in (and this obtains among many youths, and girls especially in boarding schools) we ought to attempt to repress it by indicating to the child its resulting dangers to the health, although, as previously indicated, I believe that masturbation is not a cause of neurasthenia. Furthermore, girls, especially in boarding schools, ought to be forewarned against the onset of menstruation, and clearly given to understand its meaning.

2. Prophylaxis during the Pre-neurasthenic state.

Proper prophylactic measures instituted during what I have designated the pre-neurasthenic state, will in most cases, exert a beneficial influence upon the condition of psychical unbalance from which the patient habitually suffers, and will tend to avert the supervention of the neurasthenic state. It should be plainly indicated to the patient that the headache, the constipation, the blushing, and the self-consciousness etc., with which he is afflicted are all associated symptoms indicative of hyper-excitability of the vaso-motor mechanism and the emotional centres, that whatever aches he experiences, are expressive of functional nervous impairment, for which there does not exist any underlying organic cause. In addition to such psychotherapy, the other measures to be detailed later in the treatment of actual neurasthenia, will be employed with great advantage during the pre-neurasthenic state. The main and vitally important thing is to recognise that one is dealing with the precursory stage of the symptom-complex, 'neurasthenia', and not to treat symptoms dissociated from the cause or causes upon which they depend.

3. The Treatment of Confirmed Neurasthenic.

The treatment of confirmed neurasthenia which I have employed in my cases, with almost invariably good results, differs in many essential particulars from that hitherto advocated by writers on the subject. By practically all authorities, the Weir-Mitchell method is acclaimed the treatment **par excellence** in most cases of the disease, whereas my experience of it is that in most cases of true neurasthenia, it is the least likely to do good,[1] but may indeed actually aggravate the condition, alike by the time expended in its application, its helplessness too often to relieve it, and the uncomforting and depressing effect this has on the patient's belief in recovery. As is well known, the Weir-Mitchell treatment consists of complete isolation in a medical home or in lodgings away from all relatives and friends, complete rest in bed, systematic massage of the trunk and extremities, special attention to the diet and overfeeding — this being the most essential part of the treatment; electrotherapy may be employed as an adjunct, but it is not regarded as an essential or important part of the Weir-Mitchell method. By way of contrast the cardinal points in the method that I have

[1] The Weir-Mitchell method is certainly a classical treatment for hysteria, and in that type of so-called neurasthenia, which has by some been designated hystero-neurasthenia, it may act beneficially.

followed are, electrotherapy (D'Arsonvalisation), —which is by far the most important measure —, isolation in the patient's own home, psychotherapy, rest in bed (at the commencement of treatment) which, however, has to be interrupted by regular visits to the physician for treatment, hydrotherapy, nutritious feeding, the systematic use of hypnotics to promote sleep, gentle exercises performed by the patient (during the period of isolation) in or out of bed — this takes the place of massage, and special measures for individual symptoms.

When the neurasthenic patient consults me for the first time, complaining of symptoms indicating to me the existence of confirmed neurasthenia, I lend a very patient and listening ear to the history of his complaint which he has to give me, and thereafter make a very careful examination of all his systems. The examination is made as quickly as is compatible with accuracy, since the patient being as yet a stranger to me (and vice versa), passes through a considerable amount of mental anxiety and excitement whilst it is being conducted. I then, or not infrequently, before my examination, put leading questions to him in order to extract how much of the symptomatology of the complete picture of the disease his case presents. Very often by doing so you enumerate symptoms which the patient experiences or has experienced

but which he has either forgotten to recall, or has not the courage to mention lest he be scoffed at. In that way you convince him from the start that you completely understand his malady, and consequently inspire him with the hope that he is likely to derive salvation from your treatment. I then proceed to point out to him the purely functional nature of his trouble, the absence absolutely of anyorganic lesion, and my conviction, founded upon past experience of exactly similar cases, that his complaint is amenable to treatment and indeed curable; (these points should be recapitulated by the physician, during each consultation). The patient is next told that he will have to rigidly carry out, or submit to, certain specific therapeutic practices, which I now propose to describe in detail.

Electrotherapy.

The average general practitioner has usually no personal experience of, or is altogether unacquainted with the value or effectiveness of electricity as a therapeutic measure in the treatment of functional nervous disorders, but in spite of this, is wont to regard it as a faddist treatment which he would fain relegate to the domain of medical quackery. Even physicians who have specialised as such, are too often sceptical of the good effects of

electrotherapy in neurasthenia and employ it rather hesitatingly. In my view, electrotherapy in the manner hereafter set out, is a perfectly harmless treatment which in virtue of its distinct ameliorating and curative value in neurasthenia, ought to be employed without desitation. I have tried two forms of electrical treatment, galvanic and high-frequency. Descending spinal galvanism applied, for fifteen minutes or so three or four times weekly will usually improve the nervous condition, but the progress is very gradual. There is nothing, I believe, that exerts more rapid and more lasting improvement in neurasthenia than high-frequency electricity; I put it in the forefront of all our remedial agents to combat the disease. I have employed D'Arsonvalisation by the auto-condensation method (condenser couch), and local treatment over the spine by the brush discharge from a multiple metallic point electrode. The apparatus used consisted of a ten inch induction coil (worked from the continuous current main through a mercury jet interruptor) the terminals of which are connected to a battery of condensers arranged as plates, the inner coatings of which are charged by the induction coil and connected with a spark gap (which is enclosed in a glass tube so as to deaden the noise), and the outer coatings are connected by a

solenoid, which in turn is connected by two stout wires to an Oudin's resonator from which two terminals lead off, one being connected to a metal handle (which the patient holds in his hand), the other to the metal back of a condenser couch on which the patient rests. The patient is thus placed in a shunt circuit with the solenoid and it is due to the great resistance in the solenoid through its self-induction that the patient gets any current at all.

For the local treatment along the spine, the patient sits on the condenser couch whilst the operator moves the brush (which is connected with the knob on the top of the Oudin's resonator) up and down the patient's vertebral column, a few inches from the back.

When a patient submits himself for this treatment for the first time, I point out to him that he is absolutely protected from any danger of electrical shock. Before each application the patients must remove all metallic substances from their pockets and clothing. I give fifteen to twenty minutes on the couch, and four or five minutes with the brush along the spine, daily for the first week of treatment, six times during the second week, five times during the third week, four times during the fourth week, three times during the fifth week, and twice weekly during the next six or seven weeks. By the end of

this time the patient can usually get along without further treatment. At any subsequent time, a further course may be taken by the patient, if felt necessary. I have employed this treatment extensively in my own house and have never observed a single untoward result from its use. It is advisable that either the physician or a competent and sympathetic nurse remain with the patient during the applications in order to allay excitement. In most cases after one or two applications the patient feels distinctly improved. My experience is that D'Arsonval high-frequency will improve, more or less, practically every case of true neurasthenia, and cure most, even without simultaneously submitting the patient to other therapeutic measures. In young adults the improvement is rapid, in the middle-aged and elderly in whom the katabolic processes are in the ascendancy, and especially if complications such as emaciation, visceroptosis, etc., have existed for some time, improvement is naturally much more gradual. I would particularly emphasise that in cardiac neurasthenia, the sedative and ameliorating effects of these currents are verily 'electrical'. I take case three as an example of one of the many patients who felt distinct improvement after the first electrical application. This patient was one of the worst neurasthenics one could possibly encounter; it was with the greatest

of difficulty that he could be persuaded to come to see me (as he had given up all hope of recovery). He experienced great mental agitation when put on the couch for the first time, but when he left my house thereafter, he felt that his nerves "were infinitely steadier than before the application". After three applications he was able to come to me unaccompanied.

Inasmuch as high-frequency treatment is regarded by many members of the medical profession as quackery or ineffectual and therefore with contempt in the treatment of this disease, one may here affirm the acknowledged and proved physiological effects of high-frequency currents, and thereafter attempt to formulate their mode of action in neurasthenia.

