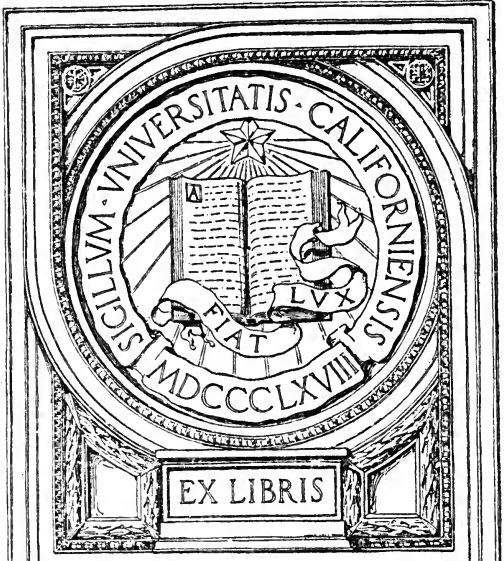
NERVE WASTE



NERVE WASTE

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PRACTICAL INFORMATION CONCERNING

NERVOUS IMPAIRMENT IN MODERN LIFE

ITS

CAUSES, PHASES AND REMEDIES,

WITH ADVICE ON THE

HYGIENE OF THE NERVOUS CONSTITUTION

By H. C. SAWYER, M.D.

SECOND EDITION

SAN FRANCISCO
THE BANCROFT COMPANY
1889

PREFACE TO THE SECOND EDITION

The second edition of this little book has been wholly re-written and considerably enlarged in an effort to make it more practically useful.

The author shall be glad if this effort to improve upon his first work will be considered, in one sense, a grateful response to the kind words of the press and to the appreciation of the public toward the earlier edition.

SAN FRANCISCO, JANUARY, 1889.
1320 MARKET STREET.

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 excercise 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 appreciated, but the world is rapidly growing too wise to neg-

lect 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 eradiction 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.

SAN FRANCISCO, DECEMBER, 1887.

1320 MARKET STREET.

CONTENTS

I

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 head, in the neck, and 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*, Perception, Intelligence, Emotion, Will.

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 con-

scious 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 "tropic center" and, if this becomes diseased, the nutrition of the parts dependent upon it suffers, —partial or complete atrophy results. 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 future chapter.

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 thought of savory food, how tears well up under the stimulus of emotion, and why the secretion of the digested 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 cempared to electricity and the nerve-cell to a Leyden jar.

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 ex-

penditure of nerve-force is reduced to a minimum, and income is far in excess of outgo; man awakens 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, used to describe the consequences of a continued predominance of nerve-waste over nerve-repair.

II

THE CAUSES OF NERVOUS IMPAIRMENT

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.—Modern life is hard upon the nervous system. The age of electricity, of complicated machinery, of intricate business methods, is upon us. "The railroad brain" and "the railroad spine" are beginning to be talked of in medical meetings. The roar, the jar, the ceaseless eye and ear stimulation, the tyranny of the clock, and the increasing sunlessness of cities did not act upon the fathers. The endless memory-weakening succession of ideas in newspaper and review tittillates rather than exercises, superficially burnishes rather than solidly strengthens the organ of mind. The factors which produce nervousness are probably more numerous and active among Americans than among any other people—the American diathesis is becoming more and more distinctly nervous. 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. The American is new, unsettled, unlocated, in a state of insecurity and unrest, which is unfavorable to health. The climate of much of the United States

is bracing, and permits and encourages a greater amount of nervous expenditure than is possible in any other part of the civilized world. The American is not yet used to his environment; many a man overboard has sunk in struggling, who, with less exertion, could have kept afloat.

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 develops 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.

Overwork.—The elements of overwork 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 scarcely 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 iritable 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 tenison 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 fibre 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 over-activity 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 overwork 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.

Social Nerve-waste.—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.

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 stand 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 overwork 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 overwork. 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.

Sedentary Habits.—A principle of physiology is that "a functional act is a nutritive act;" in other words, an organ is nourished, within certain limits, in proportion as it is used. An organ to be healthy must be used, but not over-used. Sedentary man over-uses one organ—the brain-and-spine and under-uses all the others. This disproportionate activity or strain upon the organ of vitality is one effect of sedentary habits. The overworked city man becomes indolent and luxurious in his hour of ease. He rides rather than walks, he seeks to habitually breathe a warmed air, chews succulent food, wears hard hats, glazed shirt-fronts and garments which fulfil his idea of elegance and dignity of appearance rather than permit grace and suppleness. Suppleness scarcely exists among us, and if an Olympian athlete could see a hundred average Americans in running costume, it is to be feared that their partially bald heads, filled teeth, flat chests, thin limbs, stiff joints, and deformed feet, would excite his derision or his pity.

Luxury e-nervates as effectually as overwork and strain. That combination of indolence, self-indulgence, over-eating, under-breathing and nervous excitement, which may be observed in certain sons and daughters of wealth, leads to nervous impairment. An under-used brain-and-spine comes to be poorly nourished, to have a flabby fibre, and to seek stimulants to "pull itself together." A brain-and-spine whose activity takes the form of excitement rather than of work, becomes irritable and craves

the soothing influence of narcotics. No observation of medical practice is more constant or more striking than that those who persistently seek comfort and pleasure are the very ones who find annoyance and pain. Like the princess in the fairy tale whose tender flesh was irritated by a crumpled rose-leaf under twenty mattresses, self-indulgence acquires sources of suffering of which hardier mortals are ignorant.

The clergyman can teach more eloquently than the physician how excess of comfort makes us selfish; how men who have never striven, and women who have never suffered, have lacked the most potent force in human character; how luxury and moral hebetude go hand in hand, and how those who have been given every opportunity for symmetrical growth and instructive example, are commissioned, and ignobly, if at all, neglect their chances in the circean isle. But the physician, with his records of cases, and his offensive specimens gathered from the dead-house can more forcibly, if rudely, demonstrate how sloth and sensuality lead to decay and death.

III

CAUSES OF NERVOUS IMPAIRMENT *(Continued)*

OCULAR DEFECTS, near-sight, and far-sight — causing imperfect perception, and astigmatism (corneal asymmetry)—causing faulty refraction, are common unsuspected exciting or aggravating causes of nervous symptoms in school children, students and others. No phase of nervous disorder is more pathetic than that in which a child is held to its work, spite of headache, eye-tire, incompetency and strange feelings which it cannot itself describe and which are not understood by others.

Dr. H. P. Allen of Columbus, O., was recently appointed by the Board of Education to examine the eyes of the children in the public schools of that city. His report states that of 4,700 children examined 1,175 were found to have defective vision in one or both eyes. Near-sightedness increased from none at all in the primary schools to 13 per cent in boys, and 17 per cent in girls in the senior class of the high school; according to age it increased from none at six years to $11\frac{8}{10}$ per cent at 17 years. Of all children who needed correcting glasses, only about 10 per cent had them. In the Polytechnic school of France, the proportion of myopia has increased from 30 to 50 per cent, and 80 per cent of all the students have to wear glasses.

In view of the wide-spread and great increase of myopia in all civilized countries, it becomes the duty of parents to give their children's eyes the same watchful care that they now do their teeth. Dr. Dennett of New York has made the excellent suggestion that a test-type placard be hung in every class-room in the land; the card which he proposes is simple, consisting of a series of letters and

characters with directions concerning the distance at which each size should be read by the normal eye.

The muscles of the orbit which control the movements of the eye-ball may become weakened, asthenic, and the disagreement between these and the internal accommodating muscles of the eye maintains a constant eye-strain. These eye-strains are very wearing upon the brain, and are capable of causing a high degree of nervous impairment, persistent headaches, and even epilepsy. Some remarkable results in the cure or alleviation of epilepsy, by the operator of ocular tenotomy, thus removing hurtful eye tension, have lately been obtained.

The manner in which eye-muscle weakness and eye-ball defect harass and injure the brain may be thus stated. When a visual impression strikes the eye-ball, it is refracted through the various media within and focused upon the sensitive membrane (the retina) which lines its posterior wall. Thence it is transmitted along the optic nerve to the great central receptive ganglion of the brain (the central home-office for sensation) the *optic thalamus*, which lies near the bottom of the brain. Thence it is radiated to, and received by those brain-cells in the surface of the brain which are concerned in the particular impression. (This outer gray substance of the brain—the cortex, or peeling, bears a similar quantitative relation to the rest of the brain that a three-quarter section of a peach does to its stone.) With a normal visual apparatus a clear impression is received at the central home-office and distributed to the out-lying brain-cells with facility. With a faulty apparatus, the image formed upon the optic thalamus is not distinct; it is blurred; the higher brain-cells recognize it with an effort, and here lies the strain. What should be an automatic act is converted into a voluntary one. So, in our great post-offices the immense effort and strain of receiving and distributing letters is largely due to the fact that so many of them are illegibly addressed.

Ear-strains may cause or aggravate nerve-weakness in the same way that eye-strains do. A plug of wax in the external ear, a chronic inflammatory condition of the middle ear, and other conditions may impair hearing and cause an indistinct auditory impression to be received at the optic thalamus, the recognition of which puts a strain upon the brain.

Reproductive Misfortunes and Malpractices are active and powerful causes of nervous impairment. Excessive child-bearing or prolonged nursing, combined with household drudgery, reduces many a mother to a serious condition of nerve-weakness. On the other hand, those parents who refuse to accept the trials of parentage are often injured by such a course. All those ingenious perversions of the natural physiological relations of marriage, aimed at the prevention of conception, which, judging from my observations, are by no means rare, prove a dangerous strain, and make serious overdraft upon the vitality of thousands. Worse still, the practice of criminal abortion, or induced "miscarriage," when it does not cause death, may bleed out a woman's vitality beyond the power of nature to restore it, or it may leave scars and disease in the delicate reproductive tissues, which, acting backwards, persistently harass and weaken the nervous system.

Sexual abuse and excess are to be expected in our American life. We have noted that the American, by reason of his constitution, his climate, the transition period in which he lives, is essentially nervous, his brain-and-spine over-active, over-sensitive, unstable, loving excitement, craving new things. Especially the city boy and man, under-using all extra-neural tissues and over-using the brain-and-spine, deteriorates in hair, teeth, muscle, skeleton, and develops a morbid sensibility in nerve-tissue everywhere. This state of nervous erythism craves all sorts of morbid excitement, and quickly responds

to erotic suggestion, and becomes the victim of sexual vice. Sexual vice has operated against health since the beginning of history, but probably it has never been so injurious to vitality as it is in the nineteenth century American. I am constantly obliged to note how the neurotic diathesis, sedentary habits, erotic suggestion and ignorance of the laws of sexual hygiene act together to produce mental and nervous disease.

Reflex Irritation.—The central nervous system, within its bony case of skull and spine, communicates with every other part of the body by means of nerves. These nerves constantly conduct nervous impulses from the brain-and-spine to other parts of the body, and constantly transmit nervous sensations from every other part of the body, generally through the spine to the brain. An impression made upon one part of the body may influence some distant part by influencing nerve-centers which are common to both. Thus, a hot application to the abdomen relieves intestinal colic, not by "striking in," but by producing a relaxing influence upon the bowel through the spine and sympathetic. Slight, persistent morbid impressions are capable, by their cumulative action, of producing very serious diseases. Thus, the back-acting irritations of teething, of indigestible food and of worms are frequent causes of convulsions in infants. The irritating impression of a tight foreskin has often caused convulsions or paralysis in children. The irritating presence of dried secretions in the nose or throat, reflected upon an over-sensitive nervous system, is a common cause of asthma, hay-fever and deafness.

The principle of reflex action is the basis of a certain proportion of cases of nervous impairment which might be described as back-acting, reflex, afferent or inverse neurasthenia. In this form the nerve-weakness is secondary to local disease in some other part of the body. A long series of irritating morbid impressions reacting upon

brain-and-spine, harass, irritate, depress these parts, and ultimately impair their nutrition and lessen their capacity for creating and supplying vital force.

Nasal catarrh may be instanced as a purely local disease which often develops a high degree of secondary mental and nervous disorder. "Spinal irritation" is often maintained by disorder of womb or rectum. Epilepsy, St. Vitus' dance, lock-jaw and every form of persistent convulsive disorder may result from such apparently inadequate irritations as eye or ear strains, from hardened wax in the ear, or from chronic constipation. 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. The mental symptoms of chronic dyspepsia may be studied in almost any household. Diseases of the womb and ovaries in the female, diseases of the male reproductive organs, and rectal diseases, all develop a long train of mental and nervous symptoms in certain cases.

In many cases of chronic local disease, the secondary impairment of the brain-and-spine comes to be by far the most important element. As between two crippled organs, the nose or the rectum, on the one hand, and the brain-and-spine on the other, the latter is certainly by far the most important, even though the former is the primary disease. Thus, the physician who fixes his attention narrowly upon a disease-process in eye, ear, nose, stomach, womb, prostate, or rectum, and ignores the secondary brain-and-spine complications, greatly limits his usefulness. This is a danger to which the specialist, who comes to his work without broad training, is liable. In a purely local interest in the physical or mechanical problems of a case, it is possible to neglect the often graver secondary mental and nervous symptoms; one may forget the patient in studying the disease.

IV

TYPES OF NERVOUS IMPAIRMENT

The Neurotic Diathesis.—A diathesis is an inherited morbid tendency; thus we notice the gouty, the scrofulous and the tuberculous diatheses. The neurotic diathesis is the foundation of a large proportion of cases of nervous impairment. It becomes established in nervous stocks as a result of the nervous strain and overdraft of civilized life; city Americans of the second and third generation are apt to be more or less neurotic.

Persons of this diathesis live and work with a very small reserve fund of nerve-force. They are like a merchant doing business upon limited capital; every little loss and waste embarrasses them and a large one threatens to bankrupt them completely. They are always trying to keep even. On those days in which they live within their nervous income they may be pretty well, but when they exceed it they suffer to some extent; a slight indiscretion may precipitate very disagreeable symptoms. A man in a strange land with a hundred dollars in his purse may be very happy in expending ninety-nine dollars and very miserable in expending one hundred and one. Such men and women may be "all broken up," as they say, by an indigestible supper, a bad night's sleep, a piece of bad news, a seminal loss, or a few days of overwork. They envy persons of great vital resources, whose large reserve fund of nerve-force enables them to expend in every direction with impunity, and which seems to exempt them for a time from obedience to the laws of health.

The nervous diathesis is not always a misfortune; in many cases it is a blessing in disguise. The nervously

poor come early to understand the science of vital economy and to be obedient subjects of the goddess Hygeia, and so are rewarded by fairly long life. The fact of limited vital-surplus keeps many a man in the straight and narrow path of virtue who would otherwise stray. Neurotic men are apt to beget bright, beautiful and interesting children and to make the best parents. Much of the world's work is being done to-day by men who are more or less crippled in their vital resources. Altogether I believe that neurotic persons who are not too unfortunate, or too reckless, perceive more, feel more, accomplish more, enjoy more and get more out of life than those of any other diathesis.

NERVOUSNESS is only 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 overdraft.

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.

NEURASTHENIA.—The symptoms of uncomplicated nerve-weakness have been long familiar to physicians, but it is only in late years that their full import has come to be well understood. The comprehensive mental vision of Dr. George F. Beard collected the straggling objective and subjective signs of nervous impairment, classified them, appraised them, and practically created them into a new disease, which he called Neurasthenia—literally, nerve-weakness. The scientific propriety of recognizing neurasthenia as a distinct disease has been denied, but in practice there is no other disorder, whose history is more clear and symmetrical, and none whose treatment is more clearly indicated. The neurasthenic is a nervous cripple. If the history of this disorder were

required to be written in three words, these would be weakness, irritability, unsteadiness.

Cerebral Neurasthenia, Cerebrasthenia, Brain Exhaustion, or Brain Fag, is most often seen in men between the ages of thirty and sixty, whose duties and responsibilities are greater than they can bear and the strain of whose work falls chiefly or wholly upon the brain. Politicians, manufacturers, professional men and merchants contribute yearly a certain number to the list of those who are killed or crippled by this form of neurasthenia. Mental symptoms—of irritability or weakness—are generally marked in these cases. The sleeplessness and circulation derangements of acute brain exhaustion are capable of developing insanity.

