NERVE WASTE

NERVE WASTE

PRACTICAL INFORMATION

CONCERNING

NERVOUS IMPAIRMENT

AND

NERVOUS EXHAUSTION

IN MODERN LIFE:

THEIR CAUSES, PHASES AND REMEDIES

WITH ADVICE ON THE

HYGIENE OF THE NERVOUS CONSTITUTION

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INTRODUCTION.

The true scope as well as the powers and the limitations of the medical man are often imperfectly understood; the various functions of the physician—cure, alleviation, prevention, teaching—are better defined by the Latin *cura*, care, than by its derivative, cure, in its modern sense. To care for the health of the whole community is a far wider field of usefulness than to cure the sick individuals in it.

In his work of curing the physician is too often viewed as a kind of sorcerer, and he is invoked to use the mysterious chemical substances which he is supposed to have, or which he ought to have; many persons imagine that if they could get hold of the doctor's prescription-book, they could do without the doctor.

There are drugs whose action is so sure, and surgical and other procedures whose results are so radical, that they appear almost magical, but, in the large proportion of cases, the physician is far from being a magician, and has no absolute power over disease. He is simply one learned in the science, and experienced in the management of sickness; he is one factor, the chief of all the forces operating for life and against death; the patient, his surroundings, his friends—sometimes his ancestors—influence the result for good or for evil.

The power of the physician against disease and death lies in his trained faculty of observation, in his superior insight, in his comprehensive grasp of principles, in his profound knowledge of all the conditions which are for

and against life, in his wiser judgment, and in the authority or the influence which he is able to exercise in any particular case. These qualities often enable him to nurse the flickering flame of life into health and strength where a less skillful hand would extinguish it forever.

Like the architect, the ship-master and the general, the doctor is a director of forces, a supervisor, an exerciser of good judgment; his equipment is intellectual more than physical; his power to cure is oftener in his head than in his satchel.

It is to be feared that the physician has sometimes permitted or encouraged an exaggerated estimate of his power; he is human, and when the case gets well he has not the heart to dispel the illusion which inspires such grateful praises. Perhaps he feels that these are, in some measure, his due to offset the unjust criticism which all physicians receive. But, in the end, any mistaken idea of his power is apt to react upon the physician; when he fails to save a case, which no power on earth could save, he is at fault; he did not understand the case; he did not know, as he ought, the specific for this particular disease. The interests of both the physician and his clients are best served by an intelligent comprehension of the scope, the powers and the limitations of medical science.

The cure of disease will always be an important element of the physician's work, and in the incurable sick, the alleviation of pain, the prolonging of life, the affording of euthanasia are priceless services; but the most valuable services which scientific medicine is capable of rendering, lie in the direction of disease-prevention—in the family, in the state and in the nation.

At this time the policy of preventing disease rather than curing it is not generally understood nor appre-

ciated, but the world is rapidly growing too wise to neglect a great conservative power in its midst, and in the future this function of the medical profession will be more and more utilized. A ship drifts under full sail upon a tropic sea, a glimmering cloud appears upon the horizon, nothing is done; the cloud grows, but is still unheeded; soon the storm bursts with terrible fury, a wild rush is made to take in sail, but it is too late. This would be criminally bad seamanship but it is an illustration of what occurs every day upon the uncertain sea of life.

The efficiency of medical men will be immensely increased when their relation to their families is more or less constant, instead of intermittent and irregular. The doctor should come and go like the clergyman and the priest; instead of being a necessary evil whose visits are avoided as long as possible, and which are a source of uneasiness when necessarily multiplied, he should be a minister and guardian of health, an officer of the family upon whose special wisdom free, early and constant reliance is placed. His counsel should have great weight in a hundred personal and family questions which influence the most symmetrical development of the child and the preservation of the man.

The eradication of inherited tendencies to disease, the direct improvement of the physical and mental measure of stocks, the development of a hardy constitution in weak children, the recognition and arrest of many fatal organic diseases in their incipiency, before they are too old to be controlled, the arrest of acute inflammations at a time when this is possible, the insuring of longevity and a sound old age—these are some of the things which the physician of to-day is able, but which he is not often permitted, to do.

Teaching is an important function of the physician;

every earnest medical man is "doctor" in deed as well as in name. Medical advice in the abstract is often barren of influence; medical teaching, which conveys clear ideas of pertinent physiological and scientific facts, is far more impressive and fruitful. As in all teaching, the living voice is effective in a greater degree than the printed page can ever be; the talent which some physicians have for clearly illustrating a subject or emphasizing a fact is an important element in their success.

Most medical men, according to their tastes and experiences, come to have a peculiar interest in certain diseases; such an interest the author has long felt toward functional diseases of the nervous system.

Nervous Impairment is one of the most common departures from health; it is a subject upon which considerable teaching has been expended, some of it true, much of it false. The experience of the author is that the popular ideas—at least upon the subject of remedies—are frequently vague or erroneous; he is constantly meeting with persons, in the field of his daily work, to whom a realization of some of the facts attempted to be explained herein would be priceless; and he has thought that this short statement from the point of view of a working physician might, in some degree, serve a useful purpose.

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REMEDIES

NERVE WASTE

CAUSES

The causes of nervous impairment are of two kinds: those which originate without, and those which are developed within the individual. In the first class may be placed Environment and Heredity; in the second class all those countless forms of nerve-waste which are so common in modern life, and which may be pretty completely summed up in two words, Overwork and Dissipation.

THE EPOCH

The age in which we live is hard upon the nervous system. The feverish and varied activity, the changed and changing methods of life and work, and all the complicated conditions of existence in the latter half of the nineteenth century are seen to be having a distinct causative relation to functional nervous disease. This relationship has been frequently pointed to, of late years, by both medical and lay writers.

The factors which produce nervousness and nervous debility are believed to be more numerous and active among Americans than among any other people. The possibilities of man in America are great, and they excite ambition—to become rich, to rise in the social scale, to accomplish objects which involve struggle, sacrifice, anxiety. A somewhat large proportion of Americans are unlocated or newly located; they are in a state of unrest and insecurity which is unfavorable to health. The climate of a large portion of the United States is said to be more bracing—to permit and encourage a greater amount of

nervous expenditure than is possible in any other part of the civilized world. And lastly, a nervous enfeeblement or susceptibility, once established in the parents, is transmitted to the children, who, in their turn, subjected to the same influences, develope the diathesis in a still greater degree.

THE NERVOUS CONSTITUTION

In the nervous temperament of the old writers, strength and endurance of the nervous system was the salient feature. By reason of this very strength and endurance the nervous temperament, in the stimulating environment of modern life, is apt to undertake too much, to work unceasingly or to dissipate to excess. Thus it comes about that the nervous temperament developes an irritable and weakened condition of the nervous system instead of the endurance which was one of its original characteristics. "Neurotic" is a word which has come into common use in modern medical literature to designate this state of more or less nervous weakness, and susceptibility to some form of nervous disorder.

Neuralgia, Sick Headache, "Neurasthenia," Nervous Dyspepsia, Epilepsy, St. Vitus' Dance, Hysteria, Asthma, Writers' Cramp, Hay Fever, some forms of Insanity and a great number of stimulant and drug vices are directly founded upon the neurotic condition.

OVERWORK

The elements of work which involve excessive nerve-waste are over-activity, tension, over-excitement and monotony.

Full exercise of the brain is favorable to health and longevity; it inhibits the emotions, strengthens the will and acts as a moral, mental and physical tonic. Even

prolonged brain-work is not necessarily injurious when unattended by hurry, anxiety or excitement, a fact which is illustrated in the biographies of innumerable long-lived brain-workers, and mental idleness, plus the dissipation which it is apt to engender, is one common cause of nervous impairment.

An incessant mental and nervous over-activity seems to be inseparable from many vocations. Some men are habitually stimulated or goaded by circumstances into working beyond their strength; they regularly work at high-pressure.

The exigencies of life often necessitate spurts of work; the lawyer works almost night and day for weeks on an important case; the inventor pursues some promising idea for days, neglecting sleep and even food. In many commercial houses there are periodically recurring busy times, when the closure of the doors at evening does not end the day's toil, the wear and tear goes on by gaslight till late at night or early morning.

The young and the strong have a large reserve fund of nerve-force and pass through these periods of excessive work without permanent injury. But the individual whose nervous system is his weak part is subject to laws that do not apply to others, just as the man in straightened pecuniary circumstances is obliged to forego expenditures that are scarely felt by his well-to-do neighbors. The relation of over-activity to nervous disease is as simple as subtraction. The man puts out more than he takes in, and sooner or later, according to the extent of his nerve-capital, he becomes embarrassed, crippled or fails entirely in his vital power.

Many occupations, for example type-setting, sewing machine running, or vocations which require prolonged standing, involve an over-activity of certain muscles; as

a result a worn and irritable condition of that portion of the spinal cord which controls the nutrition of, and supplies the power to these muscles may be established.

The spinal cord is a highly important part of the nervous system, having many similarities of structure and function to the brain; it is in fact a continuation of the brain, and some physiologists look upon it and the brain together as a single complex organ. When local irritation is once established in the spine it may irritate and depress the whole nervous system and give rise to many distressing symptoms.

The tension of anxiety so common among manufacturers, merchants and men holding responsible positions, is an element of work that is in some respects worse than mere over-activity, and the two often go together.

If a long, flexible, finely tempered sword be supported at its extremities and subjected to a moderate weight at its middle, it will bend, and, as often as the weight is lifted from it, will fly back to its natural shape, though this act be repeated a million times; if an excessive weight be brought to bear upon the steel it is snapped in twain; if the blade be subjected to the strain of a lesser but still too heavy weight, it will yet respond up to a certain point of strain; if the too heavy weight is maintained during months and years, the resiliency and elasticity of the blade is impaired, the sword becomes crooked, inelastic, lifeless. So it is with human vitality; a man may sustain heavy day strain throughout a long life, if the succeeding night hours are periods of true relaxation; it is the carrying of business cares and worriments over night that impairs the fiber of the delicate and high-strung nervous organization of the nervous constitution.

With certain workers, as locomotive engineers, bank tellers, dentists, the largest experience and the most practised skill can never dispense with an abnormal vigilance, an over-alertness, which kept up day after day, and year after year, is wearing in the extreme, and which not unfrequently proves a strain that breaks.

Over-excitement is excessively rapid nerve-waste; it is tying down the safety valve and burning lard in the furnace. A measure of excitement is good for the brain and nerves, it stirs up the nutritive processes, cleans out the cobwebs, and leaves the mind clearer and stronger for it. But excessive excitement has burned the youth out of many a brain and left its possessor an old man at forty. The stock-board and the street are notorious fields of shattered nerves and softened brains, and every year the excitement of political campaigns makes overdrafts upon the vitality of thousands.

There are men whose work involves no great overactivity nor anxiety nor excitement, and yet they suffer from the monotonous repetition of one set of acts and impressions. The whole brain is not uniformly exercised by any act nor set of acts, but only certain parts of it. So certain impressions, as sights and sounds, do not impress the whole brain, but only small areas of it whose function it is to receive and take cognizance of this class of impressions. By a constant harping on one string it wears out before the others. By a continuous exercise of one set of brain-cells to the comparative exclusion of others, they become tired, then exhausted and incapable of further continuance in this particular groove without suffering to the individual. Thus the book-keeper, dealing with figures and nothing but figures year after year, becomes tired, listless, inelastic and finally incapable of work. A vacation trip to the seaside or the mountains benefits him

immensely, partly by the power of pure air and exercise, but largely because the overworked areas of the brain are rested, and because a new set of acts and impressions exercises other brain-cells that needed exercising.

The physiological history of every man is that he gradually matures, then for a few years is at the maximum of his strength, then gradually fails to old age. The time when a man is at his best, is limited to a few years—champion athletes seldom maintain their supremacy ten years. Such men may appear to be as strong or stronger than ever before, but the invisible fountains of power, deep in the nervous structures, have begun their retrograde change, their day is passed, and in the race some fresher man wins the prize. The amount of work which a man can easily do between thirty and forty should not be his standard of achievement in later years; when he has started to descend the hill of life, his work should become easier and his holidays and vacations should become more and more frequent. Unfortunately this is not often possible; sometimes an acquired inability to enjoy anything else in life but work is one of the bitter elements in the cup of success, but more often stern duty to others, and the grinding competition of young and tireless rivals keep the older man to a pace beyond his failing strength. At this stage of our national development over-work seems to be an inevitable condition of existence, but it is to be hoped that increasing prosperity and increasing wisdom will reduce the exactions and lessen the often terrible price which men pay for decent success, and that the "gospel of relaxation," preached by Herbert Spencer, may become fashionable in the land.

WORRY

There are minds that no trouble can injure—it glides off as water does from a duck's back; it does not sink in and corrode; but nervous people are seldom philosophical or phlegmatic enough for this. Domestic trouble often aggravates nervous weakness, and instances where the thinning and rapidly ageing face are the only signs of silently borne grief are within the range of everyone's experience; the skeleton in the closet is oftener revealed to the physician than to any other, and his skill to heal often stands helpless before its power to wreck.

Success or failure in life, whether accident or sequence, has much to do with the health of the individual. Success brings friends, favors and pleasant words, a thousand little amenities that smooth the road of life. The consciousness of being somebody, of cutting a good figure in the world, is exalting and sustaining; it buoys and enables many a weak man to accomplish a long life journey that he never could have accomplished had the way been rougher. Failure depresses and irritates; the sensitive mind of the man who has failed poorly withstands the rebuffs, the harsh words, the neglect or the scarcely concealed contempt of his fellows. The depressing influence of disappointed ambitions and a hopeless future is sometimes a powerful obstacle to recovery.

SCHOOL LIFE

Anyone who is often abroad at the hours when the children are going to and from school, must have noticed that a certain proportion of them are very thin, pallid, and as far as possible from the normal standard of plump, rosy, healthful childhood. During the past twenty years there has been no lack of protest against what Huxley vigorously designated "precocious mental debauchery" and

"book gluttony and lesson bibbing" but it would seem that the teacher and the parent can not often be made to see this subject from the point of view of the physiologist.

Over-pressure and over-application are relative terms; what is over-work for one child may be easy work for another. From the standpoint of the physician the routine method of teaching which goads every one of fifty children, of widely varying physical and mental strength, to a high standard of accomplishment, under penalty of a certain disgrace at school and at home, is pernicious in the extreme.

The idea that exercise strengthens the brain and mind is true up to the boundary line in the individual where exercise becomes over-work. The long lessons, the struggle to keep up, the cramming for examinations, all mean the expenditure of brain-force. This force must come from somewhere; the brain draws upon the blood-current to a greater extent than the physiological economy of the child provides for; the result is that certain chemical elements of the blood, which ought to be, and naturally would be, converted into bone, muscle and nerve tissue, are diverted from this course, by the demands of the brain; the bones and muscles are poorly nourished, and the child is stunted in growth and never becomes the man physical or mental, that he might have become. This is the story of the undeveloped muscles, the short stature, the physical insignificance of thousands, whose parents before them were large and handsome specimens of humanity.

Many intelligent educators recognize these facts, but the teacher is no more able than other men, to work a revolution within the sphere of his duty; the unwise ambition of parents is as often responsible as the zeal of the teacher for the nervous disorders arising out of school-

life. The father who has begotten a nervous child owes it to that child to exercise more than ordinary care in its education; school honors and study must be subordinated to physical development, which includes the physical brain and nerve tissues as well as bone and muscle tissues.