The recognised effects of local high-frequency treatment previously referred to, many of which are readily apparent to anyone who works with these currents are;-
(1) a varying degree of hyperaemia of the treated part with resulting tonic effect on the blood vessel walls;
(2) vacuolisation of the skin (microscopically noted), possibly resulting from liberation of oxygen or ozone from the tissues;
(3) increased activity of the sebaceous glands; (4) diminished electrical excitability of the muscles and nerves to faradism and galvanism although the high-frequency currents can be tolerated in greater strength than before electrification;

(5) the production on the surface of ozone and doubtless the absorption of this into the tissues, thus increasing the oxidation processes in the blood and other tissues so that nitrogenous substances are more readily and completely oxidised and excreted as urea instead of remaining in the tissues unoxidised or incompletely oxidised and possibly exerting an irritant and toxic action upon the nervous system; for some time after the application of these currents, an odour can be felt on the patient's skin and clothing as well as in the atmosphere of the room where the apparatus is used; this odour is partly due to ozone and partly to the production simultaneously with the ozone, of nitrous acid; (6) a material rise in the blood pressure (easily demonstrable by the use of the mercurial manometer before and after an application) in cases where there is arterial hypotension.

The general applications of high-frequency currents produce a beneficial and toning influence on the sympathetic and vaso-motor system of nerves, thereby causing (1) increased oxidation in the blood and other tissues, (2) increased reduction of oxyhaemoglobin in the blood, (3) increased elimination of waste products in the urine, (4) increased elimination of carbon dioxide from the lungs, (5) increase of blood pressure in cases with hypotension, (6) mitigation of the various vague neurasthenic pains. In other words

we get an increased and better-regulated metabolism which also accounts for the increase of the surface temperature and the temperature of the mouth (from a half to one degree F.) recorded by Somerville[1]. Some observers record a lowering of the blood pressure, as a result of high-frequency action (in neurasthenia and other diseases besides) in cases of hypertension[2]. These apparently paradoxical physiological effects may be explained either by the differences in the apparatus used, or by the regulating (tonic) influence which high-frequency currents undoubtedly exert on the vaso-motor mechanism.

It would seem, therefore, in the light of these recognised effects of high-frequency applications, that the improvement that undoubtedly results from treating cases of neurasthenia with them, rests upon definite physiological, chemical, and perhaps physical influences. But there are those who would ascribe these effects to the influence of the patient's own unconscious auto-suggestion. I do not share such a view, and that for several personal observations. Firstly, when commencing the electrical treatment do not allow the current to pass to the couch, and no improvement in the patient's condition will result, that is, with no current passing to the patient (without him being aware of it) and the whole

[1] Glasgow Medical Journal, January 1904, and Medical Electrology and Radiology, May 1906.

[2] Deherm and Laquerriere, Arch. d'Électricité Méd, July 10, 1907.

electrical display to influence the patient's mind suggestively, the symptoms of neurasthenia do not abate. That, perhaps, is the strongest proof that high-frequency currents do not intrinsically act as suggestive influences. Secondly, high-frequency currents produce their sedative and ameliorating effects with wonderful rapidity as compared with spinal galvanism no matter how much the administration of the galvanism be associated with the simultaneous display and working of elaborate electrical apparatus (high-frequency, for example), the patient being under the impression that he is getting the currents from the latter apparatus. Thirdly, as previously indicated, I have often been struck with the remarkably rapid ameliorating effects of these currents in neurasthenia, more especially in the cardiac variety, the most obstinate 'functional' (neurasthenic) tachycardia being ameliorated or cured by them; after the very first application the patients, who very often have submitted themselves to the treatment, very sceptical of its good effects, and more often than not terrified of it, are astounded themselves that on leaving the doctor's premises, they are not so fatigued as usual, that the heart refuses to act with its wonted rapidity and violence. One is fully justified, therefore, in inferring from prima facie consideration of these three observations, that the currents have a distinct action on the cause producing the nervous asthenia in neurasthenia.

D'Arsonval's view that the currents exercise an inhibitory influence upon the nervous system, seems to me to be correct, and I believe, they act essentially upon the vaso-motor and sympathetic mechanisms. For we have the clinical fact that the accelerated rate and increased force of the heart beats are markedly diminished by the currents in cardiac neurasthenia, thus pointing to a marked inhibition of the augmentor and accelerator fibres of the sympathetic nerves of the heart (with which vaso-motor fibres are intimately associated). The increase in the arterial pressure noted in neurasthenics with hypo-tension indicates an excitation of the vaso-motor centres in the bulb, spinal cord, and elsewhere, causing an increased contraction of the peripheral arterioles. I am inclined to the view that this sedative and regulating effect upon the nervous system is due to (1) increased oxidation processes facilitating the excretion of fatigue and other toxins (which have a deleterios action upon the neuro-muscular mechanism) from the system, (2) a direct action on the vaso-motor and sympathetic centres in the bulb, spinal cord, and elsewhere, resulting from afferent impulses to them along sensory nerves, (3) a direct influence on the vaso-motor nerves in the peripheral circulation, and (4) a distinct somnifacient effect. Once the high-frequency currents have brought about some improvement, auto-suggestive influences are set agoing which produce a circulus virtuosus

of psychic events with progressive improvement in the patient's condition, thus explaining adequately why the sedative action of the currents upon the nervous system tend to be permanent and curative.

B. Psychotherapy.

At the very first interview the physician must impress the patient that he thoroughly understands the disease from which he is suffering by dwelling upon and explaining the symptomatology of neurasthenia, and narrating, perhaps, in some detail, cases similar to his own. He must assert then, and at every subsequent interview, his firm conviction, based upon experience of exactly similar cases, that recovery, though perhaps slow, is most likely to result inasmuch as the disease is purely functional and not dependent upon organic mischief. The physician must at all times exhibit a ready willingness to listen to his patient's recital of his woes, and extend to him his whole-hearted sympathy. Further, he must spend some little time with his patient at each interview in order to exert his 'suggestive' influences. In that way the physician will win the patient's confidence, and, when interviewed, his presence will be a source of encouragement and hope to the sufferer. Beyond such suggestion in the waking state I believe it is unnecessary to go, inasmuch as the simultaneous application of electrotherapy, and the other measures hereafter described rarely fail to ameliorate

or cure.

I have no practical intimacy with hypnotic suggestion which some observers have vaunted so much as a remedial measure in this disease. Savill states[1] that in his experience "relatively few neurasthenics are hypnotisable". Personally I am convinced that very few neurasthenics, more especially cardiac neurasthenics, would even dare submit themselves to a hypnotic seance. Moreover, inasmuch as the patient's aches, palpitation, fatigue, etc., are real and not hypochondriacal or hysterical in nature, it appears to me to be unwise and perhaps dangerous therapeutics, to induce in the neurasthenic a condition of hypnosis — an unnatural, and to that extent at least a pathological state, in order to rid the patient of positive facts—actualities, by the inculcation of negative hallucinations. In the method of treatment of this disease which I adopt, psychotherapy though a useful, is not an all-important measure; hence I never recommend recourse to such measures as hypnotisation. I do not minimise, however, the important rôle which unconscious auto-suggestion of the patient can play in helping towards a restitution to the normal state of mind; but this is only set agoing once the disturbed emotional, vaso-motor, and sympathetic mechanisms have been influenced beneficially, by the exhibition of electrotherapy and the other measures about to be indicated.

[1] Savill "Lectures on Neurasthenia," Page 196.

Psychotherapy, in the form of suggestion by the physician in the waking state, is a useful auxiliary remedial agent, in respect that it is likely to initiate unconscious auto-suggestion in the patient, and by that means help towards a restitution to the normal state of mind. I agree with Hartenberg[1] and Bernheim[2] that psychotherapy is not to be regarded as a specific, for, (that is, will seldom, by itself, cure or markedly and permanently relieve), true neurasthenia, and that those that claim this for it, have either been dealing with false neurasthenia, or have simultaneously submitted their patients to other therapeutic measures as well.

Home Isolation.

In the Weir-Mitchell method, isolation of the patient is carried out in a nursing home. My experience is that true neurasthenics, particularly when they have reached what we might call the phobia stage, will, as a rule become worse if they be isolated from friends in strange surroundings. They require that overwhelming amount of sympathy which relatives alone can give them, whilst their emotional upheavals, and irritable natures, will meet with more tolerance and consolation from friends than from strangers. By home isolation I mean complete segregation of the patient

1 Hartenberg, "Treatment of Neurasthenia" translated by Playfair, Page 150, London 1914.
2 Bernheim, Neurasthenie et Psychoneuroses, Paris, 1908.

in a room in his own home. The room should be the cheeriest one in the house and well-ventilated; no one but the relatives nearest and dearest to the patient should have access to him. The patient is allowed complete freedom of action in his room; he is permitted to go to the lavatory, and can lie down to repose, or sit at the window or elsewhere, sua cuique voluptas. His actual stay in the room is interrupted only by his visits to the physician for electrical treatment. Thus the isolation of the patient is by no means absolute, and this, indeed, is advantageous and desirable, for our object in alienating him from the society of everyday life is to enable him again to tolerate it with that mental unimpressionability characteristic of the normal mind. Soon under the influence of electrotherapy and other measures about to be detailed, the patient gradually regains his lost self-confidence and his ability to follow his wonted habits and pursuits. I usually encourage the patient to perform gentle exercises (which must stop short of the limit of actual fatigue) in his room, with or without indian clubs or dumb-bells. This serves the double function of stimulating metabolism and keeping his mind more or less occupied and away from himself; it takes the place of massage in the Weir-Mitchell treatment. Further, I do not prohibit, (as is usual), but indeed encourage, the occasional reading of light and amusing literature, in order to still more engage

the patient's mind, but the perusal of newspapers and exciting or brain-taxing books should be strictly interdicted. The writing of letters, business or otherwise, should be reduced to the barest minimum or entirely forbidden, according to the severity of the neurasthenia.