Spinal Neurasthenia is the type most likely to be developed when strain has been brought to bear upon the spinal cord more than upon the brain. Telegraphers, compositors, type-writers, penmen, railroad men and house-wives may be instanced among those liable to this form of nerve-weakness. There is no clear-cut difference between cerebral and spinal neurasthenia; their symptoms are much the same, but are apt to present certain differences in degree.

Sexual Neurasthenia is a term used to describe those cases in which nerve-weakness is partially or entirely manifested, and, in many cases, originated, in the reproductive apparatus. This class of cases has been variously designated by the names Spermatorrhœa, Seminal Weakness, Irritable Prostate, Impotency, Sexual Hypochondriasis, according as different physicians fixed their attention upon one or another of the symptoms which characterize it.

Nerve-Weakness Manifested by other Organs than the Brain and Spine.—A common phase of city life is a large family whose only resource is a moderate salary earned by the father. The daughters approaching

womanhood, the sons at college, or a sick child have the most pressing needs and absorb an undue share of the slender income. There is not enough to go round, and some one, too often the mother, must manifest poverty for the whole family. So it often is with the central nervous system—the great vital source—and the other organs and tissues of the body, which, as we have seen, are dependent upon it for vitality. Many men and women have some organ or tissue that is, by inheritance or by acquisition, weaker than the others—it is their vulnerable point. When excessive brain or muscle work or strain uses up a disproportionate amount of the available nerve-force the supply is not enough to go round, and the weak part is very apt to suffer. When the brain and spinal impoverishment is manifested principally in the digestive apparatus we have the type gastric neurasthenia, to the various symptoms of which the names oxaluria, lithæmia, lithiasis, liver insufficiency, enteroptosis (falling of the bowels), nervous indigestion, nervous chills and cramps are applied. In other cases the muscular system is chiefly or solely affected in the form of tremor, or of writer's cramp, while in still others the eye, the voice, the heart or the reproductive organs suffer most.

The Functional Nervous Disorders—a large family—are manifestations of insufficiency or impairment of the brain-and-spine. *Mental Disorders* of every degree of severity from simple crankiness to violent mania or profound melancholia or dementia often consist, or begin in, brain-and-spine weakness. In certain stocks the brain is an organ of less resistance than the spine and nervous over-draft or nervous strain may result in mental alienation; the "insane neurosis" is the great predisposing cause of insanity. *Inebriety*, the diseased appetite for alcoholic liquors, uncontrollable because of enfeebled will-power, is now distinguished from the vice drunkenness and treated as a mental and nervous disease. *Insomnia*

is one of the most constant symptoms of nervous impairment. *The Convulsive Disorders*, Epilepsy, St. Vitus' Dance, Hysteria and others, which are manifested by paroxysmal and irregular discharge of nerve-force, depend upon instability (one element of weakness) of the central nervous system, and are only radically cured by improving the vitality and stability of this part of the body. *Spermatorrhœa* is often a symptom of cerebro-spinal instability as of local reproductive disorder. Over-sensitiveness of nerve-centres (another element of weakness,) is the predisposing cause of many forms of *Headache* and of *Neuralgia*. As in the convulsive disorders, the great aim in the radical treatment of these pains is to improve the integrity of the nervous structures *Hay-fever*, in a large proportion of cases consists in an over-sensibility of the nervous centres connected with the nerve-ends in the upper air-passages, plus the excitant or irritant, whatever it may happen to be. *Spasmodic Asthma* has a similar condition of the respiratory nerve-centres for its primary causation.

V

SURFACE SIGNS

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 which 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.

The changes which excessive nerve-waste produces on the surface of the body may be studied everywhere in American business and social life.

Good looks depend more upon health than upon symmetry. Every sound, wholesome, fresh country boy and girl is good looking, but many society beauties will not bear inspection in the morning. The difference between the plump, firm, rosy cheek of youth and the withered flabby one of age is fundamentally a difference of vitality—of nerve-force.

Extreme Thinnesss, 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 of sexual excesses.

BALDNESS, which is said to be increasing among Americans, is one of the most common results of over-activity of the nervous system.

The three conditions of hair-growing are a blood-current containing a sufficiency of certain chemical substances, its free circulation in the vessels of the scalp and sufficient vigor in the hair-follicle to attract the blood-stream and assimilate from it.

In cases of excessive nerve-waste the demands of other organs upon the blood are imperative; they tax its nourishing and force-supplying capacity to the utmost molecule. Thus when the hair follicles are, hereditarily or otherwise, somewhat weak organs, they are robbed of their food. In sedentary man the lazily acting heart does not freely pump the blood as far as the hair follicle, and the blood which is pumped there is often obstructed for hours at a time by the pressure of hard hats upon the nutrient arteries of the scalp.

Non-exercise of the scalp is one great cause of baldness. "A functional act is a nutritive act;" that is, exercise of an organ calls the blood into it and thus the organ is nourished, within certain limits, in proportion as it is used. The function of the hair is to protect the scalp. In animals the hair follicles are active; they erect the hairs in hot weather and apply them closely to the skin in cold. Sedentary man covers his head with hats, keeps the scalp at a hot-house temperature, or subjects it to the enervating climate of rooms. He relieves his hair follicles from all duty in protecting the head, and so they degenerate or perish as any other organ would from non-use.

In extreme thinness the absorption or the absence of the layer of fat which naturally lies between the scalp and

the bony skull subjects the hair follicle to pressure and thus favors atrophy. An impaired nervous system poorly innervates or vitalizes its dependent organs; the hair follicles become unable to attract the blood current or to assimilate from it as it circulates through their tissues; thus they become enfeebled beyond the power of stimulus to rouse them, or die altogether.

These ideas accord with the natural history of baldness. This defect is rare among non-sedentary peoples—as the Indian—to whom nervousness is unknown, and in women who do not interfere with the circulation of the scalp, nor maintain it at a debilitating temperature, by their head-gear, and who are not often subjected to the same degree of nervous strain that men are. Thus, too, we may understand the inefficiency of all the popular methods of treating baldness. It is easy to bring the blood into the scalp by friction or by stimulating lotions, but an enfeebled hair-follicle cannot use this blood more than a dyspeptic's stomach can use food. We may lead a horse to water but we cannot make him drink. The treatment of the baldness of nervous insufficiency consists chiefly in improving the vigor and resources of the nervous system, as advised in the later chapters of this work, more than in the use of local measures.

The Teeth of civilized man are not very enduring; there are comparatively few Americans who are not compelled to seek the services of the dentist to rescue some of these organs from premature decay. The teeth, like the hair follicles, often deteriorate because they are not used sufficiently. Teeth were meant for biting, but civilized man does but little real biting. His food is soft, succulent, soaked in liquids, and the dental roots do not receive that nutritive stimulus which frequent firm pressure in their sockets provides. Impoverished blood is another cause of decay in teeth. There is only a certain available quantity of phosphates in the blood-stream, and if these

are appropriated by an overworked brain, little is left with which the teeth may nourish themselves. Debility of the tegumentary trophic nerve-centres—those centres which vitalize teeth, skin and nails, and enable them to attract the blood stream and to assimilate from it the chemical substances which they require—is still another element in dental caries.

Brittleness and slow growth of the nails is a sign of which the causation is similar to that of decay in teeth.

Atony.—The firmness of muscle, of artery and vein, and to some extent of surface flesh depends upon a steady stream of nerve-force from the central nervous system. When this nervous outflow is limited the tissues may become lax and more or less flabby; the flesh lacks tone; the veins may be relaxed and dilated, even to the degree of varicosity or of varicocele, the face develops hard lines or wrinkles, and a general atony may prevail at a time of life when the tissues should be firm and solid.

Anomalous Appearance.—While nervous impairment is very apt to leave its mark upon the surface, it does not always do so, and it is a fact that a high degree of brain-and-spine weakness may exist in persons who are, to a casual observer, the healthiest of men. This is most strikingly exemplified in individuals of a mixed nervo-sanguine temperament, having fine thin skins and plenty of red blood. Such persons are sometimes pictures of rosy health, their digesting and blood-making organs being perfect while the central nervous system is weak and irritable in the extreme. These persons have a rather uncomfortable time of it. Their sufferings are altogether subjective and cannot be demonstrated. They are often unable to make any one believe that they are sick, and finally cease to try and learn to bear their troubles in silence. Relatives who would overflow with compassion for a cut finger have no sympathy at all for a lame brain-and-spine because they cannot see it. It

sometimes happens that such persons are unjustly blamed for laziness or mental irritability or moral delinquency when they should be cured (i. e., cared for).

The youthful appearance of many nervous invalids is a phenomenon which I have repeatedly noted; one is surprised to hear a patient who looks not more than twenty-five state his age at thirty-five or forty.

The Neurasthenic Voice is an objective symptom which may be noted here. The quality and quantity of the voice is apt to be temporarily enfeebled after fevers, or any acute disease which seriously involves the nervous system. In chronic nervous impairment the voice may become permanently altered. A huskiness or hoarseness, a soft quality, a lack of *timbre* and of power, and especially unsteadiness or unreliability, make up what is called the neurasthenic voice. These changes are caused by a flabbiness or lack of tone in the vocal cords and their adjacent muscles, and in some cases 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 general brain depression, or as a result of persistent reflex irritation from the stomach, reproductive organs or elsewhere.

The neurasthenic voice is sometimes supposed to be due to chronic laryngitis or some other condition of the larnyx, but purely local treatment never cures 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.

VI

MENTAL SIGNS

The central nervous system is the seat and source of character. The difference between a chief-justice and a sneak-thief consists in the changes which heredity and discipline have wrought in the plastic brain-and-spine. And the physical condition and the blood supply of "the organ of mind" largely determine those traits and characteristics which make up a man's individuality.

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.

PATHOPHOBIA means "fear of disease." An irritated, over-sensitive, or impoverished brain-and-spine is apt to be uneasy about itself. It watches, notes symptoms, worries. This morbid sensitiveness about health has become an American trait. No other people swallow so much medicine, nor support so many physicians, nor become the prey of charlatans to such an extent as Americans. This trait is not wholly imagination; it is a sign manifested by nervous systems irritated by the restless, disproportionate activity of American life.

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 develops, 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 mis-use 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 he 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, and 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.

UNEVENNESS is one of the characteristic phases of nervous impairment, which often renders the subject an enigma to his friends. Not only the state of mind, but all the subjective sensations of the disorder are liable to sudden and frequent changes. One day such a man may be active and enthusiastic, the next fatigued and depressed. One day he may be cheerful, or even vivacious; the next silent, inelastic, listless. The functions of digestion and reproduction are liable to sudden breakdowns, or to periods of enfeeblement. Thus the neurasthenic invalid is apt to be in business and in society a noticeably uneven man.

VII

CIRCULATION SIGNS

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 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 *Anæmic 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 symtom 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, conjested and hyper-sensitive state of certain deep-seated parts—the uretha, the prostate 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.

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; thence it again receives this red oxygen-laden blood 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 can not 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 outflow 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.

Closely related to the unstable circulation of nervous impairment are certain

Disorders 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 pliable, 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.*

VIII

THE ACHES, PAINS AND FEELINGS OF NERVOUS IMPAIRMENT

The apparatus of sensation includes: 1. The brain, which is the great central receptive organ. 2. The nerves, which conduct impressions from every part of the body to the brain. 3. The nerve-ends in eye, ear, tongue, nose, skin and elsewhere, which are the perceptive part of the apparatus. Healthy, nervous tissue perceives, conducts and receives natural impressions without pain or discomfort, but weakened, poorly nourished, morbidly sensitive nervous tissues do not always do so.

HEADACHE.—The head may ache from a great variety of causes, and the headache of nervous impairment is only one of a large family. Thus the head may ache:

1. When the brain is irritated or pressed upon by some foreign substance, as a brain tumor, abcess or meningitis.

2. When the blood pressure within the brain is increased by any derangement of the circulation. This may be the result of exposure to cold, of over brain-work, of heart disease, of kidney disease, or of the unsteady circulation of nervous impairment.

3. When the brain is harassed by any continuous morbid impression brought to it from distant parts; thus the disordered stomach of the dyspeptic sometimes irritates his brain into aching.

4. When the blood is charged with unnatural or with poisonous substances; a large dose of quinine causes headache in most persons; the blood-poisoning of Bright's disease often gives rise to terrible head pains. Exposure to cold acts partly in this way; the function of the skin,

an important excretory organ, being suppressed for a time, various poisonous substances are imprisoned in the blood.

5. When the brain is chronically tired, as in eye-strain and ear-strain, or in regular over brain-work it may ache just as a muscle would.

6. When the brain is imperfectly nourished by poor quality of blood.

The headaches of nervous impairment are variously described 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. They are explained by the unsteady circulation of the blood described in a preceding chapter, by the over-sensibility to reflected irritations, which is a characteristic of weakened nerve-cells, and in some cases by brain-tire from strain and over brain-exercise.

MIGRAINE, OR SICK HEADACHE, is a peculiar form of headache to which many nervously impaired persons are periodically subject. A typical sick headache is ushered in by brow uneasiness, or by painful disturbances of vision, and chilly sensations which continue for a time, varying from a few minutes to several hours. These disorders of sensation gradually pass into headache, often limited to part of the head, and often attended by nausea or vomiting. The stage of headache is apt to last several hours and leave the patient weary and depressed, though after the immediate effects have passed away many persons feel better than usual—a fact probably explained by the enforced rest, abstinence from food, and vomiting. The attacks may occur every few days or as rarely as once in several years, or even once in a lifetime.

Neurologists are not agreed upon the real nature of sick headache. It was formerly supposed to be due to liver or stomach derangements, but these are now known to be only exciting causes, bearing the same relation to the brain that an ignited fuse bears to a mine of powder.

Dr. Liveing has written an exhaustive work on this form of headache, in which he asserts that it is a pain-storm traversing certain tracts in the brain. The theory most commonly held refers migraine to the sympathetic nervous system. This system, which consists of chains of nervous ganglia in the head, neck, chest, abdomen and pelvis, is controlled by the brain-and-spine. In a weakened brain-and-spine this controlling or inhibiting influence is impaired, and the sympathetic system runs riot. The sympathetic system controls the blood-stream, and it at first contracts the blood-vessels in its uncontrolled excitement, causing the visual and other disordered sensations of the first stage. Later, its excitement is followed by temporary exhaustion or paralysis, whence results dilatation of blood-vessels, brain-fullness and headache.

Migraine is a disorder of the first half of life; after thirty or forty the attacks diminish in frequency and finally cease.

In many cases of impending sick headache, temporary seclusion and rest, or, it may be, cheerful change, will ward off the attack. In others warmth, a hot mustard foot-bath (if the feet are cold), or hot-water rubber bottles to spine and neck, a cup of strong coffee, a little hot bouillon or a glass of wine internally, and an evaporating lotion, or cloths wrung in ice-water, may be added, and will suffice. Purgatives are of great use in the beginning of sick headache; five grains of calomel, mineral waters, two or three teaspoonfuls of Tarrant's seltzer aperient, or a dose of the individual's favorite "liver pill," may be used upon the first warning of the approach of migraine. Salicylate of soda has a reputation for preventing migrainous attacks, which it sometimes realizes; it is not without danger to the kidneys, and is not suitable for self-treatment.

VERTIGO, OR DIZZINESS.—The physiology of equipoise is quite intricate. First, our perceptive organs (of vision,

hearing, and touch) give us evidence of our relation to outside objects. The evidence of these various impressions is transmitted by the nerves to the cerebellum, or little brain, which is the co-ordinating centre, or home office, of equilibration. The cerebellum acting upon this evidence sends out nervous impulses to various muscles, chiefly those of the head, neck and spine, by the proper contraction of which we are able to maintain our equipoise. When any of the three parts—perceptive, co-ordinating or motor—of this mechanism is disordered we may have vertigo. It occurs in certain diseases of the eye and of the ear, because it is largely by the aid of these organs that a man unconsciously takes his bearings. It occurs in several organic diseases of the brain and of the spine, in epilepsy, in certain diseases of the stomach, and in gout. It frequently complicates sick headache and sometimes replaces it. It occurs in simple nervous impairment from an unsteadiness of the entire nervous apparatus of equilibration.

Spine Pains and morbid sensations are among the most common symptoms of nervous impairment, especially of spinal neurasthenia.

The back of the neck and the region of the spine, extending from the hair to a point just below the shoulder blades, is the most common seat of sensations variously described as a sore, tender feeling "deep in," a dull ache, or an uncomfortable, irritating, burning sensation in the skin; a dull "headache in the back" may be experienced at any point along the spine.