If such a child cannot keep up with other children who have inherited strong nervous systems, without abnormal thinness, headaches, "nervousness," then let him stay behind. The parent should never encourage such a child, by rewards or by reproaches, to become first in his class. Many nervous children are extremely bright; they learn quickly and with an apparent ease which gains them praises and honors, and leads the parents to expect and to exact great things; unfortunately, experience shows that this mental precocity is not often maintained in after life.

Instead of "The mind is the measure of the man," it might be said in these days that nerve-force is the measure of the man, so important a part does this quality play in the battles of life. The man who at thirty finds himself with a strong nervous system has in it a possession of appreciable coin value. Modern life demands not only fine work but a quantity of it, and many a fine-worker has been obliged to abandon a lucrative position to some one less skillful, for lack of the necessary staying powers.

Nervous men and women are apt to be fond of amusements, and of the excitements of social life; these seem like recreation after a day of toil, and, in some degree, they are such. But when they are carried to excess, or when they involve undue excitement, or encroach upon the hours of sleep, in a person whose nervous system is

weakened, they draw steadily upon the diminished fund of vitality. There are many forms of social duty, as those incident to church, lodge and politics which require night work without being in any degree recreative, and which become auxilliary causes of nervous impairment. The effects which balls and parties, the habitual reading of exciting fiction, and all the excitements of fashionable life, alternating with sedentary or indolent habits, have upon women of all ages, are facts which physicians have frequent opportunities to note.

Excessive child-bearing or prolonged nursing, combined in some cases with household drudgery, sometimes produces a general enfeeblement in which nervous debility has a conspicuous place. The over-use of tea, coffee, tobacco and alcohol, as well as many drug habits are often met with as exciting causes or as aggravating elements of nervous impairment.

Wrong sexual habits are among the most frequent forms of excessive nerve-waste; not only the abuses and excesses so common among the young, but certain perversions of the natural physiological relations of marriage, aimed at the prevention of conception, which, judging from my own observations, are by no means rare, make serious overdrafts upon the nervous resources.

Finally many chronic local disorders—among which are eye-strains, ear-strains, irritations about the upper air passages, morbid conditions about the stomach or reproductive organs in either sex—may originate or exaggerate existing weakness of the central nervous system. The manner in which these local conditions act will be more fully explained on subsequent pages.

THE PHYSIOLOGY OF NERVE FORCE

THE NERVOUS SYSTEM

The central nervous system consists of the brain, a soft mass of gray and white tissue, which fills the cavity of the skull, and the spinal cord, a white cord sixteen inches in length and about the thickness of a lead pencil, which is enclosed in the bony spine.

To the anatomist and microscopist this nerve tissue appears exactly alike in all human beings, but the invisible physical differences which undoubtedly exist, constitute the difference between the mind of a Napoleon or a Cromwell, and that of some contemporary simpleton. This central nervous system communicates with every other part of the body by means of long white conducting nerves of varying thickness. The term "nerve-cell" is used quite frequently in this book and it is important to understand what it means. The cell is the anatomical basis of human flesh; it is a minute mass, spheroidal, ovoid, cylindrical, sometimes shapeless. A typical cell consists of an outside membrane, and an enclosed mass of protoplasm which may or may not include certain germinal spots, the nucleus and the nucleolus. These cells are extremely small, it is estimated that the spinal cord alone contains many millions of them. An aggregation of these cells is called a nerve-center, and these nerve-cells and nerve-centers, bound and woven together by fibres, and the crevices packed with fat and connective tissue, make up the structure known as the brain and spinal cord. Besides this central

nervous system, a vast number of nerve-cells and nerve-centers have been placed in the cavities of the chest, abdomen and pelvis; these cells are independent of the will but are dependent upon the central nervous system for their vitality. They control, regulate, and supply power to the vital organs within the body; they act as reservoirs of nerve-force, and with their connecting nerves make up what is known as the sympathetic nervous system.

THE FUNCTIONS OF THE NERVOUS SYSTEM

Are: 1.—**Mind**, intelligence, will, emotion. 2.—**Instinctive Action**, inherited ability; a new-born infant almost without mind does many acts instinctively. 3.—**Automatic** or habitual action; many acts come by repetition to be automatic, done without the consciousness of the individual, or participation of mind; thus, in writing, the mind of an adult is not often concerned in the spelling of the words, nor in the penmanship—they have become automatic acts; or, one may play correctly a tune upon a musical instrument while the mind is absorbed in some other subject. This principle of habitual action has an important bearing in nervous diseases. Every repetition of any act makes a certain impression upon the nerve-centers in the brain or cord which renders subsequent acts more and more easy; this is the history of all skill from learning to walk to the most difficult performances of the musician or the professional gymnast.

Thus by repetition bad habits as well as good ones become established or fastened upon us, and certain diseases as epileptic fits or St. Vitus' dance in children, tend to become more and more a habit, or easily performed act of the nervous system.

4.—**Reflex Action;** by this we mean that a sensation in any part is carried to the spinal cord or brain by the nerves, and thence *reflected* to some other organ or part by instinctive action or otherwise. A man touches a hot iron and draws his hand away almost before he is conscious that the iron is hot; the painful impression is telegraphed to certain nerve-centers in the spinal cord, and instantly they telegraph back to certain muscles, which withdraw the hand from the iron. The mind may not be concerned at all in this process; when a person is tickled during sound sleep he may make a great variety of reflex motions, without being at all conscious of them.

5.—The **Nutrition and Growth** of every tissue and organ is under the direct control of certain nerve-centers in the brain and spinal cord; every tissue is believed to have its "trophic center" and, if this becomes diseased, the nutrition of the parts dependent upon it suffers, causing partial or complete atrophy. Many obstinate diseases of the skin and of the joints depend upon disease of their nourishing nerve-centers.

6.—Certain areas of the nervous system directly control and **regulate the circulation** of the blood; this vaso-motor function of the nervous system will be more fully described in a paragraph on circulation derangements.

7.—The processes of **secretion and excretion** are directly maintained and regulated by the nervous system; this excito-secretory function explains why the mouth of a hungry man waters at sight or at thought of savory food, how the tears well up under the stimulus of emotion, and why the secretion of the digestive juices, and the consequent appetite and digestion, is influenced by good or bad news, or why the skin and mouth sometimes become dry and parched under the influence of any intense emotional excitement.

8.—The nervous system **acts as a battery** to generate and give out force to every part where there are muscular fibres; the muscles, arteries and veins, stomach and bowel walls, and every organ that contains muscular fibres, gets that quality which we call *tone*, from the steady, gentle force-supply from the nervous system. Muscular exertion involves the expenditure of nerve-force, the power is *manifested* in the muscles, but it comes from the nerve-cells, just as the power which is manifested in the ringing of an electric bell comes from the cells of the galvanic battery; the champion oarsman is not the man with the largest or hardest muscles, but he whose nervous system can supply the largest amount of force and maintain it the longest in the race.

9.—The brain receives, assorts, distributes to its different parts, and registers, impressions and sensations from every part of the body, but although the brain feels for the whole body, it cannot feel for itself; surgical operations upon the brain tissue cause no pain. When a pin is thrust into the finger the pain is really felt in the brain; the proof being that if the nerve which connects the finger with the brain be cut, the pin can cause no pain; the finger is numb and paralyzed. The nerves may be compared to telegraph wires; they transmit nervous impulses from, and impressions to, the brain and spinal cord.

THE SOURCES OF NERVE-FORCE

The power that is expended with every thought and movement comes from food and oxygen. The blood—liquefied and digested food—circulates through every tissue and brings to every cell and fibre the chemical materials with which it may renew itself; it also brings oxygen in little red sacs, which unites chemically with the worn-out elements of the tissues, burns them up, or

oxidizes them; in this body-combustion *heat* is evolved, and this heat, by a mysterious vital process, is converted into force, with which every brain and nerve-cell is more or less charged. This force may be compared to electricity and the nerve-cell to a Leyden jar.

THE RELATION OF GOOD FOOD, GOOD DIGESTION AND PURE AIR TO NERVE FORCE

The nerve-cells may be starved by a poor food-supply, either from poverty of purse or of digestive power. The evolution and storage of force may be lessened by a poor supply of oxygen, as in those leading a sedentary life, taking no exercise, breathing with only the upper third of the lungs, or spending a large portion of their time in furnace-heated apartments, or in other places where the oxygen of the air is diminished.

THE RELATION OF SLEEP TO NERVE FORCE

During the day the expenditure of brain and nerve force in thinking, moving, working, is greater than the capacity of the nervous system to store it from the blood, so, after sunset, a halt is called for sleep. During sleep the expenditure of nerve-force is reduced to a minimum, and income is far in excess of out-go; man awakes after a good night's sleep with his nerve-cells charged with an abundance of force for the labors of the day. Sleepless nights quickly exhaust the reserve force and a time comes when the individual must sleep. A young, strong person quickly recuperates from the effects of prolonged loss of sleep because his vigorous young brain and nerve-cells have the power of rapidly absorbing new force; in the old or enfeebled this power of creating nerve-force is slow, and recuperation correspondingly so.

CONSEQUENCES OF EXCESSIVE NERVE-WASTE

Thus the nerve-cells are constantly the seat of two processes—nerve-waste and nerve-repair. When these two processes are proportionate in the individual, all goes well. But when nerve-waste habitually, or for a time, exceeds repair, certain changes take place within the nerve-cell; it becomes *weakened*, not only in its capacity to put out force, but also in its capacity to attract nourishment and create force from the blood; it becomes *irritable*, over-sensitive to impressions, its power of enduring is diminished. When these two conditions of weakness and irritability become established in the nerve-cells, other parts of the body suffer; the whole physiology of the individual may become disordered, weakened, unsteady. Nervousness, nervous debility, nervous prostration or exhaustion, are names in common use to describe the consequences of a continued predominance of nerve-waste over nerve-repair.

PHASES.

THE SYMPTOMS OF NERVOUS IMPAIRMENT.

The signs of the nervous irritability and weakness which result from excessive nerve-waste, or from the disturbing influence of chronic local disease, have long been known to physicians, but it is only within a few years that the true import and relationship of these symptoms has come to be thoroughly comprehended.

The symptoms of nervous impairment have been collected, classified, appraised and practically created into a new disease known as Neurasthenia, literally, nerve-weakness. This term has been more or less universally adopted by progressive physicians, although the scientific propriety of grouping all the varied phases of nervous impairment under one name has been denied by some. As a fact, the introduction of Neurasthenia as a new disease is at variance with the scientific methods of classification in use, but in practice there is no other disease whose natural history is more clear and symmetrical, and none whose treatment is more plainly indicated.

Various types of Neurasthenia have been described: thus, when the brain is the organ chiefly affected, the term Cerebral Neurasthenia, or brain exhaustion, is used, and other terms, Spinal Neurasthenia, Gastric Neurasthenia, Sexual Neurasthenia, are self-explanatory.

It is not my purpose to attempt any elaborate pen-picture of the symptoms of nervous impairment, but rather to so explain their significance that the chapter on Remedies may be as clear and as valuable as possible.

Of the somewhat numerous train of symptoms following excessive nerve-waste, only a portion, perhaps only one or two, are to be seen in any single case, and although nervous debility is said to be the most common disease in America, it is seldom that two patients ever present exactly the same combination of symptoms.

NERVOUSNESS

Is the manifestation of a greater or less degree of nerve weakness, inherited or acquired.

In some persons any emotional perturbance or excitement, or any mental effort which rapidly uses up a large amount of force, leaves the whole muscular system weak and trembling, and periods of activity and vivacity are apt to be followed by periods of depression and wretchedness; these phenomena indicate the smallness of the nervous resources, and the inconstant, unstable out-flow of nerve-force. So the intolerable annoyance which some persons feel at certain creaking noises, the sudden starting at slight, unexpected sounds, the excessive peevishness, the lack of self-control, the losing presence of mind at nothing—"going all to pieces"—are signs of the abnormal susceptibility and lessened endurance of the nervous tissues.

NERVOUS PROSTRATION

Is an abrupt failure of the life-forces; it may be partially recovered from in a few days, or it may keep the patient hovering between life and death for weeks, according to the degree of the vital over-draft.

A serious case of nervous prostration is as impressive a health lesson as can be imagined. The active man of a few days before is now a helpless inert mass; in his face every vestige of youth, health and mental power is replaced by a worn, prematurely aged appearance painful

to look upon. The strong, quick intelligence familiar to his friends is degraded to a stupid indifference, or incoherence; in some cases visions or delirium occur; the pulse beats quickly and feebly, thin as a thread under the finger, and almost feels as though it might at any moment die away forever. Muscular strength is at its lowest ebb; slight exertion causes trembling; the subject is unable to rise, he is forced by outraged nature to permit a remedy that was long ago her due—rest. Fever, persistent sleeplessness, headache, vertigo, congestion of the brain, alarming sinking sensations are common symptoms.

In some cases the sick man never reacts from this collapse, but after lingering for days or weeks, dies—a real suicide; but the larger proportion of cases slowly respond to rest, judicious medication and feeding. A careful nursing of the remnants of life recalls the subject from his graveward course; although, after passing through such an experience, the patient is seldom or never again the man he was.

The acute form of nervous exhaustion is far less common than the chronic, and it is to the description of the various phases of chronic neurasthenia that the remainder of this chapter will be devoted.

ALTERED PERSONAL APPEARANCE.

Some years since a distinguished English visitor, Herbert Spencer, in the course of a New York address, said:

"Everywhere I have been struck with the number of faces which told in strong lines of the burdens that had to be borne. I have been struck, too, with the large proportion of gray-haired men, and inquiries have brought out the fact, that with you the hair commonly begins to turn some ten years earlier than with us. Moreover, in every circle, I have met men who had themselves suffered from nervous collapse due to stress of business, or named friends who had either killed themselves by over-work, or had been permanently incapacitated, or had wasted long periods in endeavors to recover health."

Altered personal appearance is a phase of nervous impairment abundantly illustrated in American business and social life.

Extreme thinness, sometimes even to emaciation, often occurs because the fatty tissues are not sustained by the blood—the excessive demands of brain and nerve lead them to appropriate the fat forming elements of the blood for force creation, and thus leave little or none to be deposited as fat. This thinness is sometimes limited to certain parts of the body, as the face; in other cases the face remains the only plump part. A peculiar sunken and aged appearance of the tissues lying immediately about the eye is a sign which I have frequently noted in victims of overwork and sexual excesses.

Baldness in a large proportion of cases is the direct result of overactivity of the nervous system in some form or other. The conditions of healthy hair are: a blood-current containing certain substances, its free circulation in the vessels of the scalp, and the power of the hair follicles to pick up these substances and convert them into hair. Excessive nerve-waste subtracts from the natural vigor of the hair follicles; they become chronically enfeebled and lose their power of attracting the necessary elements of the blood-stream, and of absorbing them and converting them into hair. Of course, many other unsanitary conditions affect the health of the hair follicle, but this enfeeblement of poor innervation, which results from a poor oxygen supply to the nerve-cells, from excessive nerve-waste, and from inheritance, is by far the most common cause of premature baldness. Baldness is rare among those races—as the Indians—to whom nervousness is unknown, and in women, who are seldom obliged to bear the same degree of nervous strain that men are. This explains the inefficiency of all the popular methods

of treating baldness; it is easy to bring the blood into the scalp by friction or stimulating lotions, but an enfeebled hair follicle cannot use this blood, just as the dyspeptic's stomach cannot use a hearty meal—we may lead a horse to water but we cannot make him drink. The treatment of the baldness of nervous impairment consists chiefly in improving the vigor and resources of the nervous system, as advised in the following chapter, more than in the use of local measures.