Hydrotherapy.

Practically all writers on neurasthenia give prominence to hydrotherapeutic measures as exerting a sedative and ameliorating influence on the neurasthenic state. I have come to the conclusion, however, that many of the hydrotherapeutic practices advocated are not compatible with, or beneficially applicable or congenial measures in, true neurasthenia. Generally speaking, the ordinary warm bath invariably increases the feeling of neuro-muscular exhaustion in the neurasthenic, whilst the intolerance of cold which most patients exhibit, renders the employment of the cold or even tepid bath distinctly injudicious. For the same reason, too, I have discarded as inapplicable, the use of the wet pack, with or without friction. I have no experience of the effects of vapour baths in neurasthenia, but even if these were useful (and I very much doubt this), the fact that the patient would have to go to some bathing establishment to get such baths, is, I urge, a very strong argument against their employment, at

least in the early stages of treatment.

There are two simple hydrotherapeutic measures which I have found to exert a distinctly sedative action in neurasthenia, which are easy of accomplishment, and which are accessible even to the poorest. To carry out the first of these the patient sits at the edge of the bed, with his limbs and front part of the trunk covered by the bed clothes; excepting the head and vertebral column region of the trunk, the back is also covered (by a thick towel). Cold (ordinary tap) water is gently poured from a jug at the nape of the neck, so that it flows right down the exposed skin of the back, that is, over the entire length of the vertebral column. A mackintosh is placed at the edge of the bed and the trickling water from it allowed to flow into a receptacle. It may be necessary, every now and then, to interrupt the flow of water down the spine, according to the degree of tolerance of the patient. The procedure is continued for about three or four minutes, during which time, a number of jugs of water will have been used; it should be practised twice daily, night and morning. This simple measure is a very useful weapon in the physician's therapeutic arsenal to combat neurasthenia, for although its sedative action is more or less temporary, it constitutes a very effective auxiliary to other more specific therapeutic measures. I believe it

exerts its sedative effects partly through the vascular system locally, superficial and deep, thus diminishing the sensibility of the spinal system of nerves, and partly by depressing the sensory end organs of the skin over the spine, and thus inducing a slight degree of anaesthesia or diminishing the spinal hyperaesthesia which is usually present. The fact that it relieves or temporarily removes rachialgia when present, is proof of its latter analgesic effect.

The second hydrotherapeutic measure which I employ, is, in reality, a modification of the last one; instead of pouring cold water down the spinal region, several thicknesses or towelling of linen, the width of the exposed skin of the spine, are frequently soaked in cold water and applied to the skin.

Both methods are equally effective, and they possess the distinct advantage besides the therapeutic one, namely, that the patient, during their application, is thoroughly protected from the risk of catching cold.

Dietetic Treatment.

I have elsewhere indicated that when alimentary disturbance exists in neurasthenic patients, it is invariably to be regarded as an associated condition, contributed to, perhaps, by the nervous asthenia, but that it rarely has influenced (and then only very indirectly) the supervention of actual neurasthenia. Special attention to the diet, therefore,

is only indicated if the neurasthenic suffers from an associated malnutrition pointing to the existence of definite digestive disturbance. In such patients, a dietetic regimen best adapted to the relief or cure of, along with appropriate medicinal remedies for, the alimentary derangement, is given. In all acute cases, however, I enjoin abstention from tea and coffee, these being liable, by day, to increase the patient's excitability, and, by night, to aggravate the tendency to insomnia. Systematic overfeeding, a cardinal point in the Weir-Mitchell method, I regard as a senseless measure, which, by itself, I am certain, could effect no material improvement on the neurasthenic state. Many patients before submitting themselves to me for treatment, had already followed the principle of overfeeding, without any appreciable improvement in their condition resulting. What sense is there, and what justification, in making the neurasthenic whose state of body nutrition is normal, overfeed, particularly when he is undergoing a rest cure as in the Weir-Mitchell method or the modified method which I employ? It can only lead to an increase in the body weight, which more often than not, means an increase in superfluous (adipose) tissue. So far as the question of diet is concerned, therefore I am guided by the state of body nutrition of the patient, his digestive powers, and the co-existence of any gastric or bowel derangement. I institute measures to combat any alimentary

fault where this exists (which implies that special diets will be called for in special cases) and to raise the digestive powers when these are below the normal. But generally, the dietetic principles to be adhered to are:- (1) a sufficiency of plain but nutritious food, (2) efficient mastication, (3) and strict regularity in the taking of meals. My neurasthenic patients have improved without any special attention to the question of dietetics beyond these simple measures.

Medicinal Treatment.

In all cases of neurasthenia, medicinal remedies will be employed with advantage. As previously indicated, where there is an associated alimentary disturbance, appropriate medicinal measures to combat this will require to be instituted. Medicinal treatment proper must embrace the exhibition of drugs (a) directly affecting the nervous system, (b) having an aperient action, (c) to promote sleep. Drugs directly affecting the nervous system:-

Bromides are the nerve sedatives par excellence in this disorder. In every case, I administer a mixture

containing ammonium or potassium bromide, and in cardiac neurasthenics, extract of hyoscyamus in addition. In the latter class of case, strychnine is not tolerated (because it increases the tachycardia), and must, therefore, never be used; in fact I have discarded strychnine as a tonic in acute cases of neurasthenia of any variety. In the young and middle-aged it is liable to produce fibrillary muscular twitchings, and this is a distinct objection to its use in such cases. I am aware that Hartenberg holds the contrary view with regard to the efficacy of strychnine in neurasthenia, and indeed advises the 'pushing' of the drug to doses of 1/8 gr. - 3/20 gr. administered several times per diem. He gives the drug by hypodermic injection. He believes that strychnine has not fulfilled expectations in the hands of many practitioners owing to its employment usually in small doses (1/30 gr.). He admits, however, that " there are isolated cases in which it appears to produce phenomena of excitement". [1] I am absolutely convinced personally, that in cardiac neurasthenics, the drug cannot be tolerated in small, let alone big doses, and I feel disposed to believe that much of the virtue ascribed to strychnine in neurasthenia by Hartenburg, is due to the simultaneous exhibition of other measures he employs, unless of course, (and this would markedly diminish the discrepancy in our views) which is

[1] Hartenberg, "Treatment of Neurasthenia" (translated by Playfair), Page 202.

likely, that he includes in the category of neurasthenics, cases that are well on the road to recovery (i.e. in the convalescent stage, so to speak), or the large class which I designate pre-neurasthenics, in whom strychnine can sometimes be employed with advantage. In denouncing strychnine as an effective remedial agent I am speaking of its action in cases of acute neurasthenia. The object in giving drugs to affect the nervous system directly in the acute phases of this disorder must essentially be to diminish the hyper-activity of the nerve centres at fault in the brain (particularly the emotional and vaso-motor mechanisms), but strychnine being a stimulant of nerve activity, does the exact opposite of this.

Other 'tonics' have been lauded by different writers on neurasthenia, but there are only other two which I have given a fair trial, namely damiana and phosphorus, drugs which have been highly recommended for this disease by Savill.[1] Personally I have found these drugs, per se, to be absolutely valueless in neurasthenia.

Drugs that have an aperient action.

Liquid paraffin in large doses (an ounce twice or thrice daily) systematically used, will help the most

[1] "Lectures on Neurasthenia", Savill, Page 121, London, 1908.

obstinate constipation in neurasthenia. Cascara Sagrada is the next best aperient drug to use. It is manifestly a matter of the utmost importance for the neurasthenic to get a daily efficient evacuation of the bowels, whether by the exhibition of drugs, or, (which is better), by the inclusion in the dietary of food stuffs (such as a large bowl of porridge in the mornings) which tend to help in this direction.