Spinal Irritation, a sensation of pain or of irritability, usually located in the lower part of the back, is a somewhat common symptom among women. It indicates congestion and over-sensibility of the spinal cord at the corresponding point; and is in most cases due to the harassing, depressing influence of ovarian or uterine disease.

Similar sensations are sometimes met with in the male in cases of sexual debility and exhaustion.

Nerve Pains.—Neuralgia has been cleverly called "the prayer of a starved nerve for food." But this is not always the case, and nerves may ache from a variety of causes, *e. g.*:

1. Exposure to cold, resulting in congestion and pressure about the nerve.

2. Poisoning; the impure blood stream of gout, rheumatism, lithæmia, malaria, or of any metallic poisoning may irritate the nerves and set them to aching.

3. Organic nervous diseases, as inflammation of the nerve itself, or disease of the spinal cord.

4. Reflex irritation, as when one decaying tooth lights up a neuralgia of half the face.

5. Over-worked and under-nourished nerve-centres are more sensitive to all the exciting causes just mentioned, but they may ache without any discoverable exciting cause whatever. The neuralgias of nervous impairment are common in the face (brow-pains and *tic*), in the head, in the chest-wall, in the leg (sciatica), and may occur in any nerve.

Tic Douloureux, Facial Neuralgia, Prosopalgia, is peculiar in the rapidity of its approach and in the abruptness of its departure, in the intensity of the pain, in the muscular spasm which it often induces and in the obstinacy with which it resists treatment. Either or all of the three divisions of the tri-facial nerve may be attacked. The term "brow-ague" supposes a malarial (exciting) causation. The opthalmic variety of *tic* is sometimes confounded with migraine, but falls far short of migraine. The sudden spasmodic contractions of the facial muscles which attend certain cases of tic douloureux have caused the term "epileptiform neuralgia" to be applied to it; the muscles about the eye, those of the face, and in some cases those of all the face and neck may be involved in

spasm. The hair is very apt to turn gray about the seat of pain, and between attacks superficial anæthesia in some, exquisite sensitiveness in others, may be marked.

There may be a dull aching sensation 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. These limb sensations are sometimes supposed to be forerunners of paralysis, and are thus the cause of much unnecessary uneasiness or alarm. They merely indicate the impoverished state of nerve nutrition and are never followed by paralysis. Electricity often removes these symptoms, as well as those located in the spine, as if by magic, and neuralgia itself is often quickly cured or greatly benefited by proper treatment.

The avoidance of neuralgic attacks involves especially two things, viz., the avoidance of cold, and of the blood-poisoning, lithæmia, which results from over-eating and under-breathing. Urinary deposits are a sign that something in diet or in habits needs adjustment.

Nerve-End Pains.—Paræsthesias, or morbid sensations on the external or the internal surfaces of the body, are very common in nervous impairment. Tenderness in the scalp, tenderness about the teeth and gums, or at almost any point; creeping or crawling sensations; itching of the skin; exaggerated sensations of heat or of cold; feelings of numbness; "burning in the nerves" of the face or any part of the surface; smarting in the womb or vagina or rectum; soreness in the muscles; a sore, tender feeling and sense of relaxation in the joints of knee, elbow or jaw; a feeling of tenderness or soreness in the heels, are among the subjective signs, described by different patients.

Visceral Neuralgias.—The nerves which innervate the internal organs may ache as well as the superficial nerves. *Angina Pectoris*, "breast-pang," is a terrifying combination of spasm and pain in the region of the heart,

of which each attack is said to bring the fear and suffering of death itself. It is like migraine, an uncontrolled action of the sympathetic nervous system, and in many cases depends upon organic disease of the heart. *Gastralgia* (gastrodynia, cardialgia, gastric colic) ranges all the way from uneasy sensations in the stomach on taking food to severe paroxysms of stomach pains. *Enteralgia*, neuralgia of the bowels, is somewhat common in abdominal neurasthenia. *Hepatalgia*, neuralgia of the liver, occurs, but rarely. Uterine and Ovarian neuralgias are common and often develop without any discoverable local causation; I have seen cases of neuralgia of the urethra and of the testicles. Neuralgia of the rectum and of the anus are occasionally met with.

An Unnatural Fatigue may be, for a time, the only indication of failing nerve-power. The accustomed duties of life may become excessively irksome, and a constant feeling of weariness may be experienced. In some cases work is well done under the stimulus of duty, but afternoon or evening brings an intolerable feeling of fatigue. Or the best sleep may be insufficient to repair the overdrawn nervous system, and the individual arises from his bed, after having slept soundly eight or nine hours, unrefreshed, inelastic and languid, and it may be several hours before he becomes braced up for the day's duties. When this abnormal tiredness occurs in an apparently healthy man he is apt to be suspected of laziness and to get but little sympathy.

Special Sense Signs.—The visual apparatus with its exquisite perception, and its delicate adjustment, is liable to several disorders in nervous impairment.

The mucous membrane lining the front of the eye and orbit—the conjunctiva—may become congested, red and watery as one of the results of a disordered circulation. The perceptive part of the apparatus—the retina, optic nerve, and in the brain the great central sensory ganglion,

the optic thalamus, may participate in the general nervous weakness and irritability. Floating specks and wavy lines in the field of vision, running together or blurring of the letters in reading, momentary blindness, and a feeling of fatigue on using the eyes are common symptoms of ocular neurasthenia.

An unnatural dilation of the pupil is often noticeable in nervous impairment. It is explained by weakness of the motor oculi nerve-sources (whence pupillary contraction) plus unrestrained action (inhibition failure), of those sympathetic fibres of the opthalmic ganglion which dilate the pupil.

The ear may become the seat of various annoying sensations, indicative of feeble and unsteady nervous outflow. Ringing, buzzing, tapping and roaring sounds in the ear are occasionally complained of. These noises are sometimes very persistent. In one case a patient had hardly been free from a ringing in the ear for more than a year; at first, as she said, it almost drove her crazy, but she finally became accustomed to it.

The nerve-ends for smell in the nose, and those for taste in the tongue, are liable in rare cases to functional perversions, and the individual is annoyed by unnatural odors or tastes. In other cases the acuteness of these senses is greatly diminished.

The treatment of neurasthenic pain is palliative or temporary and curative or permanent; the former is accomplished by stimulation and sedation, the latter by the whole hygiene of the nervous constitution. Electricity is the most valuable single remedy in both the palliation and cure of neurasthenic pain.

IX

MUSCULAR SIGNS—WRITER'S CRAMP.

The muscles everywhere are directly dependent upon the brain-and-spine, not only for power but for growth. When the electric bells of a dwelling-house ring faintly or cease to ring, and the bell-man is summoned, he turns his first attention, not to the bell, but to the batteries hidden away in the attic or cellar. In paralysis of muscles it is, in most cases, the nervous tissue back of the muscle that has gone wrong. A strong nervous system is the foundation of muscular agility and power. The pugilist Sullivan has probably no heavier or harder muscles than thousands of other men, but a superior quality of nerve tissue enables him to use heavy muscles with the rapidity and cat-like agility, and the concentration of power in a single blow, that makes him so effective as a pugilist. An irregular, dissipated life would soon ruin this fine quality and reduce him to the level of other men. Hanlan, for many years the champion oarsman of the world, has not very large muscles, but his superior quality of brain and spine tissue gives him a high and sustained power which few men can equal. The common gymnastic feat of raising one's self a number of times on the horizontal bar is one in which neurasthenics never succeed very well; they lack reserve power.

The relation of the nervous system to the muscular apparatus is often illustrated in professional athletes. When a man is trained too fine, *i. e.*, when his muscles are developed out of proportion to the capacity of his nervous system to create and supply force, and of his heart and lungs to supply blood and oxygen, he lacks stay-

ing power and is apt to be defeated in a contest. Readers of Wilkie Collins' novel "Man and Wife" will remember the fate of Geoffrey Delamayne. Dr. Winship, a one-time celebrity of Boston, who trained himself from a puny college boy to a Hercules in lifting heavy weights, suffered from palpitations and faintings during his public exhibitions. Many large muscled men suffer severely from nervous symptoms.

Trembling of fingers and hands is a common phase of nervo-muscular impairment; it may be more or less constant, or may only be manifested when an unusual demand is made upon the nervous system, as during sudden emotional excitement, or after any great muscular effort.

A sudden twitching or starting of the muscles of one limb or the entire body, generally on going to sleep, and a twitching of the muscles about the eyelids in reading or in any work requiring eye strain, are symptoms that are frequently described by neurasthenic patients. These tremblings and twitchings indicate the unsteady intermittent character of the nerve-current from brain-and-spine to muscle.

Writer's Cramp, or writer's palsy, is an example of the exhaustion of certain groups of nerve-cells. This is one of a family of nervous disorders known as "occupation neuroses," which is seen among telegraphers, musicians, dancers, engravers and others, who habitually use one set of muscles to do more or less fine work. The individual partially or completely loses the ability to make the familiar movements of his craft, while in other respects the limb is but little impaired. Thus the penman may become unable to write or even to grasp his pen, while his ability to play ball or row a boat, or do any coarse movement, may be as good as ever. The cell combination in the nervous system which directs the complex act is exhausted. The fact that the symptoms

of writer's cramp are chiefly manifested in the extremities leads many to suppose that it is a purely local affection ; but if the subject attempts to use the left hand instead of the right the disease soon appears there as well.

Cramp or palsy is only one of many symptoms exhibited in the occupation neuroses, and even these may be absent in well-defined cases of writer's cramp. Three types of these disorders have been described, viz.: the spasmodic, the paralytic and the tremulous, according as cramp, weakness or trembling is the most marked symptom in the case. One of the earliest and most constant symptoms is a sense of unnatural fatigue in the hand, arm or shoulder, which may grow into a dull aching pain during work. Sometimes this pain implicates the whole limb from the fingers to the spine, and is so great as to compel the individual to cease work. Other symptoms frequently described are stiffness and tightness of the fingers or arm ; trembling or twitching unsteadiness of the limb ; cramp, spasm, or jerking or tightness of the muscles ; soreness and tenderness ; loss of power; various morbid sensations in the limb, as a sense of itching, burning, tingling, creeping, prickling, numbness on the surface; binding about the wrist; feelings of heat or coldness; neuralgia; a tendency to grasp or clutch the pen too tightly, and to bear down heavily upon the desk.

Victims of writer's cramp often suppose that they have rheumatism and treat for this disease.

Many cases of writer's cramp are cured quickly and permanently without abandoning work. These are generally cases in which the disorder has not become too chronic. In some cases a more or less prolonged vacation is necessary, and in certain old cases, especially existing in thoroughly broken-down patients, no treatment will do more than lessen the evil. The treatment of this, as of all similiar disorders, is a combination treatment. It includes among other things:

1. Change *in* work. The patient must endeavor to do his work by means of motions as opposite to those to which he has been accustomed as possible; in the style of the pen and holder, in holding the pen, in standing or sitting at work, in lifting heavy books, many changes may be made which will throw part of the strain of work upon other nerve-cells and rest those which have been over-drawn.

2. Training. When an athlete wishes to get himself into the best possible condition, he goes into training for a time. So the victim of writer's cramp who wishes to hold his position must often reform his habits of eating, drinking, smoking, sleeping, and perhaps deny himself many things in which he takes comfort.

3. Electricity in the form of local and central galvanism is the most efficacious single remedy. It generally relieves pain at once and substitutes a grateful glow for the feeling of fatigue and stiffness so often complained of. Its permanent effect is equally valuable and I have never seen a case of writer's cramp that was not distinctly benefited by this remedy.

4. Massage. Kneading and various passive exercises of the affected muscles are useful measures, as is also hot bathing.

5. Hypodermic injections of various medicines into the affected limb are, next to electricity, the most potent measure, though not adapted to all cases.

X

MUSCULAR SIGNS—THE CONVULSIVE DISORDERS

Convulsion and spasm are italicized signs that something is wrong with the brain-and-spine. In many cases of convulsive disease search discovers a cause therefor in some irritation of the gray brain-cortex, whether existing in the brain itself or transmitted thither from without by sensory nerves. But in other cases no cause can be discovered; if death occurs from accident, necropsy shows no morbid change, and the microscopist with ever so high a power can detect nothing abnormal in the nervous structures. An unstable, a weakened, an over-sensitive, or all three of these conditions of the brain-and-spine, may manifest itself in convulsive muscular movements of various kinds. Chorea, Hysteria, and Epilepsy can hardly even be alluded to in the few pages that can be spared here, but a few facts may serve as introduction to a statement of the important principles of treatment which apply to all three.

In St. Vitus' Dance, irregular and more or less violent convulsions, involving single muscles or groups of muscles, which are exaggerations of natural movements rather than convulsions, occur; the term "insanity of the muscles," has been applied to it. In the fourteenth and fifteenth centuries an endemic nervous disorder prevailed in the region of the Rhine and the Moselle, and it was customary to lead victims to the chapel of St Vitus at Strasburg, where they were supposed to be cured by religious ceremonies and invocations. The various forms of chorea which are now popularly known as St. Vitus' dance have no similarity to the nervous epidemics of the middle ages.

Chorea has been traced to various physical changes in the brain, and to various irritations, poisonous or reflex. The chorea of nervous impairment is apt to develop in children, more often in girls, between the ages of seven and fifteen. Habit and imitation sometimes develop and establish this disorder. Chorea is the most easily curable of the convulsive disorders, though it occasionally runs a course of a year or more, and may become chronic.

Hysteria is the most protean of all diseases; convulsive seizures are but one phase of it, and they are sometimes absent. The entire apparatus of perception may be deranged; morbid sensations, aches, and pains, which are true cerebral hallucinations, are complained of.

The motor apparatus may be periodically agitated by convulsive movements, or may remain paralyzed in one limb or another for five, ten, or even twenty years, to be miraculously cured in a week or a moment by the faith cure, or a bottle of the water of Lourdes. The mind often distinctly deteriorates in its moral element; hysterical patients are sometimes mendacious, deceitful, egotistic, selfish, and painfully lacking in moral stability. Some of the most remarkable instances might be related of the deep-laid and ingenious tricks which have been resorted to by hysterical patients to obtain the notoriety or the attention they crave.

The fact that typical hysteria is almost confined to the female long led to the supposition that it has its origin in the womb, but hysteria is occasionally observed in the male, and the exaggerated emotional susceptibility peculiar to this disorder is not so very rare in man. Hysteria varies in type in different countries and at different ages. France develops a type of hysteria, hystero-epilepsy or hysteria major of Charcot, that is seldom seen in England or America. Hysteria mimics all diseases; hysterical insanity, hysterical unconsciousness, hysterical amblyopia, deafness, paralysis, convulsions, pain, asthma, dyspepsia,

joint-disease, ovarian and uterine disease, and even hysterical pseudo-pregnancy occur.

Epilepsy, "the falling sickness," is a very ancient disease. In ancient times one having it was supposed to be "possessed of a devil," and religious formulas were resorted to to drive out the unclean spirit. The essential features of epilepsy are sudden loss of consciousness and convulsions, but many subtle and masked phases of this disorder have been noted. In severity an attack varies all the way from slight, almost imperceptible, unconsciousness to tragic fits, and even to violent homicidal mania. Epilepsy is most common between the ages of ten and twenty—puberty is a comparatively unstable period of life—but may occur at any age. The frequency of attack varies from once in one or two years to even one hundred and fifty seizures in twenty-four hours; the larger proportion of cases outside the asylums have well-defined attacks once in two or three weeks. The two factors in this disease are intrinsic instability (hereditary or acquired) of the higher brain-cells plus an irritation. The irritating impression may consist in blood-fullness, in a blood-poison, or may be reflected from a distance. Recent observations render it probable that ocular defects are a frequent irritating cause, among others. Habit has much to do with the development and maintenance of epilepsy. Each fit renders subsequent ones more probable and more easy. Thus the reflex convulsions of childhood sometimes merge into epilepsy, and thus in the adult, fits which are only epileptiform may gradually become epileptic. The tendency of this disorder is to weaken body and mind, although it does not always do so. It is probable that the epileptic seizure is a sign of various conditions which we are unable to differentiate in the present state of our knowledge. Thus the epileptic fits of Napoleon did not express the same condition of brain deficiency that those of the idiot epileptics of our asylums do. In-

stability is the prominent defect of the one, abject weakness of the other.