Brittleness and slow growth of the nails is a condition probably due to an insufficiency of available phosphates in the blood after the requirements of the brain have been met, and to a debility of the central nerve-cells controlling the nutrition of the integument.

The firmness of muscle, blood-vessel, and to some extent of the surface flesh, depends upon a steady stream of nerve-force from the nerve-cells. When this is diminished the tissues may become lax, more or less flabby, the flesh lacks tone, the veins may be relaxed and dilated, and a general atony may prevail at a time of life when the tissues should be firm and solid.

But while the above remarks are applicable to many cases, it is also true that a high degree of general nervous impairment may exist in persons who are, to the casual observer, the healthiest of men. This is most strikingly exemplified in certain individuals of a mixed nervo-sanguine temperament, having fine, thin skins and plenty of red blood; they sometimes are pictures of rosy health, their digesting and blood-making organs being perfect, while the nervous system is weak and irritable in the extreme.

AN UNNATURAL FATIGUE

Is often for a time the only indication of failing nerve power. The accustomed duties of life become excessively

irksome, and the subject experiences a constant feeling of weariness. Many persons sleep soundly eight or even ten hours, but arise from their beds unrefreshed, inelastic, languid, and it is two or three hours before they become braced up for the duties of the day. When this abnormal tiredness occurs in an apparently healthy man, he is apt to be suspected of laziness and to get but little sympathy.

MENTAL PHASES.

The brain is the organ of mind; upon the physical conditions of the brain-tissue and its blood supply, largely depend those traits and characteristics which make up a man's individuality. When the brain-cells become weakened by over use, the mind may present certain abnormalities whose meaning the physician has frequent occasion to interpret.

Mental Irritability is a frequent manifestation of the physical irritability and weakness within. A fretful, peevish manner, an increasing irascibility, a tendency to become angered at slight provocation or without provocation, an abnormal suspiciousness or jealousy; in woman, an abnormal emotional sensitiveness, sometimes approaching hysteria—these are trouble-creating traits which may be developed in the most amiable individual as a result of nervous impairment.

These exhibitions are apt to be looked upon as moral failings, and met with reproach and censure when medical advice or treatment is what is needed.

Depression of Spirits is a common phase. Poorly nourished brain-cells cannot be expected to put forth a strong, hopeful, joyous quality of mind. The gloomy forebodings and the morbid fears of nervous impairment become in some cases a true insanity, and may even lead to suicide, but more often this phase takes the form of

repeated fits of the blues, or of hypochondria. In this latter condition the subject feels that he is sick, and his attention once fixed upon his condition, develops into a morbid habit of introspection; he exaggerates the meaning of all his symptoms and fears the worst consequences.

Thousands of medical vampires deliberately do all in their power to cultivate this wretchedness, and derive large incomes by playing upon this phase of nervous impairment.

Impairment of Memory. The process by which external impressions become fixed forever in the mind has been compared to photography—the highly sensitive particles of brain matter corresponding to the highly sensitized plate in the camera. Every impression is brought to the brain through the special senses of sight, hearing, taste, touch and smell; and every thought and imagination of the mind is supposed to be *registered*—that is to produce certain molecular changes in the brain-cells. But, since these brain-cells are being constantly worn out and destroyed, and the life of the individual cell is transient, how is it that this registration is permanent? This is explained by applying the law of heredity to cell-life. Within every cell is a spot or germ, which, as the cell itself is passing through the various terms of its existence, gradually developes, and eventually takes the place of the parent cell, carrying on all the molecular peculiarities of the parent cell.

The vigor of the memory is apt to be in direct proportion to the vigor of the brain-cell. In youth, memory is keen, and many of the impressions registered in the substance of the brain during that period of life are remembered vividly in extreme old age, while impressions brought to the comparatively blunted and enfeebled brain-cells of old age are forgotten in a week or a day.

This illustrates how it is that an enfeebled condition of the brain-centers is apt to be manifested by a failing memory. The cells, poorly nourished by thin blood, or impoverished by an excessive expenditure of their reserve force, become sluggish, blunted, unimpressionable at any age, just as they do in the natural failing power of extreme old age. Many degrees of impairment of memory are met with. Of course, the capacity of the brain to register impressions has its limits. A three weeks' tour of Europe is apt to leave indistinct and confused memories. A man whose business involves the remembrance of a vast number of details, may have a very poor memory for things outside the range of that business, without having any degree of brain or nerve impairment.

Closely related to this impairment of memory is an

Impairment of the Faculty of Speech. The power of speech requires a more or less normal condition of the vocal organ in the throat—the larynx, of the muscles concerned in articulation—those of the tongue and lips, and of the resounding chambers or cavities in and adjacent to the throat and nose. But, in addition, it requires the more or less healthful condition of certain brain-cells, the speech-centers, in which reside the faculty of language, or that part of intelligence which associates certain words with certain ideas.

A fluent speaker is one in whom the speech-center in the brain is, by heredity or by cultivation, highly developed. This instinct for words may be extraordinary in persons who are not fluent talkers; some of the most famous authors have been comparatively stupid companions, or have been totally unable to make a speech in public. Children born deaf, or becoming deaf from early sickness, remain dumb, not because the vocal organs are at fault, but because the speech-center in the brain

cannot be sufficiently educated without hearing. When, as a result of over brain-work, the vigor of the cells of the speech-center, in common with other parts of the brain, becomes impaired, the subject may be noticed to frequently misuse words, or syllables, or even single letters, generally the initial letter of words; and he may be often at a loss for a familiar word. This impaired fluency of speech is not constant; the individual may be a strong and eloquent speaker under the stimulus of certain surroundings, but in his enervated, listless moments, when the brain is more or less off duty, this phase may be very conspicuous.

Impairment of Will Power. Volition is the rarest and most valuable quality of mind. There are a hundred men who are wise for one who is strong, and the man with a strong will is apt to control his fellows. In many cases of nervous impairment, weakening of the will power is very noticeable. A patient lately informed me that he had left home immediately after breakfast to have an aching tooth drawn, but, though be had fully decided that the tooth must be removed, he could not bring himself to enter the dentist's office; he passed and repassed the door innumerable times, and it was noon before he could force himself to enter and submit to the momentary operation. This incident by itself is not proof of an impaired will, but when such a peculiarity developes, as it did in this case, in a man to whose known character it is utterly foreign, then it is so. My patient had visited the dentist many times before without shrinking, and his acquired enfeeblement of will was manifested in other directions. Fickleness, inconstancy, wavering, an inability to concentrate the mind, or to long apply it to study or work, are often the manifestations of an acquired enfeeblement of will, and may seriously affect

the business or social interests of the individual. The patriarch's "Unstable as water, thou shalt not excel" well describes some of these cases. This impairment of will power is not unfrequently exhibited in old and wealthy families where the stock is retrograding from a lack of earnest work combined with dissipation, and it is one of the serious consequences of several of the drug habits, notably of morphine and of chloral addiction.

CIRCULATION DERANGEMENTS

The vessels, by means of which the blood circulates through every part of the body, are not rigid and unyielding tubes, but have the property of dilating and contracting. These changes of calibre occur under a great variety of circumstances. In the moment of sudden fear the blood recedes from the skin and rallies around the vital organs within as if to protect them—the face is "blanched with terror"; under the stimulus of another emotion the vessels of the skin dilate, and the blood rushing in to fill them causes the blush of shame; when the body is exposed to cold, the blood-vessels of the skin contract and the blood is partially withdrawn from the surface, in order that it may be kept hot and not radiate its heat too rapidly into the cold air; under the influence of heat the blood is led into the skin, that, by radiation and by evaporation of sweat, the body may lose part of its superfluous heat; during study or earnest thought the blood-wave is attracted to the brain; during and after digestion to the stomach and other digestive organs.

The duty of managing these complicated circulation changes belongs to a certain part of the nervous system of organs known as the *vaso-motor* system. This system consists of central collections of nerve-cells and of innumerable thread-like nerves which run along in the walls of

every blood-vessel in the body. In health all goes well, but when the nerve-cells of the central nervous system become weakened or irritable, the action of the dependent *vaso-motor* nerves is apt to become deranged and unsteady, the abnormally susceptible blood-tubes are not properly controlled, and certain **circulation derangements** result. One of the most common of these is: Partial Congestion of the Brain. Brain exercise attracts a large quantity of blood into the brain-vessels, which, when the brain exercise is at an end, should be made to recede from the brain by the contraction of the blood-vessels; but if the supply of nerve-force to these blood-vessels is insufficient, they are sluggish, lack tone, and cannot contract; the brain remains engorged with blood, and we may have a *Congestive Headache* or perhaps a persistent *Sleeplessness*. Or, the blood-flow to the brain may be too small, causing *Anaemic Headache*, vertigo or dizziness, and a variety of sensations referable to the head, eyes, and ears. The *Excessive Blushing* which so annoys some patients, and the *hot flashes* experienced by many women about the change of life, are examples of this unsteadiness of the circulation resulting from a weakened, or an irritated nervous system.

There may be constant *coldness of the feet and hands*, or, on the other hand, the extremities may be warm and perspiring, according as the blood current is over or under the normal supply to these parts. Almost any organ in the body may be affected by these irregularities of blood-supply. A congested and abnormally sensitive condition of the spinal cord, with or without some disorder of the reproductive organs, is a common symptom among women, known as *Spinal Irritation*, or the Irritable Spine; *The Irritable Ovary* and *the Irritable Uterus* are terms which imply an irritable, congested and

relaxed condition in those organs. In the male a relaxed, congested and hyper-sensitive state of certain deep-seated parts—the urethra, the prostrate gland, and parts adjacent—are often the conditions keeping up *Spermatorrhœa* and *Impotency*. One form of weak and Irritable Eyes depends upon a state of chronic congestion in the mucous membrane of the eye—the conjunctiva.

DISORDER OF SECRETION AND EXCRETION

The skin contains immense numbers of sweat-glands whose function it is to excrete, or separate from the blood, certain waste substances in solution; so, too, the pink, shining mucous membrane lining those cavities of the body which communicate with the air, and which is a kind of internal skin, is studded with innumerable follicles which secrete, or separate from the blood, a thin fluid mucus. This mucus serves to protect the parts, to keep them moist and flexible, and, by being constantly removed and changed, it keeps the parts clean. Both these sets of glands are under the direct influence of certain nerve-cells, and in nervous impairment, this excito-secretory office of the nervous system may become disordered, unsteady, over or under the normal degree of activity, causing *Excessive Perspiration* of the hands or feet, or of the whole body; or in other cases an *Unnatural Dryness of the Skin*, or an *Abnormal Dryness of the Mouth* and *Throat*.

THE IRRITABLE HEART

Palpitation of the heart is one of the most common symptoms of nervous debility, and one which sometimes causes much uneasiness or alarm. The heart is a hollow muscle, swung somewhat freely in the chest, whose business it is to keep the blood in motion. It acts as a pump,

receiving the dark blood from the veins and forcing it into the lungs, where it is purified and reddened by contact with oxygen; then it again receives this red oxygen-laden blood from the lungs and pumps it to every organ and tissue, through hundreds of elastic tubes,—the arteries.

The power or force that keeps the heart moving, day and night, comes from the nervous system, just as the force that vibrates the hammer of an electric bell comes from the galvanic battery. While this supply of nerve force flows out to the muscular fibres of the heart in proper quantity, that organ beats strongly, steadily, and with a certain rhythm. But if the nerve-cells, or batteries, of the nervous system, become weakened by over-expenditure, two things may happen: first, the nerve-cells cannot give out a strong current of force to properly maintain the beating of the heart; second, one certain nerve, whose duty it is to maintain the *rhythm* of the heart, by keeping it to a certain number of beats per minute, partially loses its governing power, and becomes more or less unreliable. These two conditions of nerve weakness cause palpitation of the heart,—a *weak* action of the heart because of a feeble out-flow of nerve force, and a rapid, irregular action because of the inability of the pneumogastric nerve to properly do its duty. Palpitation of the heart in the great majority of cases, is not a symptom of heart-disease, as that term is used by medical men; it is not, in itself, dangerous to life, and never results in or causes sudden death.

I have met men and women suffering from this symptom, who firmly believed themselves to be the victims of heart-disease, and over whose heads the fear of sudden death had hung for months or years. They had obtained this idea from the representations of some patent medicine advertisement, or from the statement of some ignorant or

unscrupulous physician. It is a sad fact that there are men, who, in order to extort a petty sum, will subject a fellow human being to a mental misery which may endure as long as life itself. There is no more terrible news to hear, and no heavier burden for the sick to bear, than the conviction that they have incurable disease of the heart. Palpitation of the heart is cured by gradually building up the nervous system, and by the use of medicines having a direct tonic action upon the heart, of which medical science has several of great value.

REFLEX ACTION AND THE PART IT PLAYS

A principle known as *reflex action* plays an important role in nervous impairment, as it does in many other disorders. The central cells of the brain and spinal cord are constantly giving out force, nervous impulses, along the conducting nerves to every part of the body, and as constantly receiving impressions from every part by means of other nerve-fibres. The healthy nutrition and action of any part depends largely upon the health of the particular nerve-centers in the spine or brain which controls it. A diseased condition or irritation in one part of the body may produce disease in some other remote part by being reflected to the nerve-centers which are related to both. Thus, every form of convulsive functional nervous disease, as epilepsy, St. Vitus' dance, lock-jaw, etc., may result from a seemingly trivial irritation in some remote organ.

The irritating impression of a tight foreskin is a not rare cause of convulsions or paralysis in children; the irritations of teething, worms, and indigestible food often cause convulsions in infants. The irritating presence of dried secretions in the nose or throat, reflected to the nerve-centers, is a common cause of asthma, hay-fever, or deafness. Constant pain in the back often results from

some abnormal condition in the womb, or in the rectum. Persistent epilepsy may result from constipation, from hardened wax in the ears, from eye or ear strains, and from many other reflex irritations. The first thing an expert in nervous diseases does with a new case of "fits," of which the cause is not obvious, is to overhaul the patient from head to heel in the search for possible sources of reflex irritation. When the circulation derangements described above establish irritable and congested ovaries, spine, or prostate gland, a continuous morbid impression is reflected to the central nervous system, which is thus harassed, irritated and weakened. There is an intimate relation between the digestive organs, as well as the reproductive organs of either sex, and the brain, and hence it is that any chronic, continuously acting irritation in those parts exerts a most depressing influence, not only upon their own centers of nutrition, but also upon the brain and mind itself, causing melancholia, hypochondriasis and other depressed forms of mental aberration.

HEADACHES AND VARIOUS HEAD SENSATIONS

There is a great variety of headaches and of causes of headaches, and a book much larger than this might be devoted to this symptom alone. Thus, headache may be the result of exposure to cold, of dyspepsia, of heart disease, of disease of the brain, or of eye and ear strains. It may also occur when the blood is loaded with unnatural substances; a large dose of quinine often causes headache, and the blood-poisoning of Bright's disease gives rise to terrible head-pains.

Weakness and irritability of the central nerve-cells causes a variety of headaches and head sensations: 1, by resulting in the circulation derangements described above, inducing congestion or anemia of the brain; 2, by rendering

the brain-tissue over-sensitive to various irritations in other parts of the body. The headaches of nervous debility are described by patients as a feeling of fullness, or a tight, band-like feeling about the temples, or a heavy, tender feeling at the crown of the head, or in the back of the neck.