Drugs that promote sleep.

It is, I am convinced, absolutely essential for the neurasthenic to get a sufficiency of sleep, ten to twelve hours, if possible.[1] The more sleep he gets, the better it will be for his nervous system, and the more readily will the latter respond to the other therapeutic measures designed to restore it to its normal balance. Whilst the administration of bromides and electricity undoubtedly produces a somnifacient effect, the habitual employment of a somnifacient that is likely to ensure sleep, is always imperative in cases with troublesome insomnia. In all cases, therefore, where insomnia was present, even in a mild degree, I have systematically administered veronal which I have found to answer the purpose wonderfully well.

[1] Jendrassik, Eulenburg, and Clifford Albutt maintain that neurasthenics need less sleep than healthy persons, and are little the better for long spells of sleep. The first part of this statement conflicts absolutely with my own experience, and the second part is only true when the disease is not, (or improperly), treated.

I give nine grains every alternate night only (to prevent the possibility of an accumulative action) half_an_hour before 'bedtime'. Administered thus, it is safe, and I regard it as a most reliable somnifacient in neurasthenia. Apropos, reading before bedtime is apt in the neurasthenic to favour insomnia and should, therefore, be prohibited.

Other Therapeutic Measures.

A word or two is necessary in regard to the use of stimulant in neurasthenia. During the pre-neurasthenic state, or when patients are well on the road to recovery from an actual attack, the moderate use of alcoholic beverage will do no harm, but stimulant is positively contra-indicated in cardiac neurasthenia, and is better left alone in other varieties of the disease during the acute attacks. Tobacco smoking, especially in the form of cigarettes, is, judging from the testimony of many patients, positively irritating and injurious, and should be prohibited, therefore, during the acute phases, and only permitted in wise moderation after subsidence of an acute attack. I am unable to reconcile this view of mine, with the diametrically opposite opinion of Savill[1] on the sedative and prophylactic value of the 'pipe' in this disease. Excessive sexuality, and masturbation, are

[1] "Lectures on Neurasthenia", by Savill, Page 122, London, 1908.

distinctly injurious at all times in the neurasthenic, and during an acute attack sexuality should be absolutely forbidden.

When the patient has improved so far as to be able to mix with people and break himself away from home surroundings without experiencing that mental perturbation characteristic of the neurasthenic state, I order a holiday to the country or seaside, for, as a rule not until then, will a change of air and scene produce its maximum restorative effect. It is during this time, too, that a certain amount of work, to keep the patients mind occupied, should be encouraged so that when the holiday is over, he may return to more or less active employment, care being always exercised to avoid exposing him to work involving mental strain or overstrain. It may sometimes, indeed, be imperative, when the patient eventually returns to work, to advise a change of vocation, should his previous occupation be harassing in nature, and liable therefore, to court the risk of recurrence of the neurasthenia.

Summary of the respective values, and duration of employment, of the various therapeutic measures, just detailed.

It is obvious that the value of any therapeutic measure must be judged essentially by its absolute or intrinsic effects. We may take it as axiomatic, therefore, that no remedial measure indicated in these pages to combat neurasthenia can possess any virtue whatever in this disease unless it can effect improvement, temporary or permanent, much or little, when used alone. The employment of a number of measures simultaneously, in this or any other disease, must obviously be for the purpose of producing beneficial effects that are either supplementary or complimentary, in a word, cumulative. For each of the therapeutic measures advocated, I claim the virtue that it exerts an ameliorating influence in neurasthenia. Psychotherapy (i.e. suggestion in the waking state), hydrotherapy, and medicinal remedies, when used by themselves, produce, as a rule, relief which at best, however, is, in most cases, temporary and not very marked, but sometimes, they may entirely fail to ameliorate. Home isolation, when employed alone, has a much higher remedial value than either of these three, though it could seldom cure or permanently relieve the neurasthenic syndrome. D'Arsonval high-frequency electricity is, I am convinced, the most

potent therapeutic measure we possess to combat this disease; when used alone, it will cure many cases of neurasthenia and relieve most. One cannot of course dissociate from its good results the beneficial influence of the patients own auto-suggestion, once some improvement has been effected, for the cure of neurasthenia occurs by way of a circulus virtuosus of psychic events just as typical pictures of this disease are produced by a vicious circle of events. The simultaneous employment of all the various therapeutic measures advocated will obviously effect amelioration more complete, more rapidly, and more lasting, that would the use of one alone. I have already indicated how long electrotherapy has to be continued. Home isolation should be kept up for at least a month; some patients may feel they can discontinue this sooner, some may require to maintain the practice longer; the patient naturally is the best judge, but I usually order at least about three weeks or a month's isolation; thereafter the patient must not hasten to mix freely in company or in his environments, but break himself gradually in with his wonted habits in this direction. Veronal must be discontinued so soon as insomnia ceases to be troublesome. The mixture of bromide and hyoscyamus should be given systematically ter in die during the first month of treatment(some may require its systematic exhibition longer),

and thereafter gradually discontinued. Its exhibition may be renewed, if need be, at subsequent periods. The hydrotherapeutic measures indicated should be maintained throughout the duration of home-isolation. When the patient is distinctly improved it will be very effectively replaced by the daily warm bath.

Degree of curability of the disease under the treatment specified.

The degree of curability of the neurasthenic treated as indicated, depends upon certain definite factors. These are: (1) the degree of inherited nervous predisposition, (2) the duration of the pre-neurasthenic state, (3) the duration of the attack before treatment was commenced, (4) The age of the patient, (5) the co-existence of any other (devastating) disease (e.g. anaemia etc.).

I am inclined to disregard statistics showing the degree of curability of neurasthenia because I believe that the pre-neurasthenic state has been practically universally confounded with confirmed neurasthenia. Generally speaking I regard neurasthenia as a highly curable disorder. The first three factors do not vitally affect the degree of curability, but naturally the more intense the degree of morbid heredity and the more protracted factors two and three have been the longer will it take to ameliorate or cure the patient. By curing a neurasthenic I mean restoring him to his state of health before the attack. I do not believe one does, excepting very occasionally, establish in the neurasthenic a state of mental health and strength better than that enjoyed before the attack.

This is tantamount to saying that one cannot readily eradicate hereditary tendencies or acquired long-standing pre-neurasthenic proclivities. Treatment will restore the patient to that state of mental health which will enable him to pursue his employment, fulfil his obligations to himself and to others with impunity, and find enjoyment in the pleasures of life, though in the vast majority of 'cured' cases the patient will experience a soupçon of his former neurasthenic symptoms if he exposes himself to mental overstrain. In the cardiac neurasthenic too, there is a tendency to easy excitability of the heart even after recovery has taken place. Pure neurasthenia in any person of whatever age is amenable to treatment, but generally speaking in those past middle life in whom the katabolic processes are in the ascendancy, the amenability diminishes in proportion as the age increases. Indeed it is in the older cases in whom emaciation and other changes have supervened as a consequence of the neurasthenia or as associated conditions, that we meet with the greatest obstinacy to treatment which may sometimes though not commonly fail to effect any material amelioration. If the therapeutic measures previously indicated are orthodoxly carried out my experience has been that in ninetyfive per cent of cases distinct improvement

will begin to be felt at the end of the first week of treatment; the improvement is progressive and in about seven or eight weeks the patient can, as a rule, return to his normal duties, although it is never advisable to allow him to do so until at least the end of three months of treatment. To avoid the possibility of recurrence the patient must be warned to husband his nervous resources by the practice of the prophylactic (physical and neuropsychic) measures previously indicated.

C O N C L U S I O N S.

1. There is practically always in true neurasthenia a long prodromal period ('the pre-neurasthenic state') characterised by well-defined morbid manifestations indicative of aberrant functioning of the emotional centres in the brain and of the vaso_motor mechanism.

2. The immediate cause of this emotional and vaso_motor instability is the reaction of environment, (using the word in its widest acceptation), on the patient's mind or cerebration, which has usually been rendered more vulnerable in this direction by inherited proclivities, although heredity is not an absolutely essential contributory factor.

3. The pre_neurasthenic state is not actual neurasthenia, and sometimes never develops into the wider and more pronounced syndrome constituting the latter.