The curative treatment of the convulsive disorders includes three great principles:

1. Elimination. The search for and removal of outlying irritations, which may be acting backward to irritate and depress the brain, is of the first importance; in an obscure case every organ and cavity of the body may have to be interrogated.

2. Brain-and-spine peace—rest. This may require removal of a precocious child from school, or in adults a change of occupation or of environment. Sleep, quiet, uneventful, unirritating surroundings are desirable in every case; in children, a year of quiet country life and sunshine, away from city sights and sounds, will succeed where the great city specialist in nervous diseases will fail. In a few cases the principle of securing absolute peace for the central nervous system must be carried to the length of secluding a patient in a darkened room for weeks, shutting out even the stimuli of light and sound; the oculist can testify to the value of this procedure in his department of nervous disorder.

3. Brain-and-spine nutrition—building. Food and oxygen are the material; electricity, counter-irritation, heat, cold and drugs, are the forces; as with all the forces which man converts to his uses, these act beneficently in proportion as they are guided wisely.

There is no magical cure for most cases of convulsive nervous disease. It is a matter of earnest, faithful persistent adherence to the principles which physiology and experience alike teach us. It is a careful, continuous, vigilant, never-relaxing care and attention to numerous details. I am convinced that many uncured cases of convulsive nervous disease are so because treatment has never gone deep enough nor far enough, and has not been characterized by the extreme thoroughness which is es-

sential to success. We have many other and more powerful forces than drugs which act upon the human tissues, and the cure of these disorders is a matter of wider scope than the prescription of bromides or of phosphorus. It is a pathetic fact that the enthusiasm, the pluck, the faithfulness, the wisdom, which is more than sufficient to cure nervous disease is often lacking in parents, and that the medical man sometimes finds his feebly-aided efforts insufficient to rescue a child from a future which is, in some cases, worse than death. In these disorders, if the necessary care is great and the details tedious, the end for which we strive is great, and even the prospect of success justifies great effort.

XI

RESPIRATORY SIGNS—HAY FEVER AND ASTHMA

The respiratory apparatus, so far as hay fever and asthma are concerned, may be described as consisting of first, the mucous lining of the nose, throat, voice-box, windpipe, and lungs; second, the nerves, nerve-ends, ingoing sensation-bearing nerve-fibers, out-coming impulse-bearing fibers and vaso-motor (blood-current regulating) fibers; third, the respiratory nerve-centers in the medulla, (between brain and spine); fourth, the unstriped muscular fiber which constitutes the middle wall of bronchial tube, wind-pipe, and of artery and vein everywhere.

HAY FEVER is a curious disorder in many respects. It attacks almost exclusively the sedentary, brain-working, well-to-do population or their descendants. It recurs annually with singular exactness; some persons are attacked at the same hour of the same day each year. It amounts, in some cases, to no more than a bad cold in the head; in other cases the coryza is followed by bronchitis, cough, and asthmatic seizure of the most intense description. These asthmatic attacks are the most dreaded feature of hay fever, and sometimes prolong the attack for weeks or months, though the usual duration of an attack is about a month. The law of habit has considerable to do with this, as with all functional nervous disorders; each attack favors a recurrence.

The nature of hay fever has been the subject of much discussion. It has been called a purely local (nasal and bronchial) disorder, a purely nervous (vaso-motor) disorder, and a purely toxic (pollen-poisoning) disorder. The

prevailing theory now is that hay fever is a respiratory neurosis, in which irritated nerve-ends, over-sensitive respiratory nerve-centres, unstable respiratory vaso-motor innervation act in different proportion in each case.

NEUROTIC ASTHMA is that variety of spasmodic difficult breathing which cannot be traced to any physical cause. In many cases there is no bronchitis nor heart, stomach, kidney or skin disease nor blood poison to explain the paroxysm, and we can only suppose over-sensibility of nerve-end and nerve-centre to irritants which are often trivial, and which are not noticed by ordinary persons. Asthma and epilepsy occur in the same individual with sufficient frequency to suggest a kind of relationship between them. Eczema and other skin diseases involving imperfect secretion through the skin, and thus blood poisoning, is a somewhat common accompaniment of neurotic asthma. Asthma, epilepsy and eczema have occurred together in several persons who have come within my observation. A paroxysm of asthma lasts from half an hour to several days and tends to recur at more or less frequent intervals. Chronic asthma is capable of inducing certain physical changes in the structure of the lungs and heart—emphysema, dilatation of the pulmonary vessels and of the right side of the heart.

THE TREATMENT of hay fever and that of neurotic asthma are similar: it includes preventive palliative and curative measures.

Change of climate is the best means of avoiding an attack of hay fever, and is often the best in asthma. For hay fever the White Mountains, several sea islands, and at sea, out of sight of land, are famous asylums. The long, dry summer season of California, in which flowers and pollens play but little part, is favorable to both hay fever sufferers and asthmatics. The tonic influence of change and rest probably have something to do in this means of warding off an attack.

The palliative treatment of both hay fever and asthma utilizes every stimulant and sedative on the list and then sometimes fails. Of stimulants caffeine, strong coffee, acholic liquors, Indian hemp and nux vomica are the most common in use. Of sedatives, belladonna, hyoscyamus, stramonium, duboisia, Hoffman's anodyne, grindelia, nitrite of amyl inhalations, eucalyptus, and the nauseants tobacco, lobelia and ipecac succeed and fail. Morphine, ether and chloroform will give temporary relief. Solutions of cocaine locally applied have a power of reducing engorgement in mucous membrane, which is of great use in the beginning of hay fever.

Various inhalations afford relief in asthma, that of oxygen, the smoke of stramonium leaves and of saltpetre. The most efficacious smoke is that from powdered lobelia, powdered stramonium leaves, powdered saltpetre, and powdered black tea, of each two ounces, mixed, sifted, burned, or smoked, and the smoke inhaled. Powerfully impressing and diverting the blood-current from the nervous centres is a principle which acts well in many cases; the hot mustard foot-bath, a mustard plaster or dry cupping between the shoulders, ice bags to the base of the brain, to the back of the neck, and to the spine are all made to accomplish this indication.

Galvanism of the pneumogastric nerve, and of the neck greatly modify the paroxysm of asthma.

The curative treatment of the respiratory neuroses is sometimes surgical, and always hygienic. Surgery, in the form of the galvano-cautery, the snare, the knife or caustics is sometimes successful when there is obvious local disease within the nasal passages. The cure and the treatment against hay fever and neurotic asthma involves the whole subject of nervous hygiene. Cod liver oil and arsenic are the great remedies. The most efficacious treatment against the respiratory neuroses would begin two or three generations before the individual is born.

XII

ABDOMINAL SIGNS, NERVOUS INDIGESTION.

Before food can become blood it must go through several processes :

1. Prehension, or the act of getting it into the mouth.
2. Mastication, or chewing.
3. Deglutition, or swallowing.
4. Digestion, or the reduction of food to a liquid, and the conversion of it into chyle.
5. Absorption of this digested food-stream from stomach and intestines.
6. Liver action upon albumens, starches and sugars.

The abdominal organs do not maintain their tone, secrete their juices and nourish themselves by their own inherent vitality, but they are enabled to do these things because they are innervated, vitalized or supplied with nerve-force by the brain and spine through the sympathetic nervous system.

That portion of the sympathetic system which directly supplies the vital (breathing, circulating, digesting) organs with power, is placed for protection and convenience in the great cavities of the chest and abdomen. Here the sympathetic centres with their connecting nerves form a double chain in front of the spine, extending from the neck to the pelvis. This outlying dependency of the brain and spine is independent of the will, is on duty day and night; its nerve-cells are kept charged with nerve force by the central nervous system, and act as reservoirs of vitality for the internal organs.

Poor Appetite and Indigestion. — The digestive juices—which attack the food, soften it and change it

chemically so as to render it fit for absorption—are secreted by innumerable follicles in and adjacent to stomach and bowels. These follicles depend directly for their power of secreting upon the nervous system. This 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 nerve-force the digestive secretions may be almost suspended for hours, or even for days. So, when the brain or the muscles are over-worked the nervous allowance of the great sympathetic system is reduced, and the quantity and quality of the digestive juices suffers from this impoverishment. After a day of severe toil a man may feel "too tired to eat," which means that the nervous system has been overtaxed, and the stomach lining, lacking its accustomed stimulus, does not secrete its juices—feels no appetite.

Atony in Stomach and Bowel Walls.—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."

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.

Gastro-ectasis, or bloating and prolapse of the abdominal mass, sometimes occur in the same subject.

Digestive Breakdowns.—In some over-worked men the digestion remains pretty good, but is liable to sudden break-downs. On certain days without any apparent cause the subject finds that his dinner rests like a bar of lead upon his stomach; or sour risings, heartburn and belchings indicate plainly enough that the meal is being slowly and imperfectly digested. Or, after a hard day's work, or after some trifling indigestion in eating, the individual may be attacked by violent colic or cramps, with nervous chills, which in some cases prostrate and incapacitate him for several days.

Such attacks may occasionally be traced to pieces of undigested food no larger than the little finger nail. At such a time a piece of cheese, of preserved fruit, or of walnut may be too tough for the deteriorated gastric and intestinal juices. Again, the intestinal gases, which are always present in larger quantities during and after slow digestion, accumulate in the bowel, the tired relaxed bowel-wall has not the tone to contract upon them, move them along and properly distribute them in the intestine, and colic results. In other cases the irritable and weakened

nerves of the abdomen become the seat of paroxysms of pain and of a variety of unnatural sensations, which are independent of any exciting cause that can be discovered. Soreness, dragging, fluttering, burning, or a feeling of weakness are among the sensations described by different patients. These and other sensations are frequently located somewhere about the navel.

The Liver Type of Nervous Indigestion.—Many years ago it was first noted that in certain cases of dyspepsia, torpid liver, as well as in cases of nervous strain or over-work, the urine is scant, high colored, of a high specific gravity and deposits certain substances on cooling. Of these, uric acid crystals, urates of soda and other urates—forming a reddish brick-dust deposit, which clings tenaciously to the sides of the vessel, oxalate of lime—whitish, thick and often very abundant—one or all together are found in different urines. The relation between oxaluria (oxalic acid or oxalate of lime in the urine), lithæmia (lithic acid in the blood), and lithiasis (the lithic acid diathesis or tendency) to nervous impairment is now well understood.

The liver weighs from three to four pounds, and is one of the most complex and important organs in the body. One of its functions is to stand between the blood-stream of the digestive organs and that of the rest of the body. At the gates of the portal or abdominal circulation, it exercises a prudent discrimination, as St. Peter is reputed to do at the gates of heaven, and only admits such and so much of the often impure or gross stream, which results from digestion, as is good. It would not do to allow all that every man eats to get into his general circulation. A gross surplusage must be gotten rid of, and this is part of the work known in physiology as excretion. When the heavy nitrogenous elements of the portal circulation representing meat, eggs, the caseine of milk and other heavy foods, are brought to the liver, it admits some and,

in hearty feeders, it restrains some. That which is kept back is subjected to the action of oxygen, oxidized, disintegrated or split up into urea, carbonic acid and water and borne to the kidneys, which filter it from the blood.

When the liver is imperfectly innervated or vitalized by the sympathetic nervous system it become "insufficient." It is unable to do its work thoroughly. It fails to form urea, and forms lithic or uric acid. Urea is soluble in water and gives a clear urine; the substances substituted for urea by a tired liver, uric acid, its resulting salts, the urates, and its later products, oxalic acid and the oxalates, are not very soluble in cold water and so form a variety of urinary deposits. Thus "the neurotic with lithiasis" (Fothergill) is apt to pass turbid urine, or urine which becomes turbid on cooling; to notice that the bottom and sides of the vessel are sometimes stained with a brick-dust deposit; to be troubled with "biliousness" and constipation, and to find that he cannot digest fats easily.

The Treatment of Abdominal Neurasthenia.—When this form of nervous impairment develops in one who is not used to sickness, much precious time may be lost before the stern laws which pertain to it are realized, and the troublesome *régime*, which experience has found essential, is submitted to. Often this disease is considered to be, and treated as, dyspepsia, but purely local treatment is unavailing. Drugs alone have no permanent power in this disorder. Merely local treatment is trimming at the branches, and leaving the roots untouched. Sometimes it is only after ignoring or resisting the disease for months or years, and after trying every patent medicine, pathy, and marvellous cure, that the victim mellows into a wise and painstaking patient. Then the true cure begins. General nervous hygiene is the foundation; a careful adaptation of diet in each case imperative, and then drugs and electricity can help. A system of partial or complete liquid feeding has done me good

service. The diet in abdominal neurasthenia needs to be generous, and as soon as we can get our nervous dyspeptic a little out-of-doors it can usually be made so, to a greater or less extent. The English physician puts his gouty dyspeptic and lithæmic patients on a reduced diet and gets them well. The American practitioner finds that his nervous lithæmics do best on a diet rich in nitrogenized matter and fats—on beef, eggs, butter, cream and wine. In abdominal neurasthenia the man is not dyspeptic or bilious because he eats indigestible food so much as because his digestive organs do not regularly receive their nervous remittances. Behind the unreliable stomach or the insufficient liver is the insufficient brain and spine; we are curing a nervous system rather than a liver.

In some cases we have to face two hostile facts. First, nitrogenized foods and fats are essential to create stability, endurance, staying power in the nervous structures; second, the individual is unable to digest these substances. He is unable to liquefy and emulsify them into absorbable chyle, in stomach and intestine (primary digestion), or, if able to do this, is unable to elaborate the food-stream in the liver, through which digested meat, eggs, milk-casein, and similar foods must pass before they can become blood (secondary digestion). But the greater the difficulty the greater the opportunity of the physician to show whether he is any more clever at curing than other people. By a system of food selection, cooking, masticating, vigilance in avoiding the beginnings of evil and a knowledge of certain timely precautions we can generally manage. The pedagogic or supervising function of the physician is perhaps more important in nervous indigestion than in any other form of nervous impairment.

XIII

RECTAL SIGNS—CHRONIC CONSTIPATION

Chronic constipation is not always a sign of nervous impairment, but only very often. Then it depends upon deficient moisture in the motions (deficient intestinal secretion) or upon debility (poor innervation) of the unstriped muscular fibre, which constitutes the middle wall of the lower bowel. Constipation is both an effect and a cause of disease. Sir Andrew Clark has recently applied the term "fecal anæmia" to a class of cases, in which the elements of disease are retained accumulation in the lower bowel, chemical decomposition with formation of poisonous matters, absorption into the blood and chronic blood-poisoning. All pelvic and reproductive morbid conditions are especially aggravated by chronic constipation.

The hygiene of the lower bowel—proper food, a regular habit of going to the closet among other things—is the best treatment of constipation. Of foods those which afford a comparatively large remainder of waste to stimulate the lower bowel—rolled oats, rolled pearled wheat, Indian meal—may be taken when they agree with the stomach. Ripe fruits in summer, stewed prunes, baked apples, figs, cranberries, in winter, are valuable. But sometimes medicines are temporarily useful. The salines unload the bowels with less disturbance than any other class of drugs. Seidlitz powders, Rochelle salts in soda-water, or any of the popular mineral waters may be occasionally relied upon. A very convenient and portable preparation is "Tarrant's seltzer aperient," of which one or two teaspoonfuls in a glass of cold or warm water before breakfast will be sufficient. A regular glass of simple water on rising is sufficient to regulate some persons. The

habit of tippling mineral waters, and especially hot water, is to be condemned for reasons which there is not space to explain.

A very good pill against neurasthenic constipation—for temporary use, is the following.

Take	Extract of Nux Vomica.....	8 grains
	Extract of Belladonna.....	4 grains
	Resin of Podophyllum.....	4 grains
	Oleo-resin of Capsicum.....	2 drops
	Aloïn	8 grains
	Powdered Ipecac.....	2 grains
	Extract of Dandelion to make...	64 grains

Mix; divide into thirty-two pills. Dose one to three at bed-time till the desired effect is produced; then continue with one-half or one-quarter of a pill at bed-time for a week.