Vertigo or dizziness may occur with or without some form of circulatory derangement.

Migraine, or sick headache, occurs in neurotic persons, and the super-sensitiveness of the brain-cells, which is at the bottom of it, generally represents some degree of nervous weakness or irritation.

NEURALGIA AND CERTAIN UNPLEASANT SENSATIONS

Neuralgia has been graphically called "the prayer of a starved nerve for food," but it is not always so. Like headache, neuralgia has a variety of causes. Among the most common of these are exposure to cold, causing congestion and pressure about the nerve, and reflected irritation, as when a decayed tooth lights up a neuralgia of the whole face. When the nerve-tissues are overworked and imperfectly nourished, they become more sensitive to cold and to reflected irritations, and may ache without any apparent exciting cause whatever. The neuralgias of nervous debility may occur in any nerve, but are most common in the face and head, and in the leg.

Certain other neuralgic sensations are described by patients. A common complaint is of a sore, tender feeling "deep in" any part of the spine, sometimes located in the back of the neck, or a little lower, between the shoulders; in others it is felt in the loins. This dull ache in the spine indicates that the spinal cord, at the point of the pain, is in a state of irritability and weakness, and of partial congestion.

Quite a variety of peculiar sensations are described by different patients, such as shooting pains in the back or limbs, tenderness in the scalp, or in the teeth and gums, or at almost any point; sometimes there are periods of intense itching of the skin, or creeping or crawling sensations on the surface.

There may be a dull, aching feeling along the course of the nerves of the arm or leg, not amounting to actual pain, or a feeling of numbness may be experienced in some part. Patients are sometimes uneasy or alarmed at these limb sensations, supposing them to be forerunners of paralysis; these fears are groundless. These sensations merely indicate an impoverished state of the nerve, and are never followed by paralysis; electricity often removes these symptoms, as well as the tenderness of the spine, as if by magic, and the neuralgias of nervous impairment are often quickly cured, or greatly benefited by proper treatment—by electricity, tonics, and attention to the hygienic measures described in the chapter on Remedies.

CRIPPLED FUNCTIONS

Certain organs of the body may become crippled in two ways: first, by the prolonged over-use of the organs themselves; second, by being regularly robbed of their proper supply of nerve-force by some other part. The organs which most frequently suffer are the digestive and the reproductive, because of the large quantity of nerve-force which they require to fulfil their complicated functions.

Most men and women have some part that is, by inheritance or by acquisition, weaker than the others; it is their vulnerable point. In one it is the stomach, in another the air-passages, in another the kidneys. When excessive brain or muscle work uses up a disproportionate amount of the available nerve force, the supply is not

sufficient to go round, and the weak part is apt to suffer.

IMPAIRMENTS OF THE MUSCULAR SYSTEM

Writer's Cramp, or Writer's Palsy, affords a striking example of the exhaustion of certain groups of nerve-cells, whose capacity for supplying nerve-force has been overdrawn. It occurs in penmen, telegraphers, pianists, engravers, and others who habitually use one set of muscles to do more or less fine work. The patient either partially or completely loses the ability to make the familiar movements of his craft, while in other directions the limb is not injured. Thus, the penman may become unable to even grasp his pen, much less to write, while his power to play ball or perform on the piano may remain as good as ever. The cell combination in the nervous system which directs the complex act is exhausted.

Trembling hands, a sudden twitching or starting of the muscles of one limb, or of the entire body, generally on going to sleep, and a twitching of the muscles about the eyelids on using the eyes in reading, or in any fine work, are symptoms that are frequently described; they indicate the unsteady, intermittent character of the nerve current which the muscles receive from the nervous system. Subjects of chronic nervous impairment are not generally able to put out a large amount of muscular force at once, though they may do light work all day. I remember the case of a neurasthenic boy, who was assisting his father to carry a rather heavy plank; he struggled to maintain his end, but suddenly became white as death, dropped insensible, and it was some time before he recovered from a condition approaching collapse. In some professional athletes, great thinness of face, trembling fingers, palpitations, indicate that the powerful muscles have been built up at the expense of the nervous and digestive systems.

DISORDERS OF VISION, HEARING, TASTE AND SMELL

Disorders of vision are frequently met with in neurasthenic patients. I have already mentioned that the mucous membrane of the eye—the conjunctiva—may become red, congested and watery as one of the results of a disordered circulation. Weak sight may be due to an irritation or weakness of the optic nerve, either as a result of reflex irritation or of the irritation of the visual nerve-centers in the brain; the excessive use of tobacco or alcohol is one of the common exciting causes of this condition.

Sometimes the muscles of the orbit, which control the movements of the eye-ball, become weakened, and, as a result of the lack of correspondence between these and the internal accommodating muscles of the eye, a constant eye-strain is induced; these cases are not generally relieved by glasses, and the sight may become so weak that it is impossible to use the eyes in reading for more than a few minutes at a time. These eye-strains may, in their turn, be the cause of persistent headaches or even of epilepsy.

The specks, black spots or wavy lines floating before the eyes, as well as the momentary blindness sometimes described by nervous patients are simply indications of a general or local nerve weakness.

An unnatural dilatation of the pupils of the eye is sometimes noticeable in nervous impairment.

Ringing, buzzing or tapping sounds in the ears are symptoms occasionally described; one of my patients informed me that she had hardly been free from a ringing in her ears for over a year; at first, as she said, it almost drove her crazy, but she finally became more or less accustomed to it.

Perversions of the sense of taste and of smell may

result from the disturbance of the nerves or nerve-centers connected with these parts; the individual may be annoyed by unnatural odors or tastes, or the acuteness of these senses may be diminished.

WEAKNESS AND ALTERATION OF THE VOICE

The voice may be temporarily weakened in acute nervous prostration; in chronic nervous impairment it may become permanently altered. A huskiness or hoarseness, a soft quality, a lack of *timbre* and of power make up what is called the neurasthenic voice. This altered voice is caused by a flabbiness or lack of tone in the vocal cords and adjacent muscles, and sometimes by a relaxed, congested state of the mucous lining of the larynx; the nerves which run to these muscles, as well as the nerve-centers or batteries in the brain, which supply them with force, are in a state of chronic depression, either as a part of a condition of general brain depression, or as the result of a persistent reflex irritation from the stomach, reproductive organs or elsewhere.

These cases are sometimes treated for chronic laryngitis, or some other condition of the larynx, but local treatment alone never permanently relieves it. It may seem strange to treat a husky voice by medicating the stomach or womb, but as I write I recall a case of persistent huskiness of voice in a young lady which completely disappeared as soon as a displacement of the womb was cured; she had been a fine singer and her husband had spent considerable money upon specialists in diseases of the throat without any great benefit.

NERVOUS INDIGESTION

The conditions of good digestion, are: 1, a certain amount of tone in the muscular wall of the stomach and

bowels; 2, a sufficient secretion, by innumerable glands, of certain digestive juices, of a proper quality. The power which preserves this muscular tone and which excites these digestive secretions, comes straight from the nervous system, whence it is conducted by various important nerves. That portion of the nervous system which directly supplies the vital (breathing, circulating and digestive) organs with power is placed, for protection and convenience, in the great cavities of the chest and abdomen; here the nerve cells and centers, with their connecting nerves, form a double chain in front of the spine extending from the neck to the pelvis. This part of the nervous system is known as The Great Sympathetic; it is independent of the will, is on duty day and night, and its nerve-cells are kept constantly charged with vital power by the influence of the central nervous system; thus they act as reservoirs of nerve-force.

The sympathetic nervous system is intimately connected with the central nervous system in the brain and spine, and disorders of digestive or reproductive organs often produce great depression of mind.

When the brain or muscles are over-worked, the nervous allowance of the great sympathetic system is reduced, and the digestive organs are particularly liable to suffer from this insufficiency. After a day of severe toil a man may be "too tired to eat," which means that his nerve-force has been over-drawn, and that the stomach, lacking its accustomed stimulus, does not secrete its juices—feels no appetite. The excito-secretory function of the nervous system is powerfully affected by mental influence; when any intense emotion, as terror or anger, or any great excitement rapidly uses up a great amount of force, the digestive secretions may be almost suspended for hours or even for days.

A hearty meal eaten after a day of hard mental or muscular labor is apt to be slowly and with difficulty digested by the enfeebled stomach. With many habitually over-worked men, the evening meal is the only hearty one of the day, and is eaten at a time when the digestive organs are poorly prepared to manage it. When a condition of chronic dyspepsia becomes established, the nervous system suffers still further from the impoverished blood supply which the weakened digestive organs are able to prepare.

In some over-worked men the digestion remains pretty good, but is liable to sudden break-downs. Some day, without any apparent cause, the individual has an attack of acute indigestion; his dinner rests like a bar of lead upon his stomach, or sour risings, heartburn and belchings plainly indicate that the meal is being slowly and imperfectly digested.

Or the victim may be seized in the night with a violent colic; the intestinal gases, which are always present in larger quantity during and after slow digestion, accumulate in the bowel, and the tired, relaxed bowel-wall has not the tone to contract upon them, move them along, and properly distribute then in the intestine. The uncertainty of himself, which the patient feels in these cases, is a source of uneasiness to him; he never knows when to expect these break-downs, and no amount of dietary care will always protect him from them.

Local treatment with tonics, stimulants and sedatives fails to cure; the bottom of the trouble lies deeper than the stomach, and before he can afford these patients permanent benefit, the physician must begin at the foundation. Of all the remedies used against nervous indigestion, drugs are the least important.

A French physician, M. Glenard, has lately described

a peculiar condition which I have noted. He gives it the name *Enteroptose*, which means "a falling of the bowels." In this condition the contents of the abdomen are not firmly supported, but drag upon their ligaments. The changed position of the parts which thus results gives rise to changes in the calibre of both stomach and intestines—dilatations and constrictions occur at various points which interfere with the proper performance of the digestive function.

This condition may affect the entire abdominal mass, but M. Glenard reports that the most frequent form of enteroptosis is a displacement or falling of the right arch of the large intestine. This arch normally lies at a point in the abdomen just to the right and a little above the navel, and helps to support the stomach above, and when it becomes prolapsed the stomach, in its turn, sinks, drags and is weakened.

Of the three coats or layers which make up the stomach and bowel walls, the middle one is composed of contractile muscular fibres, and by the elasticity and resiliency of these muscular fibres, the shape and tone of these organs is maintained; as has been explained, this muscular tone depends directly upon a steady supply of nerve force from the cells of the sympathetic nervous system. When the force-creating and force-supplying capacity of these cells is impaired, the muscular coat of the stomach loses tone, becomes more or less relaxed; the gases of slow digestion distend it, the subject describes his stomach as "bloating." This gastro-ectasis, as it is called, may occur without any degree of prolapse or falling of the parts.

Dr. Fothergill, of London, has lately called attention to a variety of nervous indigestion peculiar to women. The intimate relation between the female reproductive

organs and the stomach is well known, and the vomiting of pregnancy is a familiar illustration of this sympathy.

In Dr. Fothergill's cases, persistent dyspepsia was associated with some morbid condition of the pelvic organs, as a diseased ovary or womb. No amount of skillful treatment of the stomach alone would effect a cure, but when the trouble in the reproductive system was alleviated, the dyspepsia disappeared. This he calls "reflex indigestion," and it is explained by the morbid influence of the local disease, acting upon and through the nervous system.

Neuralgia of the stomach or bowels is sometimes met with in nervous persons as one of the symptoms of a general over sensibility of the nervous tissues.

THE RELATION OF NERVOUS DEBILITY TO DISEASES OF WOMEN

When the central nervous system becomes weakened, the reproductive organs may become implicated as a direct result of this condition. In woman the tone of these parts largely depends upon the general health. The ill-regulated, unsteady circulation of the blood, which so often accompanies failure of nerve power, is very apt to include a congested and supersensitive state of certain organs as one of its manifestations. This abnormal condition is usually found in the spine, the ovary, or the womb, or in all three, and—at least in the two last-mentioned organs—it may develop into a real chronic inflammation. In these cases *the Irritable Spine*, *the Irritable Ovary* and *the Irritable Womb* are not distinct diseases, but only the local symptoms of a condition of general nervous impairment. Local treatment alone, however skillful, cannot effect a cure, but must go hand in hand with remedies addressed to the nervous system.

In over-worked girls menstruation may be entirely suppressed for considerable periods as a result of the local debility thus induced. In a class of 114 young women who were studying mid-wifery, Prof. Schroeder found that 65 were affected in this manner. In most of these cases the menstrual flow ceased soon after beginning the course of study.

There is another class of cases in which chronic disorders of the female reproductive organs are direct causes of nervous debility. These local conditions, often continued through months and years, exert a powerful depression and irritating influence upon a susceptible nervous system, just as a splinter in the foot may, by its disturbing influence, cripple the entire leg. I have indicated above how a local disorder in the female, acting through the nervous system, may cause obstinate dyspepsia, which remains uncured until the local causative condition is rectified; and a tender ovary, or a bent and displaced womb may so harass the nervous tissues, as to eventually produce all the symptoms of chronic nervous impairment. *Hysteria* and the exaggerated emotional phenomena so common among delicately reared women are generally the effect of an abnormally sensitive nervous organization plus some irritating process about the pelvic organs.

In the treatment of the various nervous symtoms attending chronic uterine or ovarian disorders but little progress can be made toward a permanent cure as long as these conditions continue to act as a cause; here local treatment is an essential factor. Fortunately medical science has made great strides in this direction of late years, both in accuracy of diagnosis, and in new and more thorough and efficacious methods of treatment, and it is not rare to see women who have been nervously crippled

for years restored to health and usefulness in a few weeks by skillfully conducted local measures.

NERVOUS DEBILITY CONNECTED WITH DISORDERS OF THE MALE REPRODUCTIVE SYSTEM

The reproductive system in the male, as in the female, is closely related to the nervous system, and in general nervous impairment, even where there is no history of sexual excess, various functional disorders of the reproductive organs, as seminal emissions, premature emission, a sense of excessive fatigue after temperate intercourse, and even a partial or complete loss of power for considerable periods may occur. In some cases, without there being any true loss of power, there is an uncertainty or unreliability with respect to the sexual function which renders the individual practically impotent. But, in the large proportion of cases, sexual neurasthenia is a direct result of the abuses and excesses so common among the young. The elements of this form of nervous debility are: 1. Excessive nerve-waste. No function involves the output of so large a quantity of nerve-force in so short a time as the reproductive; sexual excess empties the nerve-cells most quickly and effectively of their nerve-force and induces a condition of irritability and weakness in the central nervous system. 2. A too early or a too frequent exercise of the reproductive function sets up certain morbid conditions in the sexual organs themselves; these consist of a morbidly irritable, congested or relaxed state of the urethra, or the prostate gland, or of the seminal vesicles and their ducts, or of all these conditions together. Some times, as a result of the continued irritation, a collar of hardened tissue forms about the urethra at a point more or less deep; these strictures of large calibre, as they are called, are seldom suspected by the patient, and are only

revealed to the surgeon in the course of an examination. When any or all of these deep-seated morbid conditions becomes firmly established, and more or less chronic, they act upon the sensitive nervous tissue in the spine and brain like a thorn in the flesh; a persistent, continuous, abnormal impression is reflected or transmitted back to the sexual nerve-centers in the lower part of the spine, and to the entire nervous system, which is thus harassed, irritated, depressed, and weakened. The excessive secretion, the unnatural losses, and all the phases of spermatorrhœa, depend directly upon these morbid conditions of irritability and relaxation, and quickly disappear when these are cured. So, too, these deep-seated conditions are often the cause of a partial or complete loss of power, or even of a diminution in size—atrophy—of the external parts. The sexual nerve-centers in the spine are the immediate sources of all the power, tone, and nutrition manifested in the external parts; when these centers have been worried and irritated, perhaps for years, by the morbid conditions described above, they gradually lose their power to create and to put out force; in addition, they participate in the general nervous debility induced by excess; as a result, the vigor of the muscles concerned is not maintained, the tone of the veins may be lost, and they become relaxed and dilated, the nutrition of the parts may suffer from the depressed state of the trophic sexual centers in the spine, and the parts may greatly diminish in size.