4. Neurasthenia itself is the culminating development from the pre-neurasthenic state, and is excited usually by more excessive emotionalism than is characteristic of the latter, acting over a period of days, weeks, or months. In a sense, therefore, meurasthenia is an acute development, an exacerbation of a long_standing disorder, although it is

perhaps more appropriate to designate it a chronic functional disease of the nervous system essentially brought on by psychical (emotional) disturbances acting over a long period of time.

5. Neurasthenia is a definite syndrome which is quite distinct from, and must not be confounded with, the nervous asthenia of many neurasthenoid states, which constitute the prodromal periods of various psychoses, or which result from the abuse of stimulants or drugs or tobacco, or which are symptomatic of other (organic) diseases (e.g. phthisis, diabetes, influenza, anaemias, carcinoma, etc.)

6. Neurasthenia is most probably characterised pathologically by the existence generally of a chronic cerebral anaemia, whilst the emotional and vaso-motor instability which is constantly present in this disease, permits of the ready occurrence of cerebral hyperaemias followed by cerebral anaemias. The nerve cells of the brain, therefore, are most probably the victims of a diminished or perverted metabolism, and probably histological examination of these cells (if it were possible) would reveal morphological aberrancies indicative of this.

7. The varying and multitudinous symptoms of neurasthenia

are the expression of aberrant functioning of the emotional centres, and the vaso-motor, sympathetic, sensory, and motor system of nerves, and many of them (such as phobias, etc.) are to be regarded as what might be termed 'vicious circle' manifestations.

8. But whilst some of the symptomatology is the product of an unconscious auto-suggestion, the disease is by no means an imaginary one, many of the symptoms, by whichever way arising, being either painful or intensely distressing and alarming. Hence neurasthenia is to be clearly differentiated from obsessions, hysteria, melancholia, and hypochondriasis.

9. The heart, in virtue of its abundant and intricate nerve supply which is under such intimate and sensitive central influence, and the blood vessels in virtue of their universal distribution, and their abundant, complex, and sensitive vaso-motor control, are usually the first to reflect the central functional disturbance in neurasthenia.

10. Generally, the prognosis in neurasthenia is not only not hopless, but indeed very favourable, provided the method of treatment advocated is orthodoxly carried out,

the degree of curability being dependent upon, as previously indicated, the degree of morbid nervous heredity, the duration of the pre-neurasthenic state, the duration of the actual neurasthenia before the treatment advocated was commenced, the patient's age, and the general health of the patient.

11. Neurasthenia is not usually curable in the sense that the patient's mental equilibrium can be brought up to the average normal or the physiological ideal, the word 'cure' in reference to this disease being employed by me as synonymous with restoring the patient's mind to the status quo before the neurasthenic syndrome first manifested itself.

12. Great attention should be paid to the question of prophylaxis of the predisposition. Susceptible children require special and delicate handling during school years, and the symptoms constituting the precursory stage of the disease (the pre-neurasthenic state) must be recognised and treated as such, and not as isolated symptoms dissociated from the cause upon which they fundamentally depend.

13. The Weir Mitchell method is not only not the treatment par excellence for this disorder, but in most

cases of true neurasthenia will fail to do much good, and in virtue of the time thus uselessly expended in its application, mightexert an uncomforting and depressing influence on the patient's belief in recovery, and therefore actually aggravate the neurasthenia.

14. The best treatment for this disease is that comprising the therapeutic measures previously indicated, employed in combination, the most important of these being D'Arsonval high-frequency and home_isolation. Employing these measures as a routine method, symptomatic treatment will be reduced to a minimum.

Statement of the Literature.

There is little reason to doubt, conceiving the pathogenesis of the disease to be as previously enunciated, that neurasthenia existed since civilisation began, and particularly, with the inception and growth of city life and its resulting consequences — the stresses of competition, social intercourse, and educative influences. Positive evidence, however, pointing to the existence of neurasthenia in ancient or classical times, appears to be wanting. It has been suggested that neurasthenia existed among the Greeks because Alcibiades had palpitation of the heart in the presence of Socrates. But this cannot be regarded as proof. The occurrence of mental diseases among the Romans, however, is strong presumptive evidence that neurasthenia prevailed then, too, and might have been embraced under that category. But we can go back much earlier still — to Old Testament times — and find abundant evidence of the existence of mental disease then, as the following quotations culled from the Old Testament tend to indicate.

Deuteronomy, Chapter 28, Verse 28.

The Lord shall smite thee with madness and blindness and astonishment of heart.

Deuteronomy, Chapter 28, Verse 14.

So that thou shall be mad for the sight of thine eyes

which thou shall see.

Samuel 1, Chapter 1, Verse 15.

"And Hannah answered and said: No my Lord, I am a woman of a sorrowful spirit".

Samuel 1, Chapter 16, Verse 14.

"But the spirit of the Lord departed from Saul and an evil spirit from the Lord troubled him."

Samuel 1, Chapter 21, Verses 13, 14, 15.

"And he (David) changed his behaviour before them and feigned himself mad in their hands, and scribbled on the doors of the gate, and let his spittle fall down upon his beard. Then said Achish unto his servants, Lo, ye see the man is mad: wherefore, then, have ye brought him to me? Have I need of mad men that ye have brought this fellow to play the mad man in my presence? Shall this fellow come into my house."

Kings 1, Chapter 21, Verse 5.

"But Zereba his wife came to him and said unto him: Why is thy spirit so sad that thou eatest no bread."

Kings 2, Chapter 4, Verse 27.

"And the man of God said, let her alone, for her soul is vexed within her."

Kings 2, Chapter 9, Verse 2.

Is all well? Wherefore came this mad fellow to thee?

Proverbs, Chapter 14, Verse 18.

" The simple inherit folly."

Job. Chapter 5, Verse 2.

For wrath killeth the foolish man and envy slayeth the silly one.

Believing as I do that neurasthenia is essentially a psychical disorder, the prevalence of the disease in modern times as the sinister influences of 'civilisation' became more widespread, undoubtedly increased, and to that limited extent, and not in the absolute sense as Beard would have us believe, is neurasthenia a modern disease.

The word neurasthenia occurs first in "Dunglisons Medical Dictionary" published in 1833. It appears that E.H.Van Deusen of Kalamazoo, Michigan, and Beard of New York, coined the word independently, the former in the 'Supplement to the Biennial Report of the Michigan Asylum for the Insane' for 1867, the title of his article being, " Observations on a form of nervous exhaustion culminating in insanity;" the latter about the year 1867. According to Arndt mention of neurasthenic symptoms was first made by the celebrated clinician Fernel, in his work entitled "De Abditis Rerum Causis, published in 1540, in which he attributed the various hysterical and nervous symptoms to the action, on the nervous system, of vapours arising from

suppressed seminal and menstrual discharges. Subsequent writers had an equally obscure conception of the nature of these symptoms, as is evidenced by the designations of their works, for example: " Treatise on Vapors, their Effects and their Remedies," by Lang, (Paris 1687); " Discourse on a Strange Malady, Hypochondriac and Gaseous, by Joly, (Paris 1689); "Dissertation on the Vapors and Losses of the Blood, by Hunauld, (Paris 1716) ; and many others. In these writings neurasthenic symptoms are confused with hysterical and organic manifestations, and it is not until the publication of a book entitled " Nervous, Hypochondriac or Hysteric diseases" by Dr. Robert Whytt of Edinburgh, in 1764, that the attempt is made to separate neurasthenic symptoms from other functional phenomena, although Whytt himself did not conceive neurasthenia as the separate and distinct entity which we now know it to be. The next important publication was the book on " Spinal Irritation" by the Bros. Griffin in 1854, in which neurasthenic symptoms were attributed to a diseased condition of the sensory nerves of the spine. In 1851 Sandras published his work " Traité pratique des Maladies Nerveuses, but it is to Bouchard, by the publication of his work entitled "De l'état nerveux, aigu, et chronique, ou nervosisme" in the Bulletin de l'Academie de Médecine, in 1857, that the credit

is due of first clearly distinguishing the symptoms of neurasthenia as constituting an entity functional in nature, and distinct from hysteria and hypochondriasis. Bouchut wrote at subsequent dates on the same subject, but he erroneously classified the disease into an acute and chronic form. Under the acute form he includes various febrile and inflammatory affections undoubtedly organismal in origin. His description of the chronic form of the disease corresponds closely with the modern conception of the neurasthenic syndrome, and the varieties into which he divides this form (nervoisme cérébral, spinal, cardiaque, gastrique, utérine,) with the classification that has obtained generally since his time. But Bouchut's work only gave a rough indication of a disease whose distinctiveness still lacked clear definition and conception. It is to the work of the American physician, Dr. George M. Beard that the great and outstanding credit is due of bringing order into the chaotic and confused conception of the disease still prevailing in his time, by first clearly defining its nature and symptomatology in a separate treatise on nervous exhaustion. He published various pamphlets and papers, the first of which appeared in the 'Boston Medical and Surgical Journal' in 1869. In all he wrote twelve articles and three books on the subject, which appeared between the years 1869 and 1890. The following