It often happens that the lower bowel is the only point at fault in chronic constipation, and then it may be best not to use any medicine at all. Any drug that influences the lower bowel must also stimulate, to some extent, in passing through, the whole intestinal tract, which is not always desirable. In such a case a daily injection of a half-pint of cold water into the lower bowel will accomplish all that drugs can, and will have a tonic effect beside. In sexual neurasthenia this is the best method; the deep urethra and the prostate are in close anatomical relation to the lower bowel, and it makes a great difference in these organs whether the rectum is clogged and heated, or whether it is clean, cool and unirritated. Mild galvanization of the spine, the abdominal sympathetic and of the rectum itself will sometimes cure obstinate constipation when all else has failed.

XIV

REPRODUCTIVE SIGNS—SEXUAL NEURASTHENIA IN THE MALE

An apparatus in physiology is a collection of organs charged with the performance of a particular function. Thus we speak of the visual, vocal, respiratory and digestive apparatus. The reproductive apparatus, viewed thus comprehensively, includes not only the external organs of generation, but also certain portions of the spinal cord and brain, without which there can be no reproductive activity. The spinal cord and sympathetic are reproductive organs as far as they contain erigerent, trophic and excito-secretory nerve-centres. The brain is a reproductive organ as far as certain of its cortical cells inherit erotic instincts, and receive, react to and remember erotic impressions.

Reproductive Signs of General Nervous Impoverishment.—When the sum total of the nervous resources is reduced, the reproductive apparatus is very apt to manifest weakness or unsteadiness. Seminal secretion may be scant or may fail altogether, and the individual may remain without sexual desire for months or years. Erection may be feeble and poorly sustained, and premature and feeble emission, on attempting coitus, is a common symptom of the nervous irritability and weakness of this type of neurasthenia. In some cases, without there being any actual loss of power, there is an uncertainty and unreliability, with respect to the sexual function, which renders the individual practically impotent. A sense of unnatural or intolerable fatigue after temperate intercourse is another common phase of this condition,

and many apparently healthy men with perfectly healthy sexual organs are obliged to practice the greatest carefulness in this part of their economy. As one man expressed it, "that thing tears me all to pieces."

Involuntary morbid seminal emissions are an annoying symptom which may occur in nervous paupers without any foundation of excess, or any local weakness, or any cause whatever, excepting the unstable condition of the spine. This form of spermatorrhœa is a neurosis, a purely nervous disease, belonging to the family of explosive or convulsive disorders, which includes epilepsy, St. Vitus' dance and hysteria. The emission is often started or set off by anything which irritates the nervous system in the slightest degree, as an indigestible supper, an evening cigar, coffee or emotional excitement.

Sexual Neurasthenia.—There are several ways in which civilized man is injured through his reproductive apparatus. The abuses of childhood and boyhood, the strain of celibacy in an environment of erotic suggestion, the folly of excess—often added to overwork (thus burning the candle at both ends), and the frauds against conception, all act extensively in our midst to produce a type of disease, which is widespread and important.

The unity of sexual neurasthenia is not at present thoroughly recognized outside of neurological literature, although the prominent part played by the nervous system in functional reproductive disorders long since led some eminent authorities to classify them among nervous diseases as the "The Sexual Neuroses." But in general, sexual neurasthenia still goes by a variety of names; its symptoms are treated as distinct diseases by many practitioners, and are so described in many standard medical works. Sexual hypochondriasis, spinal irritation, spermatorrhœa and impotence are often functional disorders of the same apparatus, having the same causation and requiring the same plan of treatment.

The elements of sexual neurasthenia may be briefly described as follows :

CEREBRO-SPINAL IMPAIRMENT.—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 if persisted in establishes a chronic irritability and weakness in the central nervous system. Here is nerve-waste at its worst.

REFLEX IRRITATION.—The repeated and other prolonged engorgements which attend sexual excitement, and the succession of irritating impulses transmitted from the brain to the sexual organs in habitual mental erotism, are capable of producing certain morbid changes in the deep, reproductive tissues. These consist of congestion, inflammatory patches, irritable points, thickening and stricture of the urethra, of irritability and congestion or even chronic inflammation of the prostate gland and of an over-active, over-sensitive condition of all the reproductive tissues.[1] Certain eminent authorities have denied that

[1]Jean Jaques Rousseau was a victim of sexual neurasthenia, if we are to judge from his famous "Confessions." Concerning his case, MM. Grimaud de Caux and Martin Saint-Ange (Histoire de la Génération de l'Homme. Paris, 1847) say: "Lastly, we have to admit the existence of another form of stricture of the urethra—that caused by a nervous state of the passage, which becomes so greatly contracted that its calibre is wholly obliterated and its sides brought into contact. Such an obstacle to urination is only temporary, lasting at most an hour or two, but, by its frequent repetition, causing much suffering to those who are its subjects. It was such an affection that rendered J. J. Rousseau so unhappy, and so insupportable to himself and to others. He was supposed to suffer from stone in the bladder. Morand, however, could never discover it by sounding, so Rousseau had recourse to Frère Côme, who, having penetrated to the bladder, found nothing. This examination quieted him for a time, but the urethral spasm reappeared, and hypochondria supervened to darken the mental horizon of the philosopher, and to disgust him, as every one knows, with all the objects of his love and friendship. If the author of "Emile" had lived in our day, with its scientific progress in the treatment of diseases of the urinary passages, it is more than probable that the greater part of his life, especially the close, would have felt the full power of his character and genius, which, being of late development, would have illumined his old age." This symptom is so common that one of my stock questions in sexual neurasthenia is, "Are you able to make water without embarrassment in a public urinal?" In twenty per cent. of all cases the answer will be, "No."

stricture of the urethra can result from sexual excitement alone and claim that it must depend upon venereal disease or upon injury. Nothing is more common in my experience than thickened, blotched or strictured urethras in men who have never had gonorrhea or even sexual intercourse. These changes, once established, persist. They act backward upon spine-and-brain, transmitting a continuous harassing impression which irritates and depresses the vitality of these vital organs. Spinal irritation, spinal instability, spermatorrhœa, impotence, are, in a large proportion of cases, directly dependent upon these deep-seated morbid conditions.

Spinal Irritation.—Unsteady circulation, congestion, impaired nutrition and over-sensitiveness of the spinal cord, is a common symptom in all forms of sexual neurasthenia.

Spermatorrhœa.—The unnatural losses of sexual impairment are the features which are apt to give the patient most anxiety, but they are by no means the most important element in the case. In some cases, these losses result chiefly from local irritability and weakness; in others, more from a *habit of excessive secretion* which the parts have been gotten into; and in others, more upon spinal instability; and in some cases all three of these conditions operate. The seminal fluid is in no sense a vital fluid as the blood is, and its loss is, intrinsically, not very debilitating. Many husbands expend seminal fluid almost daily for years, or a life-time, without apparent injury; and in children before there is any secretion to lose, and in females, bad habits may produce all the nervous symptoms of chronic spermatorrhœa. But in the powerfully depressing mental effect which this objective symptom often produces, it is worthy the most earnest effort on the part of the physician. The excessive nerve-waste, the reflex irritation of deep reproductive disease, the depressing emotions of anxiety and remorse are the most potent factors in sex-

ual neurasthenia and all together make up a peculiarly distressing form of disease.

The Urinary Deposits, which are common in all varieties of nervous impairment, are a source of great anxiety to sexual neurasthenics. Influenced by false statements of advertising charlatans tens of thousands of "young, middle-aged and old" men believe that their life-force is being drained by spermatorrhœa. It is a great comfort to many such men to see their turbid urine clear up in a second on the application of suitable chemical tests.

Impotence may be temporary or permanent; partial or complete. It may consist in unstriped muscular-fibre atony (relaxation of vein, scrotum, imperfect erection or failure of erection), in excessive irritability, local, or universal throughout the whole apparatus (premature ejaculation), in atrophy (diminution in size of the external parts), or in excito-secretory failure (deteriorated seminal secretion—sterility), or in all together. Behind this symptom is the great fact of the spinal cord and sympathetic. The external genitals are the instrument, the spine is the source of sexual vigor (tone, erection, ejaculation) and of sexual life (nutrition and secretion). Diseases of the spinal cord, implicating the centres of sexual life, are attended by impotence. If the nerves which connect nerve-centre and generative-organ could be severed all sexual life (growth, secretion, vigor) would cease. Thus, when the spine and sympathetic have been overdrawn by excess, or when they have been depressed for years by morbid urethral and prostatic impressions, they poorly innervate or vitalize the external parts and sexual impairment—debility or exhaustion—results. Thus, the spine is the ultimate organ of sexual life, and the great objective point in any scientific treatment of this symptom, and thus impotence is pre-eminently a nervous disorder.

Sexual Hypochondriasis—Sexual Pathophobia.—The mental depression and anxiety of sexual neurasthenia is often itself a symptom of central nervous impairment. Poorly nourished and irritable brain-cells are apt to manifest an anxious or gloomy quality of mind. Reproductive impairments and especially discharges, of every kind, cause a mental depression in nervous persons that is in striking contrast to the cheerfulness of graver diseases. In tuberculosis, the patient is often cheerful and hopeful to the last; the lungs do not exert the same influence over the brain that the reproductive organs do.

A large proportion of sexual neurasthenics labor under false or distorted conceptions of the nature and gravity of their disease, and in some these false beliefs attain to the gravity of real insane delusions. One of these delusions is in relation to the intrinsic effect of an occasional seminal loss. The tons of cheap printing which are circulated throughout the land will compare favorably with any disease germ, in the amount of mental and nervous disorder which they produce. The policy of these books is to frighten, and to this end, symptoms and consequences of sexual abuse are distorted and exaggerated with great ingenuity.

A common statement is that the loss of a single drop of seminal fluid is equal in vital waste to forty ounces of blood. The invalid, ignorant of physiology and of pathology, knows that he is sick, and that he feels a wretched lassitude and weakness after such a loss, and this statement strikes him with all the force of truth. He becomes morbidly watchful, and every evidence of loss depresses him greatly. I have lately treated a young man weighing one hundred and sixty pounds, and presenting every external evidence of health, who was for years completely unfitted for his day's work by a weekly emission; and have in my possession numbers of letters which express a degree of mental wretchedness, amounting to

agony, because of this single symptom and without another obvious sign of disease. Of the three elements of a seminal emission in nervous individuals (the seminal loss, the nervous discharge, and the subsequent mental depression) the last is far the most potent. In certain patients it may be elicited that during several years of sexual abuse they retained good health, but that upon discovering the awful consequences from some advertisement, and upon the natural appearance of seminal emissions, habitual worry quickly made them nervous invalids. If we could persuade sufferers from chronic nasal catarrh that every drop of mucus lost from the nose is equal to forty drops of blood, and that this disease is bearing them to the insane asylum or the grave, we could thus frighten and worry thousands of these patients to death. In most cases of sexual neurasthenia, sexual abuse is only one of several causes—among heredity, over-work or sedentary habits. But these patients are apt to attribute all their weakness to their own folly, and to suffer much unnecessary misery. The fact that sexual sufferers must generally bear their troubles in secret, with no strong arm to lean upon and none to instruct or advise does much to develop morbid notions.

The importance of these mental states of sexual neurasthenia does not always receive the consideration it needs. Many physicians, estimating this disorder upon its objective and pathological features alone, look upon it as a trifling matter. Thousands of young men, who every year seek help from their family physician, are met with indifference or brusqueness, or receive some medicinal treatment which is entirely inadequate in the case; then the patient remains miserable, the physician misses one of his greatest opportunities for doing good, and the charlatan thrives.

Remorse for the past and anxiety for the future are terrible forces in human life, and the fact that there is

often no true foundation for these emotions does not lessen their power. Chronic worry is capable of killing the strongest man, and many a pale-faced boy is carrying about a secret which is a serious matter to him, and which, of itself, depresses his vitality, retards his growth and distinctly interferes with his success in life.

It is wiser to recognize the importance of the mental phases of sexual troubles, and to set to work sympathizingly and kindly to remove them. It requires a much higher order of medical skill to treat a disorder which has its seat in the mind than in any other function of the body. With earnestness in both physician and patient sexual neurasthenia is one of the most certainly curable of all nervous disorders. A little pains taken to instruct these patients in the elements of sexual physiology and pathology, will achieve a success in practice which is not always granted in other directions. In very many cases the favorable prognosis, which can conscientiously be made by the physician who is equipped for this kind of work, in substituting 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 which 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 Treatment of Sexual Neurasthenia varies according as general nerve weakness, mental depression, spinal weakness, irritability and instability, deep-seated urethral and prostatic changes, or local debility or exhaustion are the most important elements in the case. Eliminative treatment is essential where deep-seated morbid processes are acting to keep up the symptoms. Modern instruments and procedures render the deep reproductive tissues perfectly accessible to the surgeon, and disease therein can be exactly located and thoroughly

treated. Teaching—giving the patient clear and correct ideas of the nature of his trouble, and instructing him in its hygiene—is often the most valuable service which the physician is able to render in sexual neurasthenia. Restoration, or building up of brain and spine, or of the spine alone, and in many cases of the external parts, is accomplished by a careful hygiene, electricity and a wise use of every force which can be included under the word "tonic."

XV

SEXUAL NEURASTHENIA IN THE FEMALE

The reproductive system is deficient in civilized woman. Our American families seem to be decreasing in size, and it is fortunate that the Republic is not wholly dependent upon its city daughters for soldiers and statesmen. Child-birth is a simple process in primitive woman, and becomes difficult, or complicated or dangerous, in proportion as the woman is civilized. The great development of the baby-food industry in the United States testifies how the mammary glands, a part of the reproductive system, are failing. It is getting somewhat rare to find a mother in the higher walks of life who can nurse her child without systematic stimulation.

Heredity and education operate extensively to weaken brain-and-spine, and dwarf dependent tissues. A pretty large proportion of American women are slender, and have clear-cut, intellectual faces, and expressive eyes. They are interesting or delightful, clever or brilliant in conversation, altogether charming as companions, and plucky or noble as wives. But the physiologist notes that they are flat-chested, narrow-hipped, that their flesh is not firm, that they lack suppleness and endurance, and he knows that they will not make good physical wives and mothers. In an address on The Modern Tendency of Disease, the late Dr. Fothergill gave an ingenious account of the manner in which the strain and overdraft of civilization stunts the purely sexual element of women, and tends to reduce her to a neuter.

There are several forms of nervous strain which act through the reproductive apparatus to depress and

weaken the brain-and-spine. Medical men alone realize the extent to which woman's dependency upon man subjects her to abuses, and renders her liable to misfortunes in this part of her economy. The strain of enforced celibacy, that of excessive and unwelcome exercise of the reproductive apparatus, which are widely suffered by women, would not be endured by man. The strain and shock of unphysiological manœuvres against conception has repeatedly been pointed out by eminent authorities, but the existence of such things is largely ignored in medical practise. In addition to these strains child-bearing, nursing, child-rearing, household drudgery and domestic worry too often strain and wear upon the nervous centres from several directions at once.

Uterine and ovarian diseases are very common among American women, and are due to a long list of accidents and mistakes. Perhaps no class of cases of nervous symptoms is more common than that in which a congested and bent womb, or a misplaced ovary or some other local disease, is the chief cause. These local conditions often continue to act backward along the nerves, through months and years, and irritate and depress the vitality of the brain-and-spine as a splinter in the foot might, by its disturbing influence, cripple the entire leg. 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 reproductive organs.

Nervous impairment in woman may manifest itself in the reproductive organs. In woman, as in man, the reproductive system is vitalized, through the sympathetic nerve-centres, by the great vital source, the brain-and-spine, and the tone of these tissues is apt to fluctuate with the general health. The ill-regulated, unsteady circulation of the blood, which so often accompanies deficient nerve-power, may include a congested and over-

sensitive state of the spine, womb or ovary. In these cases the irritable spine, the irritable womb, and the irritable ovary are best considered not as local diseases, but as local symptoms of a general nervous deficiency. Local treatment alone is only palliative; cure must come in caring for the nervous system.

In over-worked women menstruation may be entirely suppressed for considerable periods when the reproductive system is defrauded of its nerve-force by the brain-and-spine. In a class of 114 young women who were studying midwifery, Prof. Schroeder found that 65 were thus affected. In most of these cases menstruation failed soon after beginning the course of study.

In the treatment of associated nervous and reproductive disorder in the female, the first thing to be accomplished is elimination, abrupt or gradual, of everything that is working for the disease. The laws of sexual hygiene must be obeyed; chloral, morphine, alcohol, if they are in the case, must go out of it. Irritating impressions of every kind must be removed as far as possible, which will often necessitate a change of environment. If ovarian or uterine disease is acting backward to irritate and depress the brain and spine, an earnest effort must be made to remove it. In this local treatment for nervous disease modern surgery has achieved some of its most brilliant successes. After the enemies have been ousted let us set the beneficent forces of nature at work in the case, and they will not disappoint us. The successful treatment of nervous disease in woman requires an earnest physician, an earnest patient, and favorable circumstances; this is why so many curable diseases remain uncured.