The strictures of large calibre mentioned above are now known to be one of the most common causes of chronic impotency, and many cases which have resisted every other form of treatment, after this condition has been discovered and removed, are quickly restored by means of electricity and other measures. A new procedure, per-

fected within a year or two, now enables the surgeon to melt away these strictures by means of a mild galvanic current, which is passed directly through the part, and which causes little or no pain. 3. The unnatural losses are the feature of sexual neurasthenia which generally gives the patient the most anxiety, but they are by no means the most important element in the case. In children, long before there is any seminal secretion to lose, and in the female, who has no true seminal secretion, bad habits may produce all the general symptoms of chronic spermatorrhœa; these losses quickly disappear when the local disorders upon which they depend are removed. The excessive nerve-waste, the depressing emotions of anxiety and remorse, and the chronic morbid conditions in the reproductive tissues are much more important factors, and together make up a peculiarly distressing form of nervous impairment.

The prominent part which the nervous system plays in these functional disorders of the reproductive organs leads many eminent authorities to classify them among nervous diseases, as "The Sexual Neuroses." Dr. Beard says, "Spermatorrhœa is usually a nervous disease. It was formerly supposed to be a local difficulty merely, a result of local inflammation. The truth is that it is like dyspepsia, usually a symptom of constitutional debility. It is more frequently a result than a cause. The masses of the people have very erroneous ideas upon this subject."

Much cant has been indulged in by writers on the subject of sexual vices among the young; the victim of a boyish foolishness, for which his parents and teachers were perhaps more to blame than he, is made to feel that he is a kind of moral monster. It seems to me that these habits in many boys are a natural consequence of certain unwholesome surroundings rather than a manifestation

of any innate viciousness. For several years about the age of puberty the reproductive system is in a more or less exalted and susceptible state, while it is being developed and elaborated into the fullness of manhood. During this period, even carefully reared youths are exposed to many subtly-acting impressions and evil influences. Especially is this so of city boys, whose budding senses are assailed by suggestive pictures in hundreds of shop-windows, who can hardly avoid an exciting and prurient literature, who use tobacco, and whose nervous systems are rendered unduly susceptible by an insufficiency of healthful out-of-door life. When we reflect how boys are abandoned, uninstructed and unwarned, to all the evil possibilities which surround this most susceptible stage of life, it is not strange so many are injured in this way.

Functional disorders of the reproductive system have not always received the consideration at the hands of the regular medical profession which their importance deserves, and as a result, many of these cases of nervous impairment have sought help from charlatans of the worst type; the worriments and despair resulting from these unfortunate experiences often seriously aggravate the trouble. The mental condition is an element of sexual neurasthenia which the physician who treats these cases successfully must correctly appreciate; this is often one of chronic secretly-borne worry plus an exaggerated sensitiveness in respect to the origin and nature of the trouble.

This mental wretchedness must be ended as speedily as possible. In a large proportion of cases a positive cure can be promised without hesitation by the physician who is properly equipped for this kind of work, and this substitution of bright prospects for anxiety is a powerful remedy to begin with. And if, in his intercourse with

his patient, the physician be imbued with a broad charity, a kindly sympathy, and an earnest desire to relieve a condition, that is, in some respects, peculiarly unhappy, this fact will often be as truly remedial, in its way, as medicines, electricity or any tangible remedy.

THE RELATION OF NERVOUS IMPAIRMENT TO LONGEVITY

In a large proportion of cases chronic nerve-weakness does not threaten life; it cripples and incapacitates the subject and may render him more or less miserable through a long life. It has even been stated that the neurasthenic condition in some degree protects the individual against acute inflammations, and, as a fact, acute diseases, as pneumonia, are not very common among this class of persons; then the neurasthenic invalid gets into the habit of taking care of himself—after he becomes an invalid—and this habit protects him against many causes of acute disease. So with many nervous invalids, especially those in whom the digestive powers remain fairly good, the chances are that they will outlive many of their more robust acquaintances.

A few, seldom young, persons die from no other apparent cause than nervous exhaution; they are worn out.

Within a few years some authorities have stated that certain organic diseases, as Bright's disease, diabetes, and disease of the blood-vessels of the brain which causes apoplexy, are sometimes the direct result of chronic nervous impairment; the prolonged ill-nourishment of the tissues is believed by these observers to result in actual changes or degenerations in certain organs. This theory is not established, but is probable in some cases.

Acute brain exhaustion is sometimes a cause of insanity; the derangements of the brain circulation, and the sleeplessness largely contributing to this result, and the evi-

dence that acute nervous prostration sometimes causes fatal organic disease is much clearer than that with respect to chronic neurasthenia.

THE INCONSTANCY OF NEURASTHENIC SYMPTOMS

is one of their peculiarities in many cases. Within the limits of a week some patients present the appearance of blooming health or look as if ready for the grave. One day a man may be active and enthusiastic, the next fatigued and depressed. One day he may be cheerful, even vivacious, the next silent, inelastic, listless. The functions of digestion and of reproduction may be unreliable, uncertain, and subject to sudden break-downs or to periods of enfeeblement. In fact, the sufferer from chronic nervous impairment is apt to be, in business, and in society, a noticeably unequal man.

REMEDIES.

THE CURABILITY OF NERVOUS IMPAIRMENT

The resources of medical science against the various forms of nervous impairment are ample and effective, but there is no other affection whose cure more depends upon circumstances. The personal character of the patient often determines the result one way or the other; not a few persons are unwilling to take the necessary trouble to get well, others by their weakness of will, or folly, frustrate the best-laid plans of the physician for their cure.

We hear much about good doctors, but less about good patients; to become a good patient, as to become a good doctor, often requires several years of bitter experience. A long period of suffering is sometimes necessary to create a wisdom that will not scorn true remedies nor rebel against the inevitable.

Some time ago a lady consulted me for certain nervous symptoms: I took pains to explain how the unnatural and unwholesome way of living, to which she had become accustomed, was at the bottom of all her trouble, and that this must be radically changed before any permanent benefit could be expected. I afterward learned from one of her relatives that she had not been favorably impressed with my ability; when asked about her experience with me she said: "Oh, he don't know anything; he told me a lot of stuff about diet and exercise, but he said he couldn't cure me." Now this lady may become a much better patient in the future when her symptoms have become intolerable, and when experience has taught her

that there is no royal road to health. The conditions are most favorable in those patients in whom intelligence to comprehend the situation is accompanied by an earnest determination to get well.

The individuality of the physician is sometimes an important element in the cure; from any one of a dozen bad habits the patient is sometimes only liberated by the personal influence of the physician; neurasthenic patients are very apt to become discouraged, even when all is going well, and are sometimes only kept to the programme by a gentle but firm control; a few cases exercise the skill of the physician to the utmost, and in these an interest in his patient, and a scientific enthusiasm which rises with difficulty and which leads the physician to exhaust the resources of his art before acknowledging himself baffled, may be saving qualities. Given a canvas, a painter and the implements of his art, these are to be found in all studios, but how different the pictures which result from this combination; given a ship, a captain and a storm at sea, the physical conditions are the same in all storms, but how much depends upon that which is invisible. So in the management of functional nervous disease, certain qualities of head and heart, independent of purely technical knowledge and skill, have much to do with the result. Sympathy, earnestness, a keen sense of responsibility, anxious thought,—these are qualities which are often given by physicians, but which cannot be bought, and which not unfrequently make the difference between cure and chronic invalidism.

PRINCIPLES OF TREATMENT

It will be readily seen that there is no uniform programme of treatment for nervous impairment; every case

requires careful investigation, and the choice and application of remedies are influenced by many circumstances. An eminent authority says:

"Each case of neurasthenia is a study of itself. . . . If two cases are treated precisely alike in all the details from beginning to end, it is probable that one of them is treated wrong."

But while this is true, there are certain broad principles which must be followed in every case:

1. Certain adverse symptoms which act as direct obstacles to improvement must be removed; among these are sleeplessness, neuralgia or headache, worry, indigestion, etc.

2. Local disorders which are maintaining or aggravating the nerve weakness must be radically cured; such are eye-strains, irritations about the nasal passages, stomach disorders, irritations, congestions, and relaxations about the reproductive organs in either sex. Many of these local disorders are obvious, others are unsuspected or masked, and are only ferreted out by the comprehensive knowledge of the physician.

3. Brain and nerve nutrition. The central nervous system must be reinvigorated, or recharged with vitality. This renewal of vital force is possible, in a greater or less degree, in nearly all cases, but especially in the young; this is not effected by stimulation, which is temporary and injurious, but by gently and surely toning and building up the tissue and capacity of the nerve-cells, to stay so. This last result is often possible only after the other two principles of treatment have been effected.

To accomplish these results, the physician has choice of a great variety of remedies, and is offered a wide field for the exercise of his judgment. The remedies used against nervous impairment may be ranged in two classes:

first, hygienic remedies, the healing power of nature, when nature is given a chance; second, the medicines and procedures which scientific medicine has learned in centuries of experience and study. In most cases, both classes of remedies are needed to effect the cure. In some cases, health is restored by means of hygienic remedies alone, without the use of drugs or of surgical skill, but it is seldom that the reverse is true, and that medicine and local treatment cure without some obedience to those natural laws which rest, immutable and inexorable, upon every human life.

REST AS A REMEDY

The "Rest Cure," in some form or in some degree, is one of the essential factors in the treatment of nearly every case of nervous impairment; it is the foundation remedy. Rest is brain and nerve economy. When disease has been brought on and is being maintained by an excessive expenditure of nerve-force, it would seem a simple proposition to lessen that expenditure. But simple as this logic is, the inability or refusal of many persons to realize it is the one thing that renders their cure impossible. When a patient becomes well impressed with this principle of brain and nerve saving, of the prudent management of his or her particular nervous resources, I consider that he has made a long stride toward health. The comparison of nerve-force with money has long been a favorite one with physicians, and "nerve income," "nerve expenditure," "nerve failure," "physiological bankruptcy," "below par," are phrases in common use as illustrations.

Most men are careful of their money; they realize that when their capital is slowly and surely diminishing, they are in a bad way. When the merchant's profits fall below expenses, he does not buy a lottery ticket and continue,

but reduces expenses and practises a careful economy until business is better. But when the same merchant finds his health becoming injured from over-work, he is not apt to practise a like wisdom in respect to his life-force that he does in respect to his money. It is hard to get him to cut down expenses at a time when he should; he demands a "tonic," and relies on that. Brain and nerve economy is not usually popular with patients; it interferes with their plans, and involves sacrifices, efforts, trouble; the hypophosphite and the nerve-food man seem to offer a much pleasanter means of cure.

Sleep is the most valuable form of brain-rest. During the hours of sleep the output of nerve-force is reduced to a minimum, and at the same time the blood is busily repairing the wear and tear of the day. The oxygen of the blood unites with the worn-out tissues, and heat is evolved in this process. This heat is converted into vital force, as the heat of an engine may be converted into electricity for lighting or other purposes, which vital force is stored up in the brain-cells for use the next day. Thus, each morning we awaken with our brain and nerve tissues charged with the vigor of life. Sleep, which the poet long ago described as "tired nature's sweet restorer," has in these days become a remedy; and in the great asylums and hospitals where nervous and mental disorders are treated, the value of prolonged sleep is understood and utilized.

Sleeplessness is a frequent phase of nervous impairment. There are two elements of a good night's sleep—getting to sleep, and staying there. When the circulation of the blood is badly managed and unsteady, as explained in the preceding chapter, the nervous invalid may find it impossible to get to sleep because the brain remains engorged with blood; again, the irritable brain-cells have

the faculty of easily attracting an increased blood-flow to the brain, whence the enfeebled blood-vessels are unable to remove it, and he wakes easily in the night, and perhaps tosses from side to side for hours.

Many devices are in vogue to enable the nervous to get to sleep and stay there; they are all based upon one or the other of these two principles :—withdrawal of blood from the brain, and soothing the brain-cells irritated by the day's experiences. A light supper of raw oysters, or a crust of bread, with maybe a glass of beer at bed time may divert the blood-wave from the brain to the stomach and induce sleep. A short walk in the open air, a brisk rubbing with a flesh brush or coarse towel, or a hot bath may act in the same way. A half-hour of light reading, or better yet music and cheerful conversation, or a cigar, may so tranquilize the irritable brain-cells that sleep is possible.

A patient who has tried all the common plans against sleeplessness informs me that a dozen or twenty deep inspirations are most effectual; this rapid loading of the blood with an excess of oxygen acts as a gentle stimulus to the brain-cells and to the circulation. The practice of counting is sometimes effective by displacing other thoughts and by the soothing influence of the monotonous impression.

When simple plans do not succeed and sleeplessness becomes habitual the aid of the physician must be invoked. Prolonged insomnia may lead to the gravest results; it is sufficient of itself to produce not only complete nervous exhaustion, but even mania and other forms of true insanity. The careful physician of to-day only makes use of chloral and other dangerous drugs as a last resort. By means of hot bathing, the Turkish bath, massage, electricity, and a certain principle of pressure

over the great blood-vessels of the neck it is often possible to manage insomnia without the use of drugs.

The genius of modern chemistry has, within a year or two, furnished the physician with some valuable drugs against sleeplessness, which have the great advantage of being comparatively harmless.

In those callings requiring night work and day sleep the day sleep can never be made to yield the same restoration of nerve-force, nor to afford the same rest to the brain-cells that night sleep does. The nervous organs are very susceptible to the stimuli of light and sound and thus a degree of tension is maintained even in apparently sound day sleep; but even where a perfectly quiet and darkened room is available for day sleep some element of natural sleep seems to be wanting.

Change is one form of brain and nerve rest the principle of which has been explained on page 15: social evenings, holidays and vacations may be made literally re-creative.

A long vacation is sometimes the best remedy in nervous impairment; if this involve considerable pecuniary loss the reader must lay his money and his vitality in the scales and choose; lost money is sometimes more easily regained than lost vitality. A few months spent largely out of doors amid the agreeable surroundings with which this State abounds, will generally do what no medical art can do, and may prevent disaster.

Trips to Europe, the tour of the great cities or of fashionable watering-places and much railroading, are, as a rule to be avoided when change is sought for the benefit of an impaired nervous system; the excitements of travel act as stimulants; the victim of over-work may feel better for a time, but the sight-seeing is generally

overdone, the expenditure of nerve-force is kept up, and no permanent benefit is derived.

In many cases the two indispensable remedies are out-door air—ten or twelve hours daily, and quiet unexciting surroundings.