are the titles of his most important works: "Morbid fear as a symptom of nervous disease," "Other symptoms of nervous exhaustion," (Chic. Journ. Ment. and Nerv. Disease, 1879); "Cases of Neurasthenia" (St Louis Med. and Surg. Journ. 1879); "Neurasthenia, its symptoms, nature, consequences, and treatment," 1880; "American Nervousness," 1881. His most matured views on the subject are contained in his "Practical Treatise on Nervous Exhaustion (Neurasthenia)," published in 1890. His description of the disease has suffered little modification from writers on the subject since his time, although many of his views are to-day untenable, and many symptoms are embraced in his description of the symptomatology which are not stigmata of the disease at all. For example, he states that neurasthenia is a modern disease, an American disease, that there is the neurasthenic (atonic) voice just as there is the neurasthenic eye or the neurasthenic stomach,[1] that blushing is a very common effect of neurasthenia,[2] that neurasthenics suffer from tenderness of the teeth and gums, neuralgic pains in the feet or podalgia, that they are capable of an unusual amount of mental and physical work, and are more youthful in appearance than other persons, etc. etc.

[1] Page 45 of his treatise on neurasthenia, above-mentioned.

[2] Ibid Page 65.
Ihave elsewhere indicated that blushing is often a forerunner of the neurasthenic state, or a very early associated symptom, and to that extent has the combined values of cause and effect.

According to Beard neurasthenia is essentially a chronic nervous disease brought on primarily by the intellectual and moral over-pressure inherent in civilisation and in the social life of modern times, which disturbs the harmonious working of the functions of the central nervous system. The balance between waste and repair in this system is disturbed, nerve nutrition becomes impaired, and nerve force impoverished or exhausted. Hence result, via the sensory, motor, sympathetic, and vaso-motor nerves, direct and reflex nerve disturbances affecting various organs. Aided by the state of unbalance of the vaso-motor apparatus which he regards as a consequence of the C.N.S. disturbance, he believes that local hyperaemias occur in various parts of the body and that these are sufficient to account for all the symptoms of the disease.

Professor Erb was the next observer to take up the subject of neurasthenia, which he did in Ziemssen's "Cyclopoedia" in the volume that deals with the diseases of the spinal cord. Erb not only endorsed the soundness and accurateness of Beard's teaching but added original observations from his own experience. Since his time an extensive literature has grown up around neurasthenia.

Erb held that the symptoms of the disease were to be explained, chiefly, as a consequence of nutritional

disturbance in certain nerve centres of the brain.

Kowalsky explains neurasthenia as being primarily due to exhausted nerve elements with their resulting defective nutrition and auto-intoxication arising from disturbance of the normal balance between metabolism and anabolism. Hereditary neurasthenia he attributes to "eine erebte abnorme chemische Zuzammensetsung der Nervenelemente infolge einer Vergiftung mit Leukomanien und Ptomainen des Organismus der Eltern."

Arndt (in 1885) postulated a hypoplasia of the nervous system with which, in his opinion, is very often associated a defective condition of the blood. He embraces in his conception of neurasthenia, almost every characteristic of the nervous temperament — the disconted ambitious man, the melancholic, and so on.

M. Glenard, in his work published in 1885, attributed neurasthenia to ptosis of one or other of the abdominal viscera. Subsequent researches, however, led him to change his view of his and to recognise that the nervous symptoms associated with enteroptosis did not conform to the symptom-complex constituting neurasthenia.

Krafft Ebbing (1887) was of the opinion that the underlying cause of the disease was a "trophische Anomalie der Ganglienzellen" rendering them incapable of carrying on

adequately the chemical processes necessary for normal brain functioning.

Anjel (in the Archiv. für Psych. viii, 2) adduced clinical facts to prove that the disease is primarily a disturbance of the vaso-motor apparatus. He showed, by means of the plethysmograph that intellectual efforts produced arterial spasm in the neurasthenic, much more readily and rapidly than in the healthy person.

Later, Weber, in his interesting contribution entitled "Astudy of arterial tension in Neurasthenia," which appeared in the Boston Medical and Surgical Journal for May 3rd, 1888, corroborated the conclusions of Anjel and proposed to designate neurasthenia 'a vaso-motor neurosis.'

Charcot in his leçons du Mardi à la Saltpêtrière (1888-1890), supports the contention that the disease is essentially a nervous affection and that dyspepsia when present in neurasthenia is an effect, and not a cause, of the latter.

Von Ziemssen(in 1887)regarded the disease as a functional nerve disorder originating from disturbance of the intellectual, psychical, reflex, and inhibitory centres of the brain, so that the whole or part of the nervous system might be affected.

Paul Blocq (in 1891) contended that the disease was essentially to be regarded as a diminution in cerebral strength, a depression of intellectual energy, which causes a perversion or inhibition of the controlling action of the brain over the rest of the nervous system.

Weir-Mitchell in his book entitled "Fat and Blood" published in 1893, discussed the treatment of neurasthenia, and enunciated the now world-famed treatment which bears his name . Reference as to the value of the Weir-Mitchell treatment in this disease has previously been made.

Mathieu (in 1892) held that neurasthenia was essentially due to a congenital predispsition and mental overstrain resulting from the over-civilisation of modern times. He opposes the theory of auto-intoxication, and puts forward the view that the sensation of abdominal fulness and many of the circulatory disturbances (such as flushing of the face, cardiac irregularities, etc.) have a mechanical origin — being the result of displacement upward of the diaphragm by distended gut. In his opinion, membranous enteritis, when present, is to be regarded as a consequence of neuro-muscular atony of the bowel. He holds that gastric symptoms may

develop as a consequence of, or simultaneously with, the neurasthenia; their antecedent development, as Bouchard and others affirm , is not borne out by his experience, although he does not consider himself in a position to deny this possibility.

Löwenfeld (in 1893) suggested that neurasthenia might be due to a congenital hypoplasia of the cerebral vessels. He indicates that our knowledge of physiological fatigue is still too incomplete and ill-defined to enable us to understand adequately the fatigue phenomena in neurasthenia, and he remarks that the accumulation of waste products from undue activity of the central nervous system is so great in this disease, that sleep no longer suffices to remove them efficiently, as is the case in health.

F.C.Müller published a "Handbuch der Neurasthenie" in 1893. This work is written in co-operation with nine contributors, and is full of information. Special attention is devoted to the question of hydrotherapeutics. It contains a full bibliography.

Binswanger contributes an excellent and lengthy exposition of the subject, in his "Die Pathologie und Therapie der Neurasthenie" (1896). He discusses every aspect of the subject,and adds many original observations of his own.

Hayem and Winter regard the disease as being due to

albuminoid products derived from deficient assimilation rather than to toxins engendered by gastric fermentation.

Maurice de Fleury in his interesting treatise "Des Grands Symptômes Neurasthéniques" (Paris 1901), expresses the view that neurasthenia is due to a weakening in the 'vital force' which regulates the expenditure of physical or moral energy and of cerebral activity. Whilst recognising that repeated excitations of nerve force and mental overstrain may induce fatigue, he would explain all neurasthenic phenomena as the result of perversion or depression of the normal physiological tone which always possesses a well-balanced organism. It is this diminished tonus, in his opinion, that causes diminished arterial tension, relaxation of the muscles, disturbs the normal functioning of the organs and consequently the normal interchange of materials, that dries up the secretions, alters the temperament, and finally causes a perversion of the intellectual faculties, affective and moral.

Dr. David Drummond contributes a very interesting article on neurasthenia in the British Medical Journal for July 7th. 1906, ("Neurasthenia, its nature and treatment"). He urges the view that neurasthenia is essentially an affection of the mind. According to him sufferers from this affection exhibit "a loss of balance and proportion

in their mental lives. ..... Some idea or group of ideas assumes abnormal and undue importance, overmasters the central will, and leads to a beak up in the harmonious working of the heirarchy of centres governing both conscious and subconscious life. It is to be noted that all the causes leading to neurasthenia are of a narrowing nature. When to this is added some derangement of the physical system, still further contraction follows. The patient's attention is now demanded by bodily sensations which are good servants but bad masters." Psychotherapy, therefore, in Drummond's view, is the sole measure that need be employed to combat the disease.