XVI

NERVE-WASTE AND LONGEVITY

A completed lifetime is a measure of nerve-force. If the brain is the organ of mind, and the spine the organ of varied functions, the brain-and-spine together is the organ of vitality. Every child inherits a vital store which may be conserved to fourscore, or so lavishly expended or so severely strained that literal death of old age may occur at forty.

Flourens (De la Longévité humaine. Paris, 1855) taught that in man, as in animals, the period of growth is to the period of life as one is to five. He fixes the termination of growth in man at 20 years, when the epiphyses have united with the main bones. "Man grows for 20 years and lives five times twenty years; that is to say, 100. The goat grows for 8 years and lives to 40; the horse grows for 5 years and lives 25 years, and so with others." We now know that man does not come to the end of growth at 20, but continues to develop to 30 and beyond; but it is true that with a fair start, and a favorable environment, man may, and often has, lived 100 years.

We may distinguish two qualities of any stock of vitality—quantity and tenacity. Some men of apparently large vital resources lack resistance, and die from slight causes; others, frail, nervous, halting, live through every strain to three score and ten. Certain swords will bend double under a weight that will break a bar of pig iron; endurance is a better quality than abundance.

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 individual 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.

Within a few years some authorities have stated that certain organic diseases, as Bright's disease, and disease of the blood-vessels of the brain which precedes 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.

We can demonstrate that brain-and-nerve weakness alters the nutrition and character of surface organs—hair, skin, nails, and reproductive organs; we know that brain and spinal disease often precipitates disease in joint, muscle and bone; and it is fair to suppose that this trophic function of brain-and-spine is universal—reaching to blood-vessel, lung, heart and digestive organs.

In case of a blighted grape-vine one might examine curiously the yellow leaves and say, "this vine has the blighted leaf," or—since leaves are the breathing organs of plants—"its lungs are diseased." But the vine-dresser knows that far down at the roots the insidious phylloxera is sapping the life of the vine, and that the diseased leaf is a result, and not a cause.

Nervous impairment is the chief cause of death in many cases described by other names. When a physician is called to a diphtheritic child, or to a pneumonitic

adult, he knows that his duty and his power lies largely in nursing his patient's vitality. The danger is lest the poison in the one case, or the acute local inflammation in the other, against which our science has as yet no specifics, shall depress the brain-and-spine to death. With strong (or better) enduring patients he has promising material, and with these he most easily makes his cures. With many men who have been slowly dying, (brain-and-spine exhausting) for five, ten or fifteen years, a pneumonia or a typhoid fever is merely the last act of the drama. The enfeebled brain-and-spine is unable to endure or to rally, it cannot be stimulated—there is nothing to stimulate, and it succumbs to a sickness which an unimpaired man would easily endure, and safely recover from. When such is the case it is a pity that the fact cannot be stated, (for the lesson there is in it), "this man was worked to death."

XVII

THE CURE OF NERVOUS IMPAIRMENT

Cure is care. Curing a chronically impaired brain-and-spine consists in taking care of it. As with horticulturists, viticulturists and pisciculturists, the man who knows most about his subject and the forces which influence it, can take the best care of it. This cure requires the co-operation of many different remedies in proper proportion.

The realization (in time) that one has a chronic nervous disorder is an important pre-requisite to cure. This realization is often difficult to bring about. The carelessness or the obstinacy of many persons in estimating the importance of nervous symptoms, until it is too late, are facts of constant observation in medical practice. Symptoms are nature's warnings that her laws are being violated, or that something has gone wrong. A nervous symptom is a sign that something is wrong with the most important organ in the body, the very fountain of life, the brain and spinal cord. When such a sign is given it is the part of wisdom to heed it, though every other sign be ignored.

This failure to realize the meaning of nervous signs is pathetic when its consequences fall, as they often do, upon some helpless and dependent member of a family. The author was once consulted by a woman whose little girl was having several epileptic fits daily. The father of the child refused to allow her to receive medical treatment, because, as he said, "it is nothing but a habit." This was strictly and scientifically true, but what worse habit could a father wish his child to have? Another

parent whose little boy was developing the first symptoms of St. Vitus' dance, declined to take him out of school, "because he would lose his examinations, and besides he was always a nervous child, and this is nothing but nervousness." The physician stands dismayed before what must seem to him criminal egotism and neglect. Of course such persons, who so confidentially place their knowledge and judgment of disease above that of the physician, come in due time to see their error, but then, too often, is too late. The writer can point to a half dozen cases at any time, where indifferent, stolid, brutal or parsimonious neglect to heed nervous signals is ruining a young and innocent life, crippling a wife and mother beyond repair, or hurrying a whole family toward want or dependence.

One reason why nervous symptoms are so lightly thought of—especially when they occur in others than ourselves—is that they are largely subjective and not material. It is one thing too see, and another to recognize the significance of what we see. A broken bone or a burned skin speak for themselves, inspire sympathy and aid. A crippled spine is infinitely more serious that a broken arm, but it is out of sight and manifests its inability only by subtle signs, which do not appeal to the senses. But when we hear a person spoken of as being "only nervous or hysterical or "queer," we must remember that these are signs that something is wrong with the most important organ in the body. Especially, mental symptoms are the most important of all disease signs, signifying as they do that a brain is being irritated or starved, or is some way out of order.

Earnestness in the patient is essential.—Very many persons, on applying to a physician for aid, have not yet arrived at that stage in the history of their disease where they are willing to make earnest effort to get well. 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.

A physician was once consulted by a lady for certain nervous symptoms. Pains were taken 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. It afterward transpired that she had not been favorably impressed with that doctor's ability. As she reported, "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, who is simply a type of thousands, may become a very good patient for some doctor in the future, when her symptoms have become intolerable, and when cruel experience has taught her that there is no royal road to health. A physician cannot cure an indifferent or a passive patient in chronic disease, more than a teacher can instruct an idle, careless or rebellious pupil. One is very unfortunate to have a chronic disease, which is often both troublesome and expensive to cure, but having it, one ought to do the best he can. The cure of chronic disease may be considered somewhat in the light of penalty for hygienic sins. It would even be a misfortune if all chronic diseases could be quickly, safely and pleasantly cured; the habits of men and women would become too bad.

Persistence is a quality which is essential in many cases of nervous impairment. A chronic disease is one which has become slowly established in the system, and is even in some cases more or less naturalized there. Patients sometimes remark that they would not feel natural without their aches and pains. Such a disease

cannot be forced or hurried out. In most cases of nervous impairment, the cure is a matter of slowly tearing down old diseased tissue and building up new, vigorous tissue, just as an old ship might be taken on the stocks and rebuilt, by replacing each rotten plank and rusty bolt, piece by piece, with new ones. The pedagogic function of the physician often operates to hold the patient to his course. Of the boys who every year begin their studies with enthusiasm, a large number would not persevere unless they were held to it by some power outside themselves, and so it is with chronic invalids. A burly athlete will train for months that he may win a contest; the nervous cripple must often train for years, or even a lifetime, that he may work well and live happily.

The individuality of the physician is sometimes an important element in the cure. Over and above purely scientific attainments, the peculiar characteristics of a physician may make him of priceless value to one class of patients, and of no use at all to others. In general, the physician is most successful who is able to inspire confidence in his patient, to exert a certain amount of influence and authority over him, to encourage and inspire him to earnest effort. And if he have a large vitality, a scientific enthusiam, an interest in his patient, and a pluck which rises with difficulty and leads him to exhaust the resources of his art before acknowledging himself baffled, these will often prove saving qualities. Trained senses, special wisdom, trained judgment, earnestness, honesty, are the qualities which make a physician; of these, skill and honesty, are, it is to hoped, common. But earnestness, enthusiasm, a keen sense of responsibility, anxious thought, are not always possible. These are qualities which are often given by physicians, but which cannot be bought. They are often inspired or repelled by the patient himself. An earnest patient stimu-

lates the physician to his best work ; the careless throw cold water upon enthusiasm, and cool it to duty, and we all know the difference between the two.

PRINCIPLES OF TREATMENT.—An eminent authority, the late Dr. Beard, wrote :

"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 allayed or 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 not affected 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.

The available vital resources existing or remaining in any case largely determine the result of caring for the brain-and-spine. When a business house suspends, and examination shows merely a temporary entanglement, or disproportion of immediate assets and liabilities, the

creditors breathe freely, there is a straightening out, a realizing, and after a time business is resumed. But when speculation or bad management has exhausted the capital, the only course is to go out of business, or to recommence in humble style. In nervous impairment the prospects are generally good in persons under thirty-five, since up to this age or beyond man is yet maturing, still on the up-grade, and nature is capable of great things at this time of life. Later in life the prospects are not so uniformly good, though some of the most satisfactory results of care, which I have seen, have been in elderly persons.

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.

XVIII

REST AS A REMEDY

The "rest cure" in some form or in some degree is an essential factor in the treatment of nearly every case of nervous impairment; it is the foundation remedy. Rest for brain-and-spine means economy in action and peace from passion.[1]

Economy in Action is a simple proposition, but, simple as it 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, 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 practices 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 practice 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;

[1] "Passion. Latin passio, from patior, to suffer. 1. The impression or effect of an external agent upon a body; that which is suffered or received."—Webster.

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.

A few weeks of rest from work, worry and irritating impressions, is the most rational treatment in cases of simple nervous impairment from over-work, and one which will often be real pecuniary, as well as vital economy.

Victims of over-work might be divided into two classes; those who can take a vacation and those who cannot. Unfortunately, a large proportion of cases belong in the latter class; they cannot leave their posts; they *must* work, and cannot help worrying.

In these cases it is often possible to suggest ways in which the evil may be lessened, and in which careful economy, outside of work, may enable a man to about keep even. The lodge, church, and other forms of night and Sunday work, or the worrying and scheming out of work-hours, which is habitual with many men, may be the straw that breaks the camel's back. Those social obligations which are not recreations may be advantageously sacrificed, and the amount of sleep increased. If such a man can habituate himself to sleep ten or twelve hours, for a time, so much the better; sleep is nerve-income.

Worry, as the reader 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.

In every large city there are men who find the fight too bitter, or the burdens too heavy. Many a man has found peace and happiness for himself and his, in retiring once and for all from the ceaseless wear-and-tear of city life, and in making a home, however humble, in the country.

Rest From Irritating Impressions is often more difficult to command than economy in action. An injured thumb is apt to be surrounded by a bandage, held in a certain position, and protected with excessive carefulness against touches and jars until it gets well. Man will "favor" a sprained ankle for months or years if need be. The oculist secludes certain patients in darkness for weeks or months, to protect a diseased eye from the stimulus of the most subdued light. A similar protection must sometimes be thrown about a crippled brain-and-spine. Years ago Dr. Mitchell in a great, little book[1] told how he managed certain cases, chiefly women in good circumstances, who had been under-worked and over-doctored into a condition of chronic nervous exhaustion. He exacted implicit obedience, isolated them from relatives and friends, put them to bed, and by a combination of continuous rest, peace, forced feeding, massage and electricity, without medicine, returned many of these hopeless cases to their friends, plump and rosy.

The principles of brain-and-spine protection and saving, involved in Dr. Mitchell's rest cure, are now everywhere practised in suitable cases, though it is not always nor often that the laity understand or submit to such a strange proceeding. When a nervous person is manifestly irritated by his surroundings, he should be removed out of them if possible. Here is one beneficial effect of change. Where change is not possible, such persons should receive a good deal of consideration from those about them. It often happens that nervous sufferers, irritable and fretful, arouse the hostility of others, and that the social atmosphere in which they live is seldom calm. In these cases the doctor is able to explain the inwardness of things, and to secure some degree of tranquility for a household.

In cases of reflex nerve-weakness, where eye, ear, nose,

[1] "Fat and Blood and How to Make Them."—Philadelphia. 1877.

womb or prostate is acting backward to irritate brain-and-spine, the removal of these conditions is only one step toward securing rest for the organ of vitality. The interdiction of stimulants and narcotics, and all unwholesome excitements, has the same purpose.

SLEEP is the most valuable form of brain-rest. During the hours of sleep the out-put 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.

The essential phenomenon of sleep is lessened blood-flow to the brain. But whether this nightly recurring ebb-tide in the brain is *the* cause of sleep, or whether (as some assert) the brain-cell itself originates the impulse (by inherent law, or established habit, or by both) which slackens heart-beat, slows blood-current, and leaves the brain in peace, physiologists differ.

SLEEPLESSNESS.—The nineteenth century worker needs often to pray, "give us this night, our nightly rest" more than "give us this day our daily bread." Insomnia is an increasing symptom in medical practice.

There are two elements in a good night's sleep, getting to sleep and staying there; one may fail in either of these:

1. When the circulation is badly managed and unsteady, as explained in a preceding chapter.

2. When the brain remains engorged with blood, because enfeebled blood-vessels (their middle wall of unstriped muscular fibre being feebly innervated by an insufficient sympathetic system) cannot contract upon, and empty themselves of their surplus.

3. When irritable brain-cells easily attract the blood-stream to the brain, whence enfeebled vessels are enabled to remove it.

Many schemes and recipes against sleeplessness are in circulation, but the only one that is applicable to all cases is, Discover and eliminate the cause of it. Nature is uncompromising when her laws are disregarded, and her penalties are not easily softened or escaped. The devices in vogue for this purpose of lessening the penalty of brain mis-use may be classified as follows:

1. Those which act by soothing an irritated brain, and by breaking off the current of the day. A half-hour of light reading or of cheerful conversation, or a cigar at bedtime, may so tranquilize the brain-cells that sleep is possible. The hop-pillow of our ancestors perhaps acts as much through the imagination as by any subtle emanation of lupuline. But twenty to forty drops of the fluid extract of lupuline in a dessert-spoonful of the syrup of lettuce is excellent for the sleeplessness of advanced life and is free from danger.

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. We read in the Old Testament that "David took a harp and played with his hand; so Saul was refreshed, and was well, and the evil spirit departed from him." Martin Luther wrote "Next to theology I give the highest place to music, for thereby anger is forgotten, the devil also; melancholy and many tribulations and evil thoughts are driven away." The future may bring the primitive minstrel once more upon the scene, and weird chant or plaintive melody may, in some cases, take the place of chloral.

Some such quiet method of diversion is suitable when the theatre or even a social evening away from home would be too exciting or too tiresome.

The plans of counting, or imagining a flock of jumping sheep, or a dripping icicle, or reading a dull book, sometimes succeed by displacing other thoughts, and by the soothing influence of monotonous impressions. The somniferous influence of a dull sermon is well-known. Many impressions acting upon the nerves-ends of the skin soothe the irritated nervous tissue; riding in the wind will make many persons sleepy, and the hot bath and massage act in part thus.

2. Gentle stimulus often soothes the brain—perhaps counter-irritates it, as scratching allays an irritation of the skin, or, in other cases, enables it to rid itself of blood. A small glass of beer, or one of the wine of coca and even the nightcap of whisky, which I do not advise, will often favor sleep. Dr. Lauder Brunton recently reported that a small dose of strychnia (a powerful nerve-tonic) at bedtime is often efficacious against the sleeplessness of brain-tire; a half grain or more of quinine will sometimes act in the same way. A patient who has tried all the common plans against sleeplessness informs me that a dozen or twenty deep inspirations are effectual.

This loading the blood with excess of oxygen acts as a a stimulus to brain cell, and to the circulation. The electrical procedure, known as central galvanization, is very efficacious, and acts by stimulating the sympathetic.

3. Many plans succeed in withdrawing blood from the brain. A light supper of raw oysters, or a crust of bread, with, perhaps, a glass of beer at bed-time may divert the blood-wave from brain to stomach, and thus induce sleep. A short walk in the open air, a brisk rubbing with a flesh brush, or a coarse towel may be useful. All but complete immersion in a hot mustard bath (only the nostrils and mouth remaining above the surface) has served me well, and acts not alone by calling the blood to the surface, but by exerting a universal soothing influence (through the nerve-ends) upon the brain. Massage acts in a similar manner.