Some men whose lives have been absorbed in business lose all interest in anything else, and when turned out into the country by the family physician for a "change of air," find the life intolerably monotonous and irksome, and soon return to the city and work. When the case is serious it is worth the while of such a man to deliberately cultivate a taste for a quiet rural life.

Fortunate the man who has early acquired a taste for landscape and color; or for whom some little knowledge of geology makes all the ground a vast and interesting book which he who runs may read. For a nervous system weakened and irritated by the experiences of city life, gardening, or the calm intellectual diversions of the amateur naturalist, botanizing, sketching, collecting, and the walking and climbing which they involve are the perfection of exercise and change, as Tyndall's Hours of Exercise in the Alps was the perfection of those recreations for healthy men.

There are many pleasant guides to the appreciation of out-of-door sights and sounds. A score of charming out-door books teach the possible "harvest of a quiet eye." Clarence King's Mountaineering in the Sierra Nevadas, and the whole fascinating literature of mountain-climbing, Tyndall, Whymper, and the rest, can hardly fail to inspire the most inappreciative with a new interest in life. Before going to the seaside, there may be obtained any one of half-a-dozen primers of marine zoölogy, which will convert a common-place sea-beach into a fairy-land abounding with objects of interest and beauty—especially

if such a book as Charles Kingsley's "Glaukus" happen to be the one selected.

In some cases where the nervous resources have been irrecoverably overdrawn the best course is to retire once and for all from the ceaseless wear and tear of city life and make a home in the country; this is a grave alternative but it is sometimes the only one.

Unfortunately the advice given above is not practical for a large proportion of the overworked; they are neither able to take long vacations nor to abandon their posts; they *must* work and they cannot help worrying.

But even in these cases the physician may point out ways in which the evil may be greatly lessened, and to do this is one of the main purposes of this chapter.

Many men will be able to reduce nerve-expenditure outside of work sufficiently to keep even; the lodge, church, and other forms of night and Sunday work, or the worrying and scheming which many men do out of work hours may be the straw that breaks the camel's back. Let those social obligations which are not recreations be sacrificed and the hours of sleep increased; if such a man can habituate himself to sleep ten or eleven hours so much the better, for, as we have seen, sleep is nerve income.

Worry, as the reader probably knows, is seldom suppressible by effort of the will; this evil must be met by a method of substitution or displacement; it must be kept out or crowded out; to this end cultivate a hobby.

I believe that music can be made a valuable remedy in many cases of nervous impairment. I know a man who, when evening finds him harassed, anxious, excited by the experiences of the day, takes out his violin and soothes his irritated brain and allays the tension of his strung nerves by the simple melodies which he is able to play.

An hour of cheerful, agreeable music before retiring is worth the trial of any victim of nervous insomnia; the fact that the invalid has no skill or ear in music need not deter him from a trial of this advice. He must remember that the purpose of learning and performing is not so much the edification of others as the soothing of his irritable nerve-cells, and the keeping out of worry and care. Some such quiet method is suitable when the theatre or even a social evening away from home would be too exciting or too tiresome. The subject of nervous impairment should train himself to avoid, as far as possible, all work and worry outside of business hours. Conjugal duties must be reduced to a minimum. So, too, it may be necessary to effect a complete change in the daily life of the woman of fashion or of the overworked mother and housewife. With many thin, nervous, irritable school-children, almost the only treatment necessary is a year's vacation, spent, as much as possible, in the open air.

Of course the principle of rest, or nerve economy, is especially indicated in all local forms of nerve-weakness; over-used eyes, vocal organs, stomachs or sexual organs must be rested by a *régime* of strict temperance, or, in some cases, of total abstinence for a time.

OXYGEN AND EXERCISE.

We have noted the part that oxygen, the essential element of the air we breathe, plays in the production of nerve-force. Oxygen reddens the blood; when the dark, almost black, blood of the veins is exposed to the air in the lungs, it instantly takes on the vivid scarlet hue of arterial blood. A daily full supply of out-door air is the most valuable tonic and vitalizer for the nervous system in existence,—without any exception.

One to six thousand lungfuls (not sniffs) of out-door

air taken daily for a few months will accomplish more toward restoring the vigor of an impaired nervous system than will phosphorus, hypophosphites, iron, quinine, strychnine, coca, or any of the other substances classified as nerve-tonics, and more than the wisest combination of these medicines can accomplish, without this remedy.

Oxygen exerts a direct, positive, certain influence upon the nutrition and life of the nerve-cells; under its influence nerve-force is made more rapidly and in larger quantity, and a larger amount of food is able to be assimilated; it is a tonic in the best sense of that much-abused word. For these reasons, nervous invalids should spend as much time as possible in the open air. I do not mean to advise an indiscriminate exposure to all weathers for feeble persons; this oxygen, like all remedies, may be so unwisely used as to do harm, and here **climate** is often an important adjuvant or corrective element in the treatment.

The mild and equable climate of California, by permitting the full and continued use of out-of-doors as a remedy, is as valuable to the nervous as to the consumptive. With respect to climate, my experience is that a moist sea-coast air will benefit a larger proportion of cases than a dry interior climate, when the nasal passages or lungs need not be taken into consideration. The question of climate is best decided for each by the physician who knows him best; but, whether sea-air, with its medication of sea-salts and iodine, or the balsamic, ozone-charged air of the mountains be resorted to, benefit will be likely to result. Simple change from accustomed air is often more valuable than any particular climatic quality. Residents of the hot, dry valley and foothill region of California are benefited by a visit to the coast, and for some of these persons, in winter, the city, with its miles of dry sidewalks, its cable-cars, and the innumerable mental

diversions to be found there, is the best place to seek a change of climate; the city is a delightful play-ground, though it is apt to be a hard work-shop.

For the residents of the city in which I write the Santa Cruz mountains offer many advantages. In this region is to be found a beautifully clear atmosphere, where the smell of the sea is mingled with the spicy fragrance of the redwoods, and where, within the radius of a few miles, a great variety of charming landscape encourages the stranger to walk or climb. Southern California is a naturally charming vacation ground, and its value to the depressed and enfeebled nervous invalid is enhanced at this time by the cheerful, hopeful, bustling character of its population; the moral atmosphere is as tonic and piquant as the physical. For the stranger Mr. Van Dyke's valuable book,[1] Mr. Roberts' Santa Barbara,[2] and the widely-read "Ramona," are three most pleasant introductions to this favored region.

The Sandwich Islands trip is a good remedy for many nervous invalids. The sea voyage is not too long—about seven days by steamer, and the moist, equable climate of the islands exerts a soothing influence upon an irritated and weakened nervous system. The effect of the complete change of scene and daily life is also very valuable.

Exercise is a good remedy in nervous debility, but it must be proportionate to the strength of the individual—like a bottle of medicine, it has its dosage and its directions for use. Exercise of the muscular system has long been looked upon as a kind of antidote to the ill-effects of a sedentary life, and muscular development has been

[1] Southern California; Its Valleys, Hills and Streams; Its Animals, Birds and Fishes; Its Gardens, Farms and Climate, by Theodore S. Van Dyke: New York, 1886.

[2] Santa Barbara and Around There, by Edwards Roberts. Boston, 1886.

confounded with health. By a system of training, a man may build up large muscles and yet be far from well, and it is a fact that professional athletes are, as a class, short-lived. The chief value of exercise in nervous impairment is the loading of the blood with oxygen, and, for the nervous, exercise should be modified in three ways: It should be moderate, it should be agreeable, and it should take place, as far as possible, in the open air. Muscular exercise involves the expenditure of nerve-force, and he whose nervous resources are limited should be careful not to expend too much in this direction. A half-hour at tennis may leave a man glowing and invigorated, when two hours of it will fag and injure him. For the comparatively strong who are suffering from some of the minor forms of nervous impairment, long days of hunting or fishing, mountain-climbing, which, according to Tyndall, "rescues the blood from that fatty degeneration which a sedentary life is calculated to induce," or even regular labor in the orchard or vineyard may be of great benefit, but for more or less enfeebled persons some light form of exercise, as walking, riding or sailing, is best. Solitary exercise in the gymnasium is of little benefit to the nervous; the putting up of dumb-bells, the use of the health-lift, and the various devices resorted to from a feeling of duty are, so far as the nervous system is concerned, far inferior to merely sauntering in the open air. Frequent holidays, vacations and Sundays spent out-of-doors will enable many an overworked and worried city man to hold his own in the face of very adverse circumstances.

CONCERNING BRAIN AND NERVE FOODS

Chemical analysis shows that the brain is composed chiefly of water, fat, albumen and phosphorus. The nutrition of this brain and nerve tissue may be analyzed

into three elements: First, the food; second, the digestion of it; third, the picking up from the blood by the brain and nerve tissues of those substances which they require—the assimilation of it. Thus the mere swallowing of any substance is at most only one-third of the way to brain and nerve feeding. When the cells of the nervous system become weakened from any cause this weakness involves their whole physiological life. Not only is their function of giving out force impaired, but their power of attracting and appropriating nourishment from the blood-current is also impaired.

The vigorous young nerve-cells of a country boy will extract from even a poor diet an abundance of nerve-force, which is exhibited in his firm flesh, toned muscles and tireless activity. The enfeebled nerve-cells of an aged millionaire cannot extract from the most succulent and nutritious diet a similar amount of force; his flesh is flabby, his muscles unsteady and his powers limited. This may serve to illustrate why nervous invalids derive no great benefit from preparations of phosphorus and substances supposed to be "nerve-foods." If these drugs were far more nutritious than they really are, and if the blood of the man with weakened nerve-cells were loaded with phosphorus, benefit would not necessarily result. The weakened nerve-cells can only assimilate a limited quantity of phosphorus, and when this substance is brought to them in unusual amount by the blood, it is unused, carried away again and excreted from the system.

The brain and nerves feed upon the blood, and a rich, pure blood, well charged with oxygen, is the best nerve-food. This quality of blood is best made from natural foods; it is hard to improve upon the Creator's method of blood-making.

Whenever my reader feels that he needs a nerve-food

the wisest thing he can do is to put himself in the hands of his physician, but if he is not quite wise enough for this some suggestions will be of value to him.

A full daily supply of out-door air is of the first importance in brain and nerve feeding. This oxygen must be taken every day, and the more the better, for it is one of the few remedies that is not apt to be abused. If my reader have no respect for nor confidence in a remedy so cheap and simple, the oxygen can be had of certain manufacturers in rubber bags at so much per gallon. This roundabout way of using oxygen is not nearly so efficacious in nervous exhaustion as the out-door plan, but it seems to suit some persons better. Lest I be suspected of being more enthusiastic than sound upon this subject, I will attempt to explain, briefly, the relationship which exists between oxygen and nerve nutrition; to make this explanation complete necessitates the repetition of a statement, but repetition is one of the essentials of good teaching.

1. Oxygen is the most efficacious known tonic for the nervous tissues; it comes into direct contact with the brain and nerve cells, vivifies them, and helps them to help themselves; by improving the vigor of the nerve-cells it improves the digestive power which depends upon these nerve-cells, and thus insures a better quality of blood.

2. The reduction of food in the stomach and intestines to a liquid is not the whole process of blood-making. Before this nourishing fluid, chyle, reaches the general circulation a large part of it must pass through the liver, where it is subjected to some important modifications. Of this food-stream, the starches, sugars and alcohol are partially burned up—by chemical union with the oxygen of the blood—they are oxidized, and in this process animal heat

is evolved; we have already noted that heat is convertible into nerve-force. The peptones, which represent the more hearty foods, the meats, etc., are also subjected to the action of oxygen. These nitrogenous foods, or peptones, are usually eaten in larger quantities than the body has any need of, and one of the uses of oxygen in the body is to dispose of this surplus—to so change it that it can be excreted from the system. It does this by oxidizing the excess of meat-food and gradually converting it into a substance called urea. This urea, the product of perfect oxidation, is unirritating and soluble in the blood, and thus is able to be filtered out through the kidneys without injury; the urine is largely a solution of urea. When the amount of oxygen in the blood is not proportionate to the amount of food, either as a result of sedentary habits or of over-eating, or of both together, this process of oxidation is imperfect; the resulting waste substances fall short of urea; they are more irritating; they are not very soluble in the blood, and hence are not easily removable by the kidneys. In short, they act as unnatural and poisonous substances in the blood. These abnormal products of imperfect oxidation are known as uric acid, lithic acid and oxalic acid, and the condition in which they are present in the blood is called lithæmia, or lithiasis, and is at the bottom of some of the gravest diseases.

These substances may assist to form an abnormal and excessive quantity of bile—"biliousness," "bilious colic;" they may be laid down in the joints or attack almost any tissue in the body—gout; they may irritate and eventually cause disease in the blood-vessels through which they are borne—apoplexy, aneurism; they may irritate and set up a chronic inflammation of the kidney—

Bright's disease; they may form collections in the urinary passages—stone in the bladder.

Nervous, overworked men are often great consumers of meat; they eat it by instinct to repair the waste of excessive work. When such a man spends most of his time indoors, breathing with only the upper half of his lungs, his oxygen supply is not apt to be great enough for perfect excretion, and he may eventually suffer from some of the troubles mentioned above.

There is a class of people who are not nervous, in whom a rich diet, a poor oxygen supply and a free use of alcoholic drinks sooner or later produce some of the graver forms of lithaemia—most often Bright's disease. Alcohol uses up oxygen very quickly, and leaves little behind to attend to the oxidation of surplus meat foods, and in addition, alcohol is itself irritating to the kidneys, liver and blood-vessels. Lithaemia in some of its forms is the national disease of the beef-eating and spirit drinking gouty Englishman, as neurasthenia is the national disease of the overworked neuratic American.

But no theory of science is needed to convince my reader of the value of oxygen in nerve-feeding if he will recall his own experience; most men know that they can eat, digest, and use up a much larger amount of food when their days are spent in the open air, than when they are spent in a stuffy office or workshop.

Coming now to actual foods, the fats stand highest on the list for the nervous—cream, fresh butter, the fat of roast beef and of beef-steaks; the brain is rich in fatty substances, and fat goes to make heat and force. Fats, while highly nutritious to the nerves, are not so easily digested as lean meat, but, by keeping up his oxygen, the nervous invalid will find himself able to manage more and more of these substances. I am aware that nine men in

ten who read this book probably abhor fat meat, but I advise such to begin with small quantities and cultivate a taste for it. Cod-liver oil is a valuable food for the nervous when it can be managed by the stomach. I prefer the plain oil to any of the numerous emulsions and compounds; the best way to take it is to float the oil on the top of a very small glass of beer, between the beer and the froth, and swallow it at a gulp. But if cod-liver oil does not agree it had better be avoided, since it has no especial medicinal advantages over cream; it is simply one of the most assimilable forms of fat.

Next in value to the fats are the unbolted cereals; first of all, wheat, then oats and corn. Cracked wheat and cream is an ideal nerve-food. Corn-bread, the "johnny-cake" of New England, made of corn meal, eggs, and flour, thick, light, warm, and soaked with fresh butter, is a better nerve-food than can be found on the druggists' shelves. Roast beef or juicy steaks are rich in the elements of brain nutrition, the phosphates of lime and soda, and the fats, besides yielding a larger amount of force to the mouthful than any other food. The preparations of phosphorus that are put up by the Creator in such inimitable packages, in the germ of wheat, oats and corn, and in meats, have great advantages over the artificial products of the laboratory; they are more easily soluble in the digestive juices, and more easily assimilated by the tissues, because they are natural. Fresh fish and shell fish are light, easily digested foods—when properly cooked—but they have no special value as brain and nerve foods. Celery, I may remark, since I have been often asked concerning it, has no value whatever in nerve-nutrition. The man with any stomach at all, who cannot make brain and nerve tissue and force upon the diet I have indicated, will not be likely to find it in any

product of the chemist's skill; but I again remind my reader that the food supply must be sustained by, and proportionate to, a proper oxygen supply.