Dr. Paul Dubois in his book "The psychic treatment of nervous disorders" (1906), is like Drummond, a great advocate of the psychic treatment of the disease, regarding neurasthenia, as he does, as being essentially due to auto-suggestion.

Jendrassik E. contributes a lengthy article "Uber Neurasthenie" in the Samm. Clin. Wort. Leipzic, (1906, no. 426 - 427). He postulates the existence of 'latent neurasthenia.'

Eulenburg has a lengthy article entitled 'Sexual Neurasthenia' in the book on 'Diseases of the Nervous System' edited by Church, New York, 1908, (Page 997).

From his description of that condition I am of the opinion that it is a different entity from neurasthenia as I understand it, with which it has, etiologically nothing in common.

Clifford Albutt is an opponent of the theory of auto-intoxication. He is "not convinced that the neurasthenic state is essentially one in which the vital energy is in great defect, but is clogged by the accumulation of waste products in the blood or muscles or both; there is no particular evidence of this beyond a few cases of indicanuria and the like, cases which, being few, were probably of complex causation, or of false diagnosis." [1]

He further states that "the attribution of abnormal irritability or over excitability to nervous structure in disease is absurd. ..... Of nervous matter instability is the peculiar virtue; the fault in neurasthenia is that the vibrations of the sense organs, instead of being absorbed into the larger harmonies of the nervous system, take to 'short circuiting,' whereby their energy is wastefully dissipated. In many of the inherited cases I suspect that the nervous centres, however high and various in quality and complexity, are deficient in volume or in blood supply." Albutt thus regards neurasthenia as being due to impairment of nutrition of the nerve centres, the exciting factors of

[1] Clifford Albutt on "Neurasthenia" in his "System of Medicine" 2nd edition, Page 733 — 734.

an attack being bodily, mental or emotional overstrain.

Mc.Cullin contributes an article on 'Gastric Neurasthenia' in the British Medical Journal for Oct. 20th 1906. Operation for visceroptosis in neurasthenia is not to be recommended, according to this writer, because in the first place he does not think any good effect on the neurasthenia would result, and in the second place, it might, indeed, act as a psychical trauma.

Gilbert Ballet regards the disease as a 'diminution of nerve energy' and that some of the symptomatology arises secondarily from auto-suggestion. He dwells at considerable length on the question of dietetics to which he attaches great importance in this disease.

Savill, in his "Lectures on Neurasthenia" is a staunch exponent of the theory of auto-intoxication.

A LIST OF THE IMPORTANT CONTRIBUTIONS ON NEURASTHENIA.

Beard.	Boston Med. and Surg. Review April	1869
Krishaber	De la névropathie cérébro-cardiaque	1873
Conraad	De la névropathie cérébro-cardiaque	1873
Peter	De la névropathie cérébro-cardiaque (Trousseau clinique)	1874
Arndt	Über Neuropatische diathèse (Berl Klin Woch)	1875
Beard	certain symptoms of Neurasthenia (Virginia M. Month., Richmond)	1878
Rosenthal	Forme dépressive de l'irritation spinale (Traité clinique des maladies du systeme nerveux)	1878
Brochin	Art maladies nerveuses du Dict. Ency des Sei Méd.	1878
Beard	Neurasthenia as a cause of Inebriety (Quart J. Inebr., Hartford)	1879
Beard	Other Symptoms of Neurasthenia (chic. Journ. Meut. and Nerv. Dis.)	1879
Beard	Cases of Neurasthenia (St. Louis Med. and Surg. Journ.)	1879
Beard	Morbid Fear as a symptom of nervous disease	1879
Dowse	On Neurasthenia and its treatment (Proc. Med. Soc., London)	1879-81
Beard	The nature and diagnosis of Neurasthenia (New York Med. Journ)	1879
Möbius	Über Neurasthenia Cerebralis (Memorabilien Heibr.)	1879
Jewell	Varieties and causes of Neurasthenia (Journ. Ment.and Nerv. Dis. Chicago.)	1880

Weir/

Weir Mitchell	Neurasthenia, Hysteria, and their treatment (Chicago Med. Gazette)	1880
Beard	Neurasthenia New York,	1880
Beard	Neurasthenia, with cases of sexual neurasthenia (Maryland Med.Journ. Balt.)	1880
Beard	The symptoms of Sexual Neurasthenia (Independ. Pract., Balt)	1880
Beard	The Sequences of Neurasthenia (Alienist and Neurologist St. Louis)	1880
Beard	The Traumatic Neurasthenia (N. Eng. M. Month., Newton, Conn.)	1881
Bouveret	la Neurasthénie (J.B. Baillière)Paris.	1881
Huchard	De la Neurasthénie (Union Méd.,Paris)	1882
Playfair	Systematic Treatment of Aggravated Hysteria and certain allied forms of Neurasthenia (Brit. Med. Journ.)	1882
Weir-Mitchell	Fat and Blood	1883
Landouzy	Progrès Médical Sept.,	1883
Möbius	Zur Lehre von der Neurasthenie (Centralbl. fur Nervenkr.,Leipzig,vi.)	1883
Axenfeld and Huchard	Traité des nevroses	1883
C. Albutt	Visceral Neuroses	1884
Le Gros Clark	Remarks on Nervous Exhaustion and on Vaso-motor action (Journ. of Anat. and Physiol. London).	1883-4
F. Richter	Die Neurasthenie und Hysterie (Deut. Med. Ztg., Berlin)	1884,1.
Ewald	Die Neurasthenia Dyspeptica (Berlin Klin. Woch.)	1884.
Jahn	Ueber Behandlung von Neurasthenien (Deuts. Med. Zeit. Berlin, ii.)	1885

Kowalewski/

Kowalewski	Neurastenija i patophobija (Archiv. Psych. Charkon. Vl. pt. 3. Also - Centralbl. f. Nervenk. Leipzig, 1887, x.)	1885
P. Berger	Die Nervenschwäche (Neurasthenie) ihre Wesen, ihre Ursachen und Behandlung - (Berlin)	1885 and 1886
Strahan	Puzzling Heart conditions dependent on Neurasthenia (Brit. Med. Journal)	1885
Arndt.	Die Neurasthenie, ihr Wesen (Wien).	1885
Glénard	Application de la méthode naturelle à L'analyse de la dyspepsie nerveuse De L'entéroptose (Lyon Mèdical)	1885
Glénard	Soc. Mèd. des Hôpitaux	Dec., 1886
Glénard	L'entéroptose (Sémaine Médicale)	May, 1886
Howell	On some conditions of Neurasthenie (London)	1886
Playfair	Observations on what is called Neurasthenia (Brit. Med. Journal)	Nov., 1886
Rosenbach	Neurasthenia Vasomatoria (Breslau Artzl. Zeitsch.)	1886
Sir A. Clarke	Some Observations on what is called Neurasthenia (Lancet)	Jan., 1886
Grasset	Traité pratique des maladies du systeme nerveux	1886
Howell	On some further conditions of Neurasthenia (London)	1887
Lafosse	Étude clinique sur la céphalée neurasthénique (These de Paris)	1887
Lowenfeld	Die moderne Behandlung der Nervenschwäche (neurasthenie) der Hysterie und Verwandter Leiden (Wiesbaden)	1887
Von Ziemssen	Die Neurasthenie und ihre Behandlung (Leipzig)	1887
Kraft-Ebing	Wien Med. Presse, No. 5. p 161	1887

Ziemssen/

Ziemssen	Die Neurasthenie und ihre Behandlung	1887
Glenard	Un cas de Neurasthénie gastrique (Province méd., Lyon)	1887
Lemoinne	Path. et Traitement de la Neurasthénic (Ann. méd.-psychol.)	Sept., 1888
Berger	Die Nervenschwäche ihre Ursachen und Behandlung).	1888
Rockwell	Neurasthenia and Lithaemia: their differential diagnosis (New York Med. Journ.)	1888
Mathieu	Prog. Méd.	July., 1888
Wilhelm	La neurasthénie, sa marche et sa guérison	1889
Trastour	Les déséquilibrés du ventre (gastro-entéroptose neurasthénie)	1889
Bordaries	Contribution à l'étude de la neurasthénie	1890
Monier	Des troubles gastriques dans la neurasthénie (Thèse de Paris)	1890
Blanc Champagne	Étude pathogénique et thérapeutique sur la dilatation de l'estomac et sur son influence dans la neurasthénie (Thèse de Paris)	1890
Loh	Die Neurasthenie und ihre Behandlung (Wiesbaden)	1890
Charcot	Leçons du Mardi à la Salpêtrière	1888-90
Levillain	La neurasthénie	1891
Bouveret	La Neurasthénie (Paris) 2nd edit.	1891
A. Clausse	Contribution a l'étude de la neurasthénie (Paris)	1891
Paul Blocq	Neurasthénie Monosymptomatique (Gaz. Hebd. de Méd. et de Chir)	May and June, 1891
Regis	Les neurasthénies psychiques (Journ. de Méd. Bordeaux)	1891