Habit has much to do with certain cases of sleeplessness; many physiologists consider sleep to be largely a brain-habit. Some persons get into a habit of lying awake, or of regularly waking at some unseasonable hour; in such cases a complete, abrupt change of environment and action will often break the bad brain-habit and restore the ability to sleep.

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 hypnotic drugs as a last resort, and then confidently, because he knows his tools. It sometimes happens that a habit of sleeplessness can be broken by a wise use of drugs, and that four or five nights of drug sleep will establish a habit of natural sleeping. The genius of modern chemistry has placed in the hands of the physician certain drugs against

sleeplessness, which have the advantage of being (as we now believe) comparatively harmless. Paraldehyde, diæthysulphondimethylmethan, mercifully abbreviated to "sulfonal," urethan, antipyrin, acetanilide and amylene-hydrate are brain sedatives of the highest value in suitable cases. But by means of the hot bath, the Turkish bath, electricity, massage, and in some cases certain mechanical contrivances, it is often possible to manage insomnia without the use of drugs.

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.

XIX

THE OUTING CURE

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. It is not meant to advise an indiscriminate exposure to all airs for feeble persons. Oxygen, like all good remedies, may be so unwisely used as to do harm, and weather and climate are the correctives in an oxygen prescription.

Sunshine is a disinfectant; how it sweetens out a foul, sick room; it is both tonic and sedative to the nervous system; the bracing and cheering influence of fine

weather is familiar to everyone. Nervous invalids should, if possible, sleep in an air which has been warmed by sunshine—in a southern or western chamber.

Muscular Exercise quickens the blood-current, equalizes the circulation, stirs up the nutritive processes, improves appetite, digestion and assimilation, helps excretion and favors sound and refreshing sleep. The use of exercise as a remedy in nervous impairment is not muscle-building, but brain-and-spine building, and to this end it must be modified in three ways:

1. It must take place as much as possible in the open air. These oxygen inhalations from nature's reservoir are, for most nervous persons, the most beneficial element of exercise.

2. It must be agreeable. Brain-rest, or brain-change, is an element of exercise which is the most important in certain cases and essential in all. Muscular exercise, to which one must drive himself, or be driven, is still work and not play, nervous out-put and not income. "I am alarmed," wrote Thoreau, "when it happens that I have walked a mile into the woods bodily without getting there in spirit. In my afternoon walk I would fain forget all my morning occupations and my obligations to society. But it sometimes happens that I cannot easily shake off the village. The thought of some work will run in my head, and I am not where my body is—I am out of my senses."

3. It must be proportionate to the strength of the individual—like a bottle of medicine, exercise has its dosage and directions for use. Exercise of the muscular system has long been looked upon as a kind of antidote to ill-effects of sedentary life, and muscular development has been confounded with health. By systematic training, a man may build up large muscles and still be far from well, and it is a fact that professional athletes are, as a class, short-lived. Muscular exercise involves the expen-

diture 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, the "parlor gymnasium," and the various devices resorted to from a feeling of duty are, so far as a weak 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 over-worked and worried city man to hold his own in the face of very adverse circumstances.

The taste for out-of-door life (often wanting in the city neurasthenic) must be cultivated. As boys we have this taste, and lose it when we become possessed with the thirst of ambition or gain. "In every man there is born a poet who dies young."

Fortunate the man who has early acquired a taste for landscape and color; or that "taste for weather as such," which one New England man claims to have acquired, and who is amused and pleased by the flora and fauna, the rocks and the stars; 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, sketch-

ing, 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.

"The moral sensibilities which make Edens and Tempes so easily may not always be found, but the material landscape is never far off," says Emerson, and many who would appreciate and enjoy out-of-door sights and sounds must be taught, and must begin with the primer. 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 seabeach into a fairy-land abounding with objects of interest and beauty—especially if such a book as Charles Kingsley's "Glaukus" happens to be the one selected.

Climate in Nervous Impairment.—Experience shows that certain nervous invalids cannot hope to be cured at home. Weather or social environment hinders, or business and social cares will obtrude. A change is necessary, and the question of climate becomes interesting. The climate cure of nervous impairment is a combination cure. It includes rest, peace, sleep, oxygen, sunshine, comfortable shelter, suitable food, and (if any society at all) agreeable society. This combination is not common from home, as any traveller knows.

The trip to Europe, the tour of the great cities, or of the fashionable watering places, and other trips involving much railroading, which many nervous invalids begin to plan at once when change is advised, are not permissible. The excitements of travel act as stimulants, and may cause one to 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 obtained.

In general, it may be said that any climate which is good for the consumptive is good for the nervous. The great remedy in lung trouble, pure, equable, balmy air, is also a great remedy in nervous impairment.

Where choice is to be had I prefer the sea-coast. There is something in the salt, moist ocean atmosphere that both soothes and braces. An hour of walking in the thick, salt night-fog, which occurs at certain seasons in San Francisco, is, one gentleman finds, the most efficient hypnotic in his case. Indeed, the opposite—high, dry climate—seems to produce nervousness. I not rarely see men from the high altitudes of Colorado, Arizona and other places, whose nervous symptoms cannot be traced to any other cause than the prolonged, over-stimulating influence of their climate. A few months of residence at the coast almost invariably benefits these cases, and they often feel better from the first day. The choice of climate is best made for any individual by the physician who knows him best; but whether he gets his oxygen and sunshine from sea air, with its medication of sea-salts and iodine, or from the balsamic ozone-laden air at the mountains, benefit will be likely to result,

Of old world climates, Madeira, the Riviera, and the Mediterranean health resorts generally may be instanced as suitable climates for nervous impairment, though a place which is famous, and has a vogue is not one I should select for an over-worked patient.

Dr. Hutchinson, in a valuable paper on "Climate Cure in Nervous Diseases" (N. Y. Medical Record, 1879), then stated that the Bermudas, the Bahamas, and the Windward islands are the most available winter climates for residents of the Eastern United States.

The mild and equable climate of California, in permitting a full and continuous use of out-of-doors as a

remedy, is as valuable to the nervous as to the consumptive. Especially is this true of the coast region from Lake and Sonoma counties to San Diego.

San Francisco has some claims to being a winter city. Its mean annual temperature ranges between 52° and 60.° Its winter is pleasanter than its summer; and three of its months, between August and December, are almost perfect—free from wind, fog and rain, which are liable at some other times, and from heat and cold, which are never known. For residents of the interior, in winter, this city with its miles of dry sidewalks, its cable cars, and the innumerable mental diversions to be found therein, make it a good place to seek a change of climate. The city is a delightful play-ground, though it is apt to be a hard workshop.

The Santa Cruz region, forty to seventy miles due south of San Francisco, is all that can be desired. From Pescadero to Monterey many a sandy beach stretches at the feet of a landscape, picturesque or beautiful, a region restful and invigorating. In the Santa Cruz mountains one finds an exquisitely 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 scenery encourages the stranger to walk or climb.

The Santa Barbara and Ventura region is one of the halcyon spots, not alone of California, but of the world. Such a combination of ever-blue ocean, ever-blue sky, hard, sandy beaches, mountains full of character, picturesque cañons and road-bits, and perennial fine weather must be rare on earth.

Santa Barbara, now a town of 5,000 people, lighted by electricity, and affording several first-class hotels, and unique in its large proportion of cultured gentlefolk, lies in a nook open to the sea, and is a trifle less uniformly mild than Pasadena for instance. But the early morning fogs

and the mild winds, which sometimes occur at Santa Barbara, are an advantage, rather than a drawback to the nervous. For probably three hundred days or more in the year Santa Barbara nestles between ocean expanse and mountain height, as perfect a haven of rest as humanity has any need of, or right to. In the health resources of its vicinage, in the tempting and varied excursions which its back country affords, Santa Barbara is for the nervous, perhaps, the most desirable objective point in the South.[1]

The whole South is a natural vacation-land, and the people who possess it, realizing this fact, have gone extensively into the way of entertaining. Elegant (and better still), comfortable, clean and moderately expensive hotels abound.

The Sandwich Islands, eleven in number, two thousand miles and seven or eight steamer-days from San Francisco, are perfect sanitaria for certain cases of overwork and worry. The mean temperature of these islands is about 75°, the thermometer varying between 90° and 60°, and falling to 40° on the mountains. The moist, balmy, regular climate, while somewhat relaxing for a permanent residence, is perfectly adapted for a few weeks or months of brain-and-spine rest. Packet steamers and small schooners ply between the islands, and the ascent of

[1] A little work, "Santa Barbara and Around There," by Edwards Roberts, (Boston, 1886), perfectly suggests the charm of this earthly paradise. See also Harper's Magazine, November, 1887, for some admirable illustrations.

The charm of out of doors in California has inspired some agreeable books. "Southern California," by Theodore S. Van Dyke (New York, 1886), is more appropriately shelved with Thoreau, Burroughs and Kingsley than among the guide-books, though as a guide-book it is admirable. The people of the South can never be over-grateful to the memory of Mrs. Jackson, whose "Ramona," among other writings, realized and vivified the traditions of a land where tradition alone is lacking. "California of the South," by Drs. Lindley and Widney, (New York 1888), has peculiar value for invalids in that it is the work of physicians who are long residents of that land. Admirers of Mr. Stevenson will remember his "Silverado Squatters" (to come north). Some of the best descriptions of vacation California have been swept out of sight in the swift current of periodical literature.

the volcanoes (ten thousand to fourteen thousand feet high) affords an exciting break in the monotony of life on a trade-wind island.

There is much to be said for, and some things against a long sea voyage. In the rest that it enforces, in the absolute isolation from care, and from temptation and goading to work, or dissipation of any kind, and in the ocean air and change of air, it is good. In that stormy weather and the exigencies of sea-life may necessitate considerable imprisonment in an ill-ventilated cabin, and in the poorer food supply, it is not so good. One is more dependent upon luck in a sea voyage than he would be ashore. Still, there are cases where, all things considered, a long sea voyage is best.[1]

Seeking health away from home has its drawbacks. Some men are everywhere at home; they are citizens of the world; they easily make acquaintances and enjoy themselves. Others, retiring by nature, or inelastic from sickness, grow homesick and depressed, mope, worry, and remain unbenefited in the most perfect climate. An invalid should leave home in company, if possible, and cannot come to his destination with too many letters, or too many preparations for quiet amusement. One whose life is supposed to be in the slightest danger from any disease, should hesitate long before venturing far away from home alone.

[1]The Ocean as a Health Resort, by Wm. S. Wilson (Philadelphia, 1880), is an admirably thorough and instructive hand-book.

XX

BRAIN AND NERVE FOODS

Chemical analysis shows that the brain is composed chiefly of water, fat, albumen and phosphorus. The nutrition of 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. In many bald-headed men the blood-stream is of the richest quality, but the debilitated hair follicles are unable to make hair from it.

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 the 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 the 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 said to be 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 alreaded 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 oxydizing 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 overeating, 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,[1] and the condition in which they are

[1] Strictly oxalic acid does not exist in the blood. It is formed in urine (whether in the urinary passages or outside the body) by the decomposition of uric acid and the urates, or by that of oxaluric acid (which is oxidized lithic acid) into oxalic acid and urea. Thence oxalate of lime and "oxaluria."

present in the blood is called lithæmia, or lithiaisis, 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 likely to be great enough for perfect excretion, and he may eventually suffer from some of the various forms of lithæmia.

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 lithæmia—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. Lithæmia 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 over-worked, neurotic American.

But no theory or science is needed to convince us of the value of oxygen in nerve-feeding if we will recall our experience. Most of us know that we can eat, digest, and use up a much larger amount of food when our 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 beefsteaks; 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.

Cod-liver oil is *the* most valuable nerve-food when it can be managed by the digestive organs.[1] I prefer the plain oil to any of the numerous emulsions and compounds. Taken in "sandwich" cod-liver oil is not in the least disagreeable to swallow. Fill a small glass two-thirds full of beer, moisten the sides to the brim by a rotary motion of the glass, float the oil on the top of the beer, cover with an inch of froth. Thus, the oil may be tossed off without ever coming in contact with the sides of the glass, or the tongue or the throat, and without being tasted. Another method of swallowing oil without tasting it is to pour a tablespoonful of beer into the bottom of a glass, then add the oil, then pour half a glass of beer upon the oil from a height, and toss off the perturbed contents, as one remarked, "before the oil knows where it is." The beer is a valuable addition, as it assists the stomach to manage the oil; it is not rare to see nervous persons gain

[1] A drawback to the use of cod-liver oil is the difficulty, or rather the uncertainty, of getting a pure oil. Cod-liver oil is as variable in quality as butter. Where the oil is made from putrefying livers, by dirty workmen, in dirty utensils, it is as certain to be rancid as is butter made under similar circumstances. The author has been informed that "cod-liver oil" is made on a large scale by soaking burnt herrings in various cheap oils. A rancid or a spurious oil is likely to do as much harm as a pure oil is to do good. Among the oils which may be relied upon are "Burnett's," marketed by T. Metcalf & Co., of Boston, "Marvin's," by John Wyeth & Co., of Philadelphia, "Peter Möller's, and Allan & Hanbury's, an English oil. The dose of cod-liver oil should not be too large, especially on beginning. The "tablespoonful" advised by many manufacturers and druggists is injudicious. I generally begin with ten drops, and gradually increase to a dessert-spoonful three times a day. In most cases there is no advantage in going beyond the latter dose. I have begun with three drops where the stomach did not take kindly to the oil.

five, or even ten pounds, in a few weeks, on this oil and beer.

Children of nervous parents may be given a semi-annual course of cod-liver oil from early childhood to through puberty with great benefit; it improves the nutrition and development of the nervous structures and to a great extent insures stability; it is putting nerve-force in the physiological savings bank. Cod-liver oil and out-of-door life would convert many a thin peevish child into a sturdy, steady one.

There is probably nothing subtle or specific about cod-liver oil; it is simply the most assimilable form of fat, and when it does not agree it is best avoided; then cream is the next best nerve-food. The breakfast coffee may be made a valuable nerve-food to most persons. To a half or a third of a cup of pure fresh cream add coffee hot enough and strong enough to bear the dilution without making the drink cold and weak. This makes a rich, smooth, elegant beverage, which is superior in restorative power to a whole bottle of hypophosphites. The cream excuses the coffee, the coffee helps the digestive organs with the cream, and many persons who "cannot drink coffee" can drink this coffee-cream with benefit. Dinner may be terminated by a small cup of hot coffee—one-third each of cream, milk and coffee. The breakfast cereals may be enriched with cream; potatoes may occasionally be served "mashed" with milk and cream; many ripe fruits will not quarrel with cream; in winter ripe bananas and cream make a delicious dessert; ice-cream—home made with fresh strawberries, may be permitted to some as a dissipation.

Cocoa seeds, as variously prepared by different manufacturers, are a useful addition to the dietary of nervous invalids. These seeds contain nearly fifty per cent. of a fixed oil or fat, besides an alkaloid, *theobromine*, which is analagous to the caffeine of coffee; burning, develops

an agreeable aroma, and when ground into a paste and mixed with various flavors, we have chocolate. Chocolate is too rich in fat, and thus too heavy, for most nervous persons, although highly nutritious.

Baker's breakfast cocoa is a light preparation which can be heartily recommended; it contains only so much fat as can be digested by almost anyone; and is peculiar in not cloying or palling after a time, as so many cocoa preparations do. Such a beverage is far more wholesome, and more agreeable, after one becomes used to it, than tea, which is so much over-used. It is especially useful for children; our little boy has drunk it since he was a year and a half old, has become inordinately fond of it, and has kept as "fat as a pig," as we say.

All these liquid preparations serve a very useful purpose in cases of nervous impairment where the digestion is weak. Belchings, slow digestion, sour risings, heavy sensations or pain in the stomach, are plain signs that solid food ought to be sparingly taken or withdrawn altogether. They indicate that the digestive juices are too poor in quality to properly disintegrate and reduce masses of more or less solid food to liquid chyle. Hot bouillon (which some cooks flavor deliciously with a little celery and spinach) is a good thing for such persons. When a man comes to his luncheon without an appetite, or to his dinner too tired to eat, and yet feels that he needs something to "stay his stomach," one of the best things he can do is to take a plate of hot bouillon and a little bread, and nothing else. In many cases of nervous indigestion the immediate symptoms may be quickly removed by limiting the patient for a few days to hot bouillon and bread as often a day as he wishes it. A plate of hot bouillon, with or without a little bread, at bedtime, is effectual in many cases of sleeplessness; a glass of milk, warm and slightly sweetened, will favor sleep and increase weight.