TEA, COFFEE, TOBACCO, AND ALCOHOL

are rather causes than remedies in nervous impairment, but it has seemed most convenient to discuss them in this chapter.

Concerning these substances it is not possible to make one rule for the whole human race; used temperately they add a great deal to the comforts of life; used intemperately they may create great mischief; thus a danger lurks in their moderate use. Coffee and tea are both stimulants to the nervous system, and their habitual use probably increases the sensitiveness of the nervous tissues; used intemperately these substances may induce a high degree of "nervousness," manifested in trembling fingers, palpitations, disordered vision, or indigestion.

Tobacco in small quantities is a stimulant to the nervous system of the habitual smoker; it promotes the flow of ideas, increases digestion and circulation by its stimulant effect upon certain nerve-centers in the brain, and it slows the processes of tissue waste. Used in excess it becomes an irritant to the nerve-centers; the heart may become irritable—"smokers heart;" the digestion may fail, the eyes may become weakened, and trembling fingers betray the irritated and weakened condition of the nerve-cells within. Gentle rubbing a flea-bite soothes the irritated skin; prolonged scratching may destroy it, or set up an inflammatory skin disease. So, tobacco, used in moderation, by its gentle stimulant effect counter-irritates and soothes the brain and nerves excited by the experiences of the day; prolonged or excessively used, it becomes an irritant. It is one of the principles of

physiology, that persistent irritation—over-stimulation—of any part eventually ends in exhaustion. The fact should be remembered, that persons of a nervous constitution and persons living a sedentary, indoor life, are more susceptible to the action of stimulants and narcotics than others, and that they are more liable to abuse, and to be injured by them. With respect to the use of tobacco by children and immature youths there can be but one opinion; it is an evil so great and so important in its relation to the public health as to justify its suppression by legislation.

Alcohol in small quantities is a gentle stimulant to stomach, heart and brain; used in excess it is one of the surest and most efficacious brain and nerve poisons that we know.

The use of alcohol should be limited to taking a little wine for the stomach's sake; a glass of light wine is a valuable addition to the dinner of many nervously-impaired persons.

The habit of drinking whisky between meals is a bad one for a healthy man, and is highly injurious to him whose nervous system is his weak part. Without considering the irritant effect of the alcohol upon the delicate stomach lining and liver tissue, that proportion of alcohol which escapes unoxidized through the liver, in circulating, passes through the finely organized brain and nerve tissues, upon which it exerts a distinctly poisonous effect. Neither wine nor whisky should ever be used as "bracers," or stimulants to the nervous system. The plan of working, or "keeping up" on stimulants so common is disastrous; no one can long follow it without paying some, often a severe, penalty.

Many of the patented preparations, to be found in so great variety in the drug-stores, with the seductive names,

"tonic," "restorative," "rejuvenator," "nerve-food," are simply stimulants, alcoholic or drug, and do the harm that all stimulants do. "The ladies' tipple" is a phrase which a recent writer has applied to that omnipresent and taking mixture—"beef, iron and wine." The composition of this compound varies with the consciences of the druggists who make it, but it generally contains a good deal of wine, and a very little of iron and beef. The popularity of this mixture is a good illustration of the superstitious faith that people are apt to put in drugs. One would suppose that when a man had decided to take beef, wine and iron, he would prefer juicy steaks and roasts, with a quality of wine of his own choosing, and the iron by itself; but the mixture representing the virtues of dog-meat and cheap wine, manufactured to reap as great a profit as possible, has, in his eyes, acquired some strange power in passing through the hands of the apothecary.

BATHS

are remedies of great value to the nervous. The cold sponge bath (which requires only a large bath sponge, a bowl of water, and a piece of oil-cloth) taken immediately on getting out of bed, and lasting perhaps a minute, is a valuable tonic, and is as strong a form of cold bathing as is advisable in many cases. In persons who have plenty of blood, the cold shower, or the plunge bath, taken in early morning or in mid-forenoon, may be better.

This question of cold bathing is to be decided by the effects which it produces; if the individual comes to the breakfast table after his sponge, sheet, or shower bath, warm and glowing, the bath has done good, but if the flesh is cooler than before the bath, or if a feeling of slight chilliness is experienced, the cold bath has done harm.

Many persons make too long a use of the cold bath. A half minute, or a single minute, spent in passing the sponge over the limbs, chest and spine, followed by vigorous rubbing with a coarse towel, will often result in a fine reaction and a warm glow, when five, or even two minutes would be too long.

There are doses of cold bathing as well as of other remedies, which must be regulated by the powers of the individual. In some, generally thin, persons any form of cold bathing has a depressing effect, and is inadmissable.

The warm or hot bath is safer for the thin and the enfeebled than the cold bath; it does not abstract heat from the body as the cold bath does. The popular impression is that warm baths are weakening, and this is true if they are too prolonged. But a five minutes' hot bath, to which two tablespoonfuls or more of salt or mustard has been added, acts as a tonic, and produces better effects in many persons than the cold bath. In cases of sleeplessness a short hot bath at bed time will often procure sleep without drugging. I think highly of short hot salt-water baths.

Local Bathing of various kinds is a remedy of the highest value in the various phases of nervous impairment; as a means of local treatment I have found hot water greatly superior to cold.

In the various weaknesses and congestions about the female reproductive organs the local use of medicated hot water is more efficacious than any other single remedy, and in the various irritations and relaxations about the male reproductive organs I use hot medicated solutions, externally and also internally, by means of certain contrivances, with the best results. Weak and irritable eyes are generally more benefited by hot or warm washes than by the cold ones so often recommended. When a weak-

ened nervous system includes among its other enemies, some chronic inflammatory process about the nasal and other upper air passages hot medicated solutions and sprays form an important element in the treatment.

In certain catarrhal conditions of the stomach as well as in other forms of dyspepsia, washing out the stomach with various medicated waters by means of a long flexible tube is of great benefit; this *lavage* is more used by European physicians than by Americans.

Sea Bathing as a remedy ranges all the way from a powerful tonic to a powerful depressant, according to circumstances; as a rule it is not adapted to thin or to weak persons. By the robust it is often overdone and made to produce depression rather than elevation of the vital powers. I advise my reader to be guided by medical advice before resorting to this form of bathing. The hot sea-water baths, to be found at most seaside resorts, are much more useful, in a large proportion of cases, than open sea bathing.

The *Turkish* or hot-air bath is very valuable in suitable cases as a powerful sedative to the nervous system, especially in cases of sleeplessness, but it has its dangers, and more than any other form of bathing, requires to be directed by the physician.

THE USE AND ABUSE OF DRUGS.

The development of the scientific method in observing and in thinking has given rise to a scepticism in medicine as it has in theology; experienced and scientific men come forward with such subversive statements as that quinine is of little value in typhoid fever, that strychnine will not cure paralysis, and that phosphorus is worthless as a brain tonic.

To read some of the standard treatises upon materia

medica, a layman might suppose that all diseases were curable or relievable by drugs, but the best medical thought of to-day tends toward a less and less use of drugs, and a greater and greater reliance upon the healing power of nature when encouraged by hygiene and good nursing.

Drugs have fallen to a secondary place as remedies; they are useful, often indispensable; they do not so much cure as assist to cure; they are not now the first remedies thought of by the wise physician nor the ones upon which main reliance is placed.

In practice there is a great pressure brought to bear upon the physician to use drugs, and many physicians yield to this pressure against their best judgment. People do not understand curing without medicine, and, what often influences the physician more, they are not willing to pay for such treatment. There is a feeling that without the prescription nothing has been done; and (will the reader believe it) there are persons who, even when the life of a loved one is at stake, are too selfish, too careless, or too unintelligent to carry out the necessary nursing; in such cases the physician must do the best he can with drugs.

Sufferers from any form of chronic disease often become addicted to self-drugging. There seems to be a tendency in human nature to search for some mysterious substance to charm away disease, or to renew the vigor of youth; the history of Ponce de Leon is daily repeated in every drug-store in the land.

Remedies about which there is no mystery—sunshine, pure air, proper food, and correct habits are not very popular, although their value is felt and admitted. In spite of repeated disappointments the sick turn again and again to the druggist; the druggist himself is not apt to

use much medicine—for him the element of mystery is lacking.

A glimpse at some of the conditions which affect the writing of a prescription may indicate that drug-giving is a more intricate science than is generally supposed.

1. The effect of most medicines varies greatly with the dose in which they are given; quinine in small doses is a very good remedy in certain headaches; in large doses it often causes terrible headache; opium in small doses strengthens the heart; in large doses it weakens it to death; ipecac is one of the surest emetics; it is also one of the best medicines to arrest vomiting; arsenic, in large doses, poisons to death by its irritant effect upon the stomach; in small doses it is successfully used to soothe the stomach and to allay vomiting; calomel is a powerful purgative—it is used extensively, in small doses, to soothe the irritated stomach lining.

2. The length of time any drug is continued affects the result. All the "bitters" and stomachic tonics, which at first increase the digestive power if used too long cause dyspepsia. Over-stimulation ends in exhaustion. The same principle applies to purgative pills. Here is one of the ways in which unwise drugging does harm. Many persons reason that if one bottle is good twelve bottles are twelve times as good, they pass in the dark the point where the medicine ceases to be of any use or becomes an injury, in their particular case. This over-doing is a characteristic of domestic treatment. It is not uncommon to meet persons who have been having some prescription refilled for years, not knowing that the fact that it did them much good at one time, does not prevent it doing them much harm later. The "tonic" habit, the "bitters," and the purgative pill habits are as injurious in their way as the morphine, chloral and alcohol habits.

For many years the liver was a favorite talisman with those persons who live by playing upon the fears of the sick, but lately the kidneys have become a favorite organ, as affording even a greater scope for business enterprise. Most of the "kidney-cures" advertised so freely, are to the kidneys what a drastic purgative is to the bowels—they "scour them out." Some kidneys need a drastic influence, and the individual feels better after using these compounds, but their continued use, or their use in persons whose kidneys happen to be irritable, sensitive, congested from exposure to cold, or some other cause, or in persons who have inherited a tendency to inflammation of the kidney may easily result in incurable Bright's disease.

3. *The Combination of drugs*, so that certain powerful ones are modified, corrected, assisted, is a principle of drug-using that has made great progress in modern medicine; this principle is especially valuable with "neurotics," that class of medicines used to affect the nervous system.

4. *Age*, *temperament*, *inherited tendencies*, *climate*, *occupation*, and many other circumstances influence the choice and the dosage of drugs; twin brothers having the same disease, might require altogether different medicines and directions.

Many cases of nervous debility are best cured without the use of any medicines whatever; all they need is good advice, and the wisdom to follow it, to get well. There is a class of patients which comes to the physician with a history of prolonged and copious "medicine-bibbing and drug-tippling" as it has been termed. They have "tried everything" and doctored for every chronic disease, with physicians of every school, including magnetic healers and the faith-cure, and the physician feels that he is in

the presence of a very experienced patient indeed. It is not always that this class of patients can be sufficiently controlled to get well; but when they can be, it is remarkable what results can be produced by a course of treatment which may not include a single teaspoonful of medicine.

Phosphorus.—The various preparations of phosphorus have considerable value in nervous debility when they are properly used. Immense sums are annually expended in this country to persuade nervous invalids that phosphorus is a specific for weakened brain and nerves. The logic of the nerve-food man is plausible, and commends itself not only to the ignorant but to the most intelligent. But, in medicine, good logic is not always good practice. The literature of medicine is full of good theories that cannot be made to work in the sick-room. There are good chemical theories for the cure of diphtheria, consumption, diabetes; but the working physician is not able to realize their promises. The chemist can formulate a perfect theory for making thin people fat, and fat people thin, but it has a very limited use in real life.

Phosphorus exists in the body of an adult to the amount of about $1\frac{6}{16}$ pounds; this occurs chiefly as phosphate of lime, phosphate of soda, and is found in the brain and nerves in peculiar compounds, the secret of which even the wonderful chemistry of to-day is not able to entirely discover.

The diet in daily use by even poor American men and women contains more than enough phosphorus, in a natural form, to maintain the needs of the body. If, during excessive nerve-waste from overwork, or any cause, the supply of phosphorus is artificially increased, it acts, for a short time, as a stimulant. Under the

stimulus of a strong, rich food supply the tired nerve-cells are enabled to do their work more easily; the individual feels better. But, very soon, the capacity of the nerve-cells to assimulate an unnatural quantity of nutriment becomes exhausted; they get dyspeptic, as it were, and, as the unnatural phosphorus supply is brought to them by the blood-current, they refuse it, are unable to use it, and it is borne away again to be excreted from the system. Thus, in the end, much of the expensive bottle of hypophosphites finds its way to the water-closet. If the course of phosphorus be wisely managed, if the patient's nerve-waste be cut down, and natural remedies be brought to coöperate with the medicine, it may produce permanent benefit. But if the patient has continued his nerve-expenditure, or perhaps increased it, under the stimulating influence of the drug, the result is that when the nerve-cells have cloyed upon their high-pressure diet of phosphorus, they are less able than before to manage the natural phosphorus supply of the food. These remarks apply particularly to phosphorus pills and the hypophosphites. It is my opinion that the reader may use the phosphate of lime and phosphoric acid *ad libitum*, for the reason that they do not reach the nervous system at all, the former becoming insoluble in the digestive juices, and the latter forming phosphates that are likewise not absorbed. Phosphoric acid, however, has some value in other directions.

The late Dr. G. M. Beard, of New York, who probably treated more cases of nervous exhaustion than any other man, wrote—

"Of phosphates this can be said, that, like iron and quinine, they belong to the list of over-praised and over-used remedies, at least in their relations to neurasthenia . . . . . these phosphates and phosphoruses and phosphites are good remedies in nervous troubles, but if they had anything like the specific power

claimed for them, there would be little need for treating these cases; most of the patients that I see have taken them in abundance. All these stock remedies have a certain power which, in very many cases, they soon expend. They reach the limit of effect, beyond which they cannot be forced."

Dr. Samuel Wilks, whose opinions are received with respect by the medical profession on both sides of the Atlantic, in a recent address, says:—

"I never remember seeing more than one patient the better after taking phosphorus, and therefore I am bound to look upon this as a coincidence. In my private pharmacopœa I have attached to the word phosphorus, the name 'humbug.'"

My own faith in phosphorus is greater than that of Dr. Wilks, but I quote him for the benefit of such of my readers as may care to compare the conclusions of an experienced and scientific physician with the statements of some of the many shrewd advertisements with which the journals of the day abound. The ignorant use of phosphorus may occasionally have serious results, and a case was recently reported in which a woman had taken a phosphorus pill three times a day for two years, to strengthen her brain, with the result of causing a chronic inflammation and partial destruction of one of the bones of the face.