P. Brauns/

P. Brauns	Die Neurasthenie etc.(Wiesbaden)	1891
Grasset	Quelque cas d'hysterie male et de neurasthénie (Montpellier Medical) May and June	1891
Blocq	Neurasthenia (Translation) - Brain, vol. XlV.	1891
T.S. Dowse	On brain and nerve exhaustion, etc. (London)	1892
Pitres	Sem. Méd. p.400 (Paris)	1892
E. Emmel	Neurasthenie etc. (Freiwaldau)	1892
C. Paul	Traitement de la neurasthénie par la transfusion nerveuse (Bull. Acad. de Méd., Paris)	1892
Goodhart	Common neuroses (London)	1892
A. Mathieu	Neurasthénie (Paris)	1892
P. Weill	Des neurasthénies locales (Nancy)	1892
Kowalewsky	Centralbl. f. Nervenh. u. Psychiat., Coblenz and Leipz.,n. F.,lV., 113	1893
Hosslin etc.	Handbuch der neurasthenie (Leipzig)	1893
R. Saundby	Clin. J., London,i., 49	1892-3
Robinson	Electro-therapeutics of Neurasthenia (Detroit)	1893
Lefevre	Les neurasthénies d'origine toxique (Ann. de Psych. et d'hypnol.,Paris)	1893
W.& G. Tyrell	Nervous exhaustion; its causes, outcomes, and Treatment (London).	1893
Hedley	The Insomnia of neurasthenia (Lancet) June	1893
Lowenfeld	Pathologie und Therapie der Neurasthenie und Hysterie (Wiesbaden)	1893
Vigoureux	Neurasthénie et Arthritisme (Paris)	1893

Dercum/

Dercum	Treatment of Neurasthenia (Therap. Gaz. Detroit.)	1893.
Evans	Neurasthenia treated with Nerve Extract (B.M.J.11)	1893.
Müller F.C.	Handbuch der Neurasthenie.	1893.
Ballet	Sem.Méd. (Paris.)	1893.
C.Paul	Bull. gén. de thérap. etc. (Paris).	1893.
F. Boissier	Essai sur la neurasthénie etc. (Paris).	1894.
Ausset	Gaz. hebd. de méd. (Paris)	1894.
R. Browne	Neurasthenia and its treatment by hypodermic transfusions (London)	1894.
Kothe	Das Wesen und die Behandlung der Neurasthenie. (Jena)	1894.
Dejerine	Compt. rend. Soc. de Biol. (Paris)	1894-
Discussion	B.M.J. 11	1894.
Mesnard	Gaz. hebd. d. sci. med de Bordeaux, 8v. 556	1894.
Mesnard	Ann. de la Policlin. de Bordeaux,iii., 110,215	1893-4.
Dowse	The Brain and the Nerves	1894.
Mitchell Clarke	Brain, vol.xvii	1894.
Rockwell	Inter. Clin. Phil., 4,s.iii., 151	1894.
J. Grandclement	Essai sur la Neurasthénie (Lyon)	1894.
C. Darroux	Des rapport de la Neurasthénie avec l'artério-sclérose (Bordeaux)	1895.
M.Deutsch	Die Neurasthenie beim Manne (Berlin)	1895.
F. Gallard	J. de méd. de Paris, 2,s.viii., 110	1896.
G.Herschel	Med. Times and Hosp.Gaz., London,xxiv.	1896.
F. Levillain	Essais de neurologie clinique (Paris)	1896.
Binswanger	Die Pathologie und Therapie der Neurasthenie	1896.

Binswanger	"Die Pathologie und Therapie der Neurasthenic"		1896
J.M. Bernuchon	Contribution a L'étude des hémorrhagies muqueses dans la neurasthenie (Bordeaux)		1896
Hilty	Ueber Neurasthenie (Bern.)		1897
A. Vial	Dégénérescence mentale et Neurasthénie (Lyon)		1897
Ausset	Des Hémorrhages dans la Neurasthénie (Rev. de Méd., Paris)		1897
Dana	Neurasthenia (in the "Twentieth Century Practice of Medicine")		1897
Giles de la Tourette	Revision nosographique des états neurasthéniques (Sem. Méd.,Paris)		1898
Morel-Lavallee	Neurasthénie: psychose et dermatose vicariantes (J. de Méd. de Paris)		1898
Hoffmayer	Deutsch. Archiv. für Klin Med.		1899
Savill	Clinical Lectures on Neurasthenia		1899
Bardet	Soc. de thérap.	Dec. 12	1900
de Fleury	Soc. de thérap.	July 25,	1900
Ingelrans	L'écho méd. du nord.	June 3.,	1900
Mirallie	Rev. neurologique		1901
de Fleury	Des grands symptômes neurasthéniques (Paris)		1901
Kuss	Le Bulletin medical	Jan. 9.,	1901
P. Joire	Nord. méd.	April 25.	1902
Gilbert Ballet	Neurasthenia		1902
Brissand	Neurasthénie (in Bronardel & Gilbert's Traite de Medecine) Paris		1902
W. Walker	Phil. Med. Journ.	Nov. 22.	1902
Albert Robin/			

Albert Robin	Rev. de thérap. méd. chir.	1903
Shoemaker	Med. Bull. Philad.	1903
Guthrie Rankin	Treatment of Neurasthenia B. M. J. page 492 March	1903
Dercum	Neurasthenia (in vol. Viii of System of Physiological Therapeutics) Lond.	1903
G. Ballet	J. de méd. int. (Paris)	1903
Hayem	J. de méd. int. (Paris)	1904
L. Cappellatti	La Neurasthenie (Milan)	1904
Godlewski	Les neurasthénics Maloine Paris	1904
S.J. Sharkey	Brain	1904
R.T. Edes	International Clinics. vol. 1.	1904
G.W. McCaskey	International Clinics. vol. 1.	1904
Higier	Neurol. Centralbl. March 16,	1904
de Fleury	Les grands symptomes neurasthéniqués (Paris)	1905
R.T. Edes	International Clinics, vol. ii.	1905
Mitchell Clarke.	Hysteria and Neurasthenia (London)	1905
G. Ballet	Bull. med. (Paris)	1906
Jendrassik E.	Über Neurasthenie. Samml. Clin. Wort. U. F. No. 426-427	1906
Dubois	The psychic treatment of Nervous disorders.	1906
David Drummond	British Medical Journal July 7,	1906
Beni-Barde	La Neurasthénie	1908
Hartenberg	Psychologie der Neurasthénique Paris	1908
E. Muller	Behandlung der Neurasthenie Deutsch. Med. Wochenschr. XXXV	1909
J.B.Hurry	Vicious circles in Nervous disorders Lancet 1. 1107-	1910
Erichsen/		

Erichsen	Concussion of the Spine, Nervous Shock (London)	1882
Von Ziemssen	Cyclopaedia, vol. XIII., Eng. Translation	
Herbert Page	Abuse of Potassium Bromide in treatment of Traumatic Neurasthenia (Med. Times and Gazette, London)	1885
Page	Injuries of the Spine and Spinal Cord (London)	1885
Oppenheim	Die traumatischen Neurosen (Berlin)	1889
Charcot	Lecons du Mardi	1888
Schulze	Ueber Neurosen nach Trauma (Samml. Klin. Vort.)	1891
Hoffmann	Die traumatische Neurose (Samml. Klin. Vort., n. F., Leipz.)	1891
Oppenheimer	Die traumatischen Neurosen (Berlin)	1891
Freund	Die traumatischen Neurosen (Samml. Klin. Vort., n. F., Leipz.)	1892
Wichmann	Die traumatischen Neurosen (Braunschweig)	1892
Vibert	La nevrose traumatique	1893