One of the worst cases of nervous break-down that I have ever seen was in a young married man, aged thirty-three, a victim of over-work and other excesses. He informed me that he had been taking a preparation of the "hypophosphites of lime, posash, manganese, iron, quinine and strychnine," which I found by his bedside, daily for over a year. It had been recommended to him by a neighboring druggist, and my patient informed me that it had done him a great deal of good. This young man, with his emaciated figure, sallow cheek and lustreless eye, was a picture of premature old age. One great

injury which patented medicines do by their fine promises is that they encourage the nervous to rely on them to the neglect of other and wiser measures.

The Brain and Nerve Poisons.—Many of the phases of nervous debility, such as sleeplessness and neuralgia, are intolerable, and have lead to the popular abuse of certain powerful drugs. The rapid increase of the "drug vices" is exciting the gravest apprehensions among sanitarians.

Chloral hydrate, the bromides, and morphine are powerful sedatives which exert a distinctly poisonous and degrading effect upon the nervous tissues; their prolonged use is capable of reducing the strongest intellect to a state of deplorable physical mental and moral weakness. The "curse of chloral" is working terrible injury among the great army of nervous women; this drug should never be used without the constant supervision of a physician.

Coca is a drug which is being exploited of late as a powerful nerve "tonic;" it is really a brain stimulant, and its use involves the dangers that the use of any stimulant does. Coca is a remedy of considerable value to the physician; in the hands of the inexperienced it is likely to prove one of those edged tools of which the adage speaks. Cocaine, the active principle of Coca, is capable, even when used in moderate doses, of producing acute poisonous effects, with delirium and delusions; an instance of this has lately passed under my observation. Caffeine and Indian hemp, like Coca, are brain stimulants of great use to the physician.

Concerning these brain and nerve poisons I wish to emphasize one fact; they are used temporarily to meet some emergency or to combat some symptom which is a greater evil than they themselves are. Their prolonged use is only justifiable in the gravest cases, and the

responsibility of their use at all, temporary or permanent, should rest upon the shoulders of a medical man.

Before leaving this subject, and at risk of prolixity, I desire to impress upon my reader the fact that a degree of wisdom is essential to get good effects from drugs. Wisdom is something more than intelligence ; it is intelligence plus experience. The girl of fourteen and the matron of forty may read the same novel, but how different are the pictures which its pages suggest to each. Physicians have constant examples of the fact that the judgment of the most intelligent man is worth little outside the range of his own immediate experience. Dr. Holmes, speaking of physicians, says: "the young man knows the rules, but the old man knows the exceptions," and before reaching the wisdom to effectually use drugs, the brightest intelligence must be qualified by years of observation in the sick room. All physicians know, in a general way, the same remedies; the difference in their treatment of disease is the difference in insight, in judgment, in carefulness. It is quite possible for two physicians to so use the same drugs, in the same patient, in the same disease, that one will produce exaggeration, the other alleviation of the symptoms. So let not my reader ever imagine that the prescription of some famous physician, written for another, will necessarily be of use in his case, for the most important thing about a prescription for the patient, is the wisdom which directs its use. The knowledge that decides what remedy to use, how long to use it, when to modify or combine it with other remedies, when to stop its use for a time, and when not to use it at all can never be conveyed within the limits of a patent medicine circular.

Here the story of one of my cases may be instructive. The patient was a very intelligent young man—a college

student. Some six months before coming to me he began to treat himself for nervous debility. He avoided all advertised nostrums, and procured standard medical treatises, which he studied carefully, yet the conclusions which he drew from these did him considerable injury. During most of this time he was taking phosphorus pills with other drugs such as strychnine and quinine, which he had learned were powerful nerve-tonics. He subjected himself to a daily cold shower bath as prolonged as he could bear; he exercised beyond his strength; he purchased an electric battery and used it for several months; but, concluding that it did him no good, he gave up its use. He thought and worried constantly about his condition. When he first came under my notice he was quite thin, visibly nervous, unable to study, his appetite capricious, and altogether he was considerably worse than when he began to treat himself. Upon taking charge of his case I abolished all medicines; his cold bathing I changed to a hot saltwater bath every other day, and devoted myself to curing certain local conditions of the reproductive system which were at the bottom of his trouble. When this was nearly accomplished his vacation came on, and I sent him to the country; he spent six weeks in the Santa Cruz mountains, and returned thoroughly well, having gained sixteen pounds in weight, and he has remained so since. One of the most important factors in the cure of this patient was the mental load which he got rid of in thoroughly understanding his condition and prospects, and in shifting the responsibilities of his treatment from his own shoulders to those of a physician.

The habit of self-drugging, so common among all classes, immensely increases the aggregate of medical practice, and it is not exactly worldly-wise in the

physician to advise against these aids to his business.

But here I may be pardoned an observation: there is a wide difference between the true physician and those merchants who reach after and treat the sick upon strictly business principles. The medical profession has its faults, but one of its glories is that the traditions of centuries, and a powerful professional opinion lead even a selfish man to place the welfare of his patient above his own pecuniary interests. What a contrast between this attitude, and that of those pretenders who "sell what never can be bought," or of those renegades from the principles of medical honor, who realize the words of the great Abernethy, "Medicine is the noblest of professions, but the meanest of trades."

LOCAL TREATMENT

When any local irritation, congestion, or weakness is at the bottom of nervous debility, either as a cause or as a sequence, and is keeping it up by its disturbing and depressing influence upon the central nervous system, local treatment is generally necessary to effect a cure. In some recent cases the healing power of nature, when permitted to act, will right the local trouble, but when it has become more or less chronic and firmly established, nature requires to be assisted by art, and here the physician with his knowledge of diseased processes and of anatomy, is most efficacious. The treatment of nervous indigestion is largely local; that of the various irritations, congestions, and relaxations about the reproductive organs in either sex is essentially local. General treatment and general medication can accomplish little, while the chronic local disturbance continues to act, but when this is cured by the various means at the command of the physician, the

central nervous system, in most cases, quickly responds to the influence of correct living, pure air, sleep, food, and suitable medication.

The chief local remedies used against the various forms of nervous impairment are: 1. Electricity; by means of appropriate "current-carriers" the electric current may be directed through almost any tissue or organ in the body. 2. The various local methods of using hot and cold water, medicated or not, internally as well as externally. 3. Local medication; by means of a variety of instruments, some of which are highly ingenious, the physician is enabled to make direct application of medicinal substances to the most remote and deep-seated parts. 4. Counter-irritation by means of rubifacients, the thermo-cautery and the galvano-cautery; this is a method which I find very useful in certain cases, never pushing it so far as to injure the skin or to cause much pain. 5. Various surgical and mechanical procedures are occasionally necessary.

ELECTRICITY

is one of the modes of molecular motion like heat, light, and sound, and is convertible into these forces.

Three kinds of electricity are used in medicine: 1, the Galvanic, or constant current, obtained from chemical action in a number of cells, from one to sixty; 2, the Faradic, or interrupted current; this is an induced or secondary current, obtained by the magnetizing and demagnetizing of a rod of soft iron, around—but not through—which a galvanic current from one to four cells is made to pass; 3, Static or Frictional electricity, developed by friction between large revolving plate-glass wheels and rubbers; in using this kind of electricity the patient is insulated and charged, like a Leyden jar, and

then, by touching his body in various places with metal rods, the electric force is drawn out at any desired point. With a good machine it is possible to draw sparks from one to twelve, or even more, inches long from certain parts of the body.

The two first mentioned forms of electricity are of the most value in nervous impairment. The galvanic current gives little or no pain ; it is a silent current of great quantity but of low intensity. The Faradic current, on the other hand, is readily felt, because of its high degree of intensity. The constant current has been compared to a mighty, slowly moving river ; the interrupted current to a rapid, leaping, noisy mountain brook. The current of frictional electricity has a high tension, but this form of electricity collects chiefly upon the surface of the body, and never penetrates very deeply below the skin.

When the electric current is passed through the body, several effects are produced, according to the kind of current used; the particular nerves it is made to traverse, the quantity or the intensity of it; the direction it is made to take, whether toward or away from the central nervous system ; the length of time it is used at each sitting; the peculiar susceptibility of the patient, and the *dosage* of it.

It is only within a few years that physicians have practised the measurement of the electric current, but this assistant to the remedial use of a powerful agent is most important ; the battery differs on different days ; ten cells on Monday may represent a different amount of electricity from ten cells on Tuesday ; again the patient's susceptibility and conductibility may differ on different days. In many cases in which electricity is used it is highly important to have a uniform, or slightly increasing dose at each sitting, and this result can only be attained by means of a delicate instrument called the milliampére-

metre. A recent writer remarks: "I can as easily imagine a drug store without scales as a medical battery without a metre."

The various remedial uses of electricity may be summed up as follows:—1. It is a powerful stimulant and tonic, not because it adds anything to the tissues in passing through them, but because it rouses them, stirs them up, revivifies or puts new life into them, and thus enables them to assimilate and make new tissue and force. 2. It may be made to exert a sedative or soothing effect upon internal organs that can be reached in no other way; this it does by a gentle stimulant or counter-irritant action—just as we rub a flea-bite to soothe the irritated skin, and in congestions of deep seated parts it acts by contracting the relaxed and flabby tissues and emptying them of surplus blood. 3. It can produce an alterative effect, *i.e.*, cause a wholesome change in organs, the seat of some morbid process, in a manner which we cannot explain. These are the chief uses of electricity in the treatment of nervous debility. As a general tonic to the central nervous system—the brain and spine—it is very valuable; but it is in the treatment of the various local phases, the irritable spine, the irritable ovary, the irritations and weaknesses of the male reproductive organs, the enfeebled stomach and bowels, that the physician is able to effect the most gratifying results with this remedy.

The use of electricity as a remedy requires a thorough knowledge of the anatomy of the nervous system, of the exact location of the nerve-centers to be treated, and of the geography of the various nerves. It is perhaps needless to say that the passing of a current from one hand to another, through the arms, has no value in the treatment of nervous impairment; as well might one rub an internal

medicine upon the hands and expect benefit. To do good electricity must be made to pass through the diseased parts.

The electric belts, electric corsets, electric brushes, and other cunning baits for inexperience are useless in nervous impairment, though the purchaser sometimes get his money's worth in experience; these toys have no effect other than that which they occasionally produce upon the imaginations of certain persons. A proposal to use electricity is not unfrequently met with some such remark as, "Oh! I have tried that; it is of no use in my case," and questioning develops the fact that the patient has worn an electric belt, or that he is the owner of a Faradic battery. The calm self-confidence of many persons in their ability to use tools which it has taken him years of labor to learn to use is sometimes a little piquing to the physician; a truer way to put it would be that an unskillful use of a good remedy has failed, as unskillful attempts in any direction are very apt to do.

Scientific electricity has many other resources beside those used in the cure of nervous debility. As a means of diagnosis it is very valuable to the neurologist; the galvano-cautery enables the surgeon to remove many diseased growths and to perform many operations without the loss of a single drop of blood. Probably the most remarkable action of electricity in the human body is that known as *electrolysis*, by which abnormal growths and tissues are made to disappear by being decomposed into their chemical elements. Two highly important applications of electrolysis have been established within the past few years; the removal of fibroid tumors of the womb, and the melting away of strictures of the male urethra, and in each of these cases electrolysis replaces dangerous surgical operations.

MASSAGE

is a word derived from a Greek word, signifying to press, knead, or handle. Massage is one of the oldest remedies in existence; from time immemorial, shampooing, rubbing, flagellation and other manual procedures have been used in the orient, and among various uncivilized races. Modern medicine makes a considerable use of this agent. The chief procedures of massage are—a gentle stroking toward the heart—*effleurage;* a vigorous rubbing—*massage à friction;* a pinching of the muscles—*pétrissage;* and a tapping or percussion of the muscles and flesh—*tapotement*

The effects of these various operations may be summarized as follows: 1. They increase the circulation and activity of the skin, thus enabling it to better perform its function of sweating out excrementitious substances from the blood. 2. They improve the nutrition of the tissues lying immediately under the skin; this fatty layer is increased, and thus the body improves in weight and appearance. 3. They equalize the circulation, drawing blood away from the brain or from internal organs, thus relieving internal congestions. 4. They produce a distinct sedative or tonic effect upon the terminations of the nerves, the end organs of the nervous system, and thus exert a good effect upon the central nervous tissues.

Massage will often induce sleep in the sleepless, or replace the intolerable feeling of fatigue of which some patients complain, by a feeling of warmth and comfort. It is sometimes possible to stroke away a headache or neuralgia as though by magic. In various affections of the joints and muscles, as rheumatism, massage is the most valuable remedy. The effects of massage described above are part of the secret of the "magnetic healing" so

much in vogue. The magnetic healer is generally a person who makes an ignorant and unscientific use of massage; they often overdo it, and thus produce injury.

There are at the present day, in all large cities, a class of men and women who have been trained in this art, and the services of these *masseurs* and *masseuses* are often utilized by the physician; and not a few physicians make personal use of massage as adjuvant to other remedies.

In thin, badly-nourished infants, a daily rubbing with cod-liver, or some other oil, for half-an-hour, will produce great benefit; they improve in weight and appearance almost immediately. Massage is one of the essential parts of a mode of treating certain cases of nervous debility described some years ago by an eminent Philadelphia physician, Dr. Mitchell. Dr. Mitchell's patients were chiefly women in good circumstances who had "doctored" for years, and yet become reduced to a chronic condition of nervous exhaustion. He isolated them from their friends in a private hospital, exacted implicit obedience, put them to bed, and by a combination of rest, forced feeding, electricity and massage, without medicine, returned many of these chronic invalids to their friends plump and rosy.

The main facts of this chapter are embodied in these

APHORISMS IN NERVOUS IMPAIRMENT

1. Many cases of nervous impairment are incurable in their earlier stages, but become curable in a later stage, after the subject has gotten very much worse; a period of suffering is sometimes necessary before true remedies will be permitted.

2. Natural remedies—rest, sleep, food, out-of-door air, cheerfulness, are more efficacious than drugs.

3. Rest—nerve-economy—in large or in small doses, is in most cases an essential initial remedy.

4. Oxygen gas in the form of out-door air is incomparably the most powerful known tonic and vitalizer to the nervous tissues,—in the quickness and certainty of its action, and in the permanence of its results.

5. Nerve nutrition requires a rich blood-stream, and hungry, unfagged, actively assimilating nerve-cells. The four factors of assimilative or (force-creating) and force-supplying vigor in the nerve-cells are daily food, daily oxygen, daily work and daily rest, in proportions that vary with circumstances. Oxygen is the essential element of the fire of life as it is of all fire; a blood-stream fully charged with oxygen gas by deep-breathing, full and free lung-play, is from ten to an infinite number of times more nourishing to brain and nerves than a blood-stream loaded with hypophosphites and lacking in oxygen.

6. Medicines are valuable remedies in nervous impairment, but their place is secondary and assistant. Of themselves, and without a foundation of other remedies they are, in most cases powerless to cure.

7. The nervous system, like the eye, is not a good part of the body for amateur prescribers to experiment with; unskillful drugging is apt to be useless or worse.

8. When a chronic, local morbid process is at the bottom of, or complicates, nervous impairment, the affection may resist every kind of general treatment until the local disorder is removed.

9. Electricity, used according to the principles, the nerve-routes and the dosage, of modern electro-therapeutics is one of the most efficacious remedies against both the general and the local phases of nervous impairment.

10. Rest, change, sleep, out-of-door air, baths, food, phosphorus, strychnine, quinine, iron, alcohol, electricity, massage, and every other remedy which experience has shown to be good in nervous impairment, may be, and often is, so used as to aggravate the disorder and make the patient worse.