Koumyss—sparkling milk, milk in which fermentation has been induced—is a valuable food in many cases.

The neurasthenic can hardly eat too much fresh, sweet butter ; it may be swallowed in large quantities with warm corn-bread; upon soft-boiled eggs; in mashed potatoes.

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. The preparation known as "Aunt Abbie's rolled oats" is easily cooked and altogether excellent. 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. Though highly nourishing, cereals are not the most easily digestible of foods, and even prove too coarse and irritating for a few stomachs. Some children who are forced to eat oatmeal, because of its reputation as a healthy food, suffer from indigestion and skin eruptions, and recover when the too coarse food is withheld. The digestibility of cereals can be greatly increased by careful cooking.

Roast beef and 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, it may be remarked, since the physician is often asked concerning it, has no value whatever in nerve-nutrition, but boiled celery, served immersed in milk and

butter, is another thing; Lima beans have a high nutritive value, and may be served in the same way. 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 insist that the food supply must be sustained by, and proportionate to, a proper oxygen supply It would never do for an indoor neurasthenic to attempt this diet, in whole; and when rainy weather or other cause keeps the outdoor one indoors, he must come down to sedentary diet.

One of the most difficult things to find, away from home, is wholesome, well-cooked food. Some of my neurasthenic patients, though living in elegant hotels, have not been able to get enough to eat. When the homeless neurasthenic finds a table where the following bill of fare may be selected, among other things, he is advised to cherish it:

Breakfast.—Fruit in season, baked apples, stewed prunes; coffee-cream, well-cooked cracked wheat and cream, rolled oats and cream, corn bread and fresh butter (two butters for one bread), soft-boiled eggs, fresh butter *ad libitum*.

Luncheon.—Chicken soup, hot bouillon, bread; properly made breakfast cocoa; fresh, warm sweet milk *ad libitum*; raw oysters, beer, bread.

Dinner.—Soup, roast beef, broiled porterhouse steak, mashed potatoes (made with butter, milk and cream), stewed celery, stewed fresh lima beans, bread, fresh butter *ad capacitatem*, claret, sauterne or burgundy, ripe bananas and cream, custard and preserved raspberries, ice cream—home made of pure cream—and fresh strawberries (rarely), small coffee-cream.

Supper (night-cap for certain cases).—Breakfast cocoa, bread; hot bouillon, bread; sweet milk; raw oysters, beer, bread.

The neurasthenic will do well to confine himself to the wholesome, nourishing solid dishes and not dissipate his digestive power upon greasy fish, meats, gravies or entrees, or upon dessert.

XXI

TEA, COFFEE, TOBACCO, AND ALCOHOL.

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.

A habit of excessive tea drinking may be gradually displaced by sipping hot water barely flavored with orange peel, or lemon juice, or any agreeable substance. When tea is drank for its stimulative effect more than for sociability, very hot milk or breakfast cocoa may be substituted.

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, the digestion may fail, the eyes may become weakened, and trembling fingers betray the irritated and weakened condition of the nerve-cells within; "tobacco amblyopia," "smokers vertigo," "smoker's heart," are constantly used terms in medical practice. Gently 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.

Many conservative men, who have had opportunity of observing the alcohol question from every point of view, believe that the popular use of light wines as food would conduce to national temperance. However this may be, there is no doubt of the value of light wines in nervous impairment. Used wisely, as food, with meals, and never as beverages between meals, one to two gills of pure, light wine warms the stomach, assists digestion, gently soothes away weariness from the tired brain, and furnishes in easily assimilable form the elements of force and heat. Some persons are offended at the statement that alcohol is under any circumstances a food, but physiology demonstrates (not theorizes) that it is. Truth is truth whatever bearing it may have upon social questions, and the firmest faith is that which has conviction that truth can never be used to injure mankind.

Heretofore, when a pure, soft, agreeable, light wine has been indicated in sickness, the physician has been obliged to recommend an imported article, but I should like to call the attention of medical men at a distance to some facts concerning the wines of California. The sunny slopes of this State produce grapes which are unsurpassed in any land. At first, and for a long period, California wine-growers lacked a science in planting, and art in making. Now, after years of effort and loss, the more intelligent of them produce light wines that are mild, smooth, of agreeable aroma and of delicate flavor, and in case of the red wines, of fine color. Certain specimens even have in them much of that velvety softness and seductive bouquet which crowns the wines of the Gironde. The *Cabernet*, *Cabernet-Sauvignon*, *Sauvignon Vert*, *Gutedel*, *Sauterne* and *Riesling*, of the best California vineyards, can hold up their heads in any company. The *Zinfandel*, so extensively planted in this state, is a good (at its best, excellent), ordinary wine, but is by no means to be considered the best that California is capable of. When a heavier wine is indicated, as it sometimes is in elderly patients, the California *Burgundy*, *Port* and *Sherry* will often be found superior for medicinal purposes to much of that imported.[1]

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

[1] Some of California's early wines gave her a reputation that is undeserved today. It is unfortunate, too, that there is still much thin, sour, astringent, bad "California wine" on the market. Some of this has been made from unsuitable grapes, and some unskillfully from suitable grapes; much of it has been made from no grapes at all in cellars far from California. Some of California's own sons, I regret to say, are the worst enemies of her wine industry. Not a few wine-sellers, hotel-keepers and restauranteurs find it profitable to supply the stranger with a wine that is cheap (to them) because it is bad. The California State Viticultural Commission has established a permanent exhibition at 216 Montgomery street, San Francisco, where the best vineyard products of the State are to be seen and tasted.

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.

XXII

NERVINES AND NERVE TONICS

Drugs do not occupy the place in modern medicine that they once did. The development of the scientific method in observing and in thinking has infused a skepticism into medicine as it has in many other departments of thought. Experienced and scientific men come forward with such subversive statements as that quinine is of little value in typhoid fever, that strychnine never cured paralysis, and that phosphorus is worthless as a brain-tonic.

A reading of some of the standard treatises upon materia medica might easily lead a layman to suppose that all diseases are curable or relievable by drugs, but the chronic invalid knows better. 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 this is encouraged by hygiene and good nursing. Medical men have come, or are coming, to appreciate that there are many forces beside chemicals which act upon a diseased organ or an impaired vitality. In late years an impetus has been given to the study of vital economy, of medical physics, of diet in disease, of climatology and of nursing, and a system of individual hygiene for individual diseases is being perfected.

But although drugs have been dethroned and degraded, they are by no means exiled nor in contempt. They are useful, often indispensable. It is only that they are not omnipotent. They do not so much cure as assist to cure; they are not now the first forces 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.

Drugs used in nervous impairment may be divided into two classes—those designed to alleviate some symptom or to have a temporary influence, and those designed to have a permanent effect. The first class consists chiefly of stimulants and sedatives, the second of tonics.

Nerve Stimulants and Sedatives.—Many of the symptoms of nervous impairment are unbearable or disagreeable, and are best alleviated at once. Pain and spasm are always thus treated. A habit of sleeping may often be made to replace a habit of sleeplessness by a judicious use of stimulants, or of sedatives, and then these serve a beneficent purpose. The feeling of fatigue is often so disagreeable and intolerable that we are justified in temporarily removing it. An insufficient liver, indicated by heavy urinary deposits, may be gently stimulated until the urine is clear. Thus the wise use of stimulants and sedatives is very useful in nervous impairment.

But certain facts need to be remembered in connection with the use of these drugs. Pain, headache, morbid fatigue, sleeplessness are not diseases but symptoms; they are signals hung out by a distressed brain-and-spine. Stimulants and sedatives do that which they do quickly and have no absolute lasting good effect; they are palliative, not curative; they temporarily remove the symptom,

but leave the disease; wisely used they are a lesser evil, unwisely they may be a greater evil than the symptom which they temporarily remove. The chemist can temporarily deodorize an offensive spot, but he knows that removal of the putrefying organic matter is essential to sanitary safety. And it is slovenly doctoring to rest content with covering a symptom by a stimulant or a sedative, and not dig about the roots of it.

The first recommendation with respect to stimulants and sedatives is to avoid them when possible. We have all gotten into a habit of resorting too quickly to these things—they act so nicely. But the hereditary neurasthenic, whose nervous system is his weak point, and who must needs be doctoring or caring for it through a long life can afford to take some trouble to escape the tyranny of these substances. In what has been called "the most sensible medical book ever written," Mr. Hilton[1] has dwelt upon a law of universal application—that pain appeals for rest, quiet, peace. Thus in sick headache or in neuralgia, one should pause in a whirl of excitement or activity and temporarily seek a subdued environment. Heat to various points on the surface will often do all that morphine will. Hot drinks internally—milk, cocoa, water or even black coffee or hot weak whisky punch—are often capable of doing all that caffeine or coca can.

Of stimulants, caffeine (the active principle of coffee), coca, and its active principle, cocaine, guarana powder, Indian hemp (whence the "hasheesh" of the orient), camphor, valerian, and the preparations of ammonia are essentially brain stimulants. The pupil-dilators, belladonna, hyoscyamus, stramonium, and duboisia, first stimulate the spine and sympathetic and incidentally relax spasm and paralyze secretion. Of heart stimulants digitalis, strophanthus, sparteine, lily of the valley may all be so

[1] Rest and Pain, by John Hilton, F. R. S.; F. R. C. S.; London.

gently used as to be justly called tonics; coca and caffeine stimulate the heart through the brain.

Of sedatives, alcoholic liquors, opium and its alkaloids, (morphine, narceine, thebaine, papaverina and codeine) chloroform, ether and nitrous oxide first temporarily stimulate the brain and then stupefy it; they are our greatest medicines against pain. The bromides, chloral, croton chloral, hops act directly upon the brain tissue, soothing it and withdrawing blood from it without stupefying. Paraldehyde, sulfonal, amylene hydrate, urethan hypnone, recent products of the German laboratories, cause sleep by a direct influencing the brain cortex which we do not as yet understand. Antipyrine and acetanilide, also produced in the laboratory, from aniline, were first introduced as remedies against fever, but are now more famous as nervous sedatives; in many cases of migraine, neuralgia, insomnia, the power of these remarkable drugs is complete. The depressants, conium, (the cup of hemlock drunk by Socrates), Calabar bean, jaborandi, gelsemium (the pretty yellow jasmine), aconite, all have terrible power. Hydrocyanic acid and the cyanide of potassium paralyze the centers of life in less time than it takes to tell it. Nitrite of amyl inhalations and nitroglycerine have a power of instantly relaxing arterial tension, which serves a useful purpose in certain diseases.

It is an interesting fact that many of the symptoms of nervous impairment are relieved by both stimulants and sedatives—by drugs which have a directly opposite action upon brain and nerves.

Nerve-Tonics—A tonic is a force which tones, or acts with some degree of permanence in opposition to a relaxation and weakness. In a narrower sense it is a medicine which tones. Tone is nerve-force manifested. It may be manifested in mental or muscular activity, or in the contraction of tightness of unstriped muscular fibre or other tissue. The brain-and-spine is the ultimate source of all

nerve-force, and thus it must be the great objective point in any attempt at toning.

The kindly forces of nature—rest, sleep, oxygen, sunshine, food, exercise, cheerfulness—are incomparably the best tonics. Unfortunately, a large proportion of nervous invalids are not able to make the best use of natural tonics; they are too expensive; often they are impossible. Thus certain artificial tonics have their place; electricity is one of the best of these; drug tonics have their field of usefulness, and the doctor himself sometimes acts as a tonic.

With respect to the organs chiefly influenced by tonic treatment, in different cases, we speak of nerve-tonics, voice-tonics, digestive-tonics, heart-tonics, reproductive tonics, blood-vessel tonics, tissue tonics, but all these forms of toning are produced through and by the central nervous system.

Tonics and Stimulants.—A careful distinction must be noted between a tonic and a stimulant. A tonic acts more or less slowly in improving the nutrition of brain and spine, and thus the vital resources. A stimulant acts more or less quickly in exciting the brain and spine into increased activity, and after its influence has passed leaves the brain and spine no stronger, or less strong, than before. A tonic may be compared to a slow saving of money which accumulates into a bank account. A stimulant may be likened to a mortgage, which procures immediately a large sum of money, and is thus highly gratifying in its immediate results, but which has a day of accounting. But with careful financiers a loan is often made the means of ultimately increasing capital, and stimulants may be so judiciously used as to permanently improve the vital resources. The abuse of stimulants is one of the sanitary evils of to-day; their use is a science that is too little understood or managed even by medical men.

ARSENIC is easily first among nerve-tonics. For a long period it was known that arsenic had an almost specific power in certain indolent chronic diseases of the skin. Its action was alterative, *i. e.*, it produced a change in the nutrition of the diseased tissue, slowly tearing down old, and slowly building up new skin, until a healthy surface resulted. Later it came to be known that arsenic has a similar effect upon a brain and spine that it has upon skin. It slowly re-creates by modifying nutrition, by tearing down and building up. To-day this remedy has the confidence of neurologists everywhere as the greatest of nerve-tonics. Its action is slow, and the remedy requires in some cases to be taken for months. In some cases in which the action of arsenic is eventually the most marked, no effect at all is perceptible for two or three months, when all at once the patient begins to improve rapidly. It improves the appetite and digestion from the start. It sometimes markedly improves the health of the skin, hair and nails. While arsenic in small doses, wisely used, is one of the most beneficient of remedies, in large doses, or unwisely used, it is a powerful poison. For this reason it should never be meddled with by others than medical men.

There is opportunity for much wisdom in giving arsenic. The preparation, the special dose at different stages, the way of taking, the frequency and length of the intermissions, are important points. The physician by wise management is able to extend the good effects of the drug over months. A patient is liable to exhaust the power of arsenic in his case in two or three weeks, and to poison himself beside.

NUX VOMICA, and its alkaloid, STRYCHNIA, are the most *active* nerve tonics. They stimulate nutrition in nerve-tissue, and especially in the spine. As in case of arsenic, strychnia may be so gently used as to heal and renovate, or so clumsily as to poison to death.

PERUVIAN BARK, and its alkaloid, QUININE, is a powerful nerve-stimulant, in large doses, and a gentle one, a true tonic, in small. The hydrochlorate of quinine, much used in Europe, is far superior to the sulphate, which is almost universally used in America for three reasons; it has greater alkaloidal strength, is more soluble in water (one in thirty-four), and the hydrochloric acid, of which it is made, corresponds to the hydrochloric acid of the gastric juice.

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 assimilate 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 stimulat-

ing 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 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 pharmacopœia 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 overwork and other excesses. He informed me that he had been taking a preparation of the "hypophosphites of lime, potash, 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 patent medicines do by their fine promises is in encouraging the nervous to rely on them to the neglect of other and wiser measures.

Coca is a remedy which is being widely advertised as a powerful nerve tonic. It is really a sedative-stimulant, and as such is very valuable in many forms of nervous impairment. The active principle of the coca-leaf is the alkaloid *cocaine*, whose power of paralyzing sensation in mucous membrane nerve-ends makes it one of the blessings of modern surgery. This anæsthetic power of cocaine extends, to some extent, to nerve-tissue everywhere—brain, spine and nerves. In addition, coca has stimulant and excitant properties similar to those of strong coffee. In these two properties of coca reside its remarkable action. It soothes away the intolerable feelings of nervous or muscular fatigue, experienced by many after a hard day's work, into a feeling of comfort, or even of mild exhilaration. It promotes the flow of ideas, and

gives an artificial *sang froid*, which is a great satisfaction to nervous and diffident public speakers and others, and which, if not repeated too frequently, is harmless. It temporarily strengthens the voice, and has quite a reputation for this purpose among singers and actors. It is the best remedy against mental depression. It is often successful against the sleeplessness which comes from brain and nerve tire. In certain cases it is the best heart tonic. It is useful in slow convalescence from any debilitating disease, and is able to comfort and sustain the aged.

But we must not make the mistake of abusing this medicine. Used regularly in full doses it is not a tonic in the sense that it builds up the brain-and-spine. It modifies sensation and increases power, not by adding anything to the sum of vital force, but by calling forth existing resources; in other words, it is a pure stimulant. Coca, like many other stimulants, may be, and often is so gently and judiciously used as to permanently improve the nutrition of the brain-and-spine, and thus act as a true tonic.

THE ARITHMETIC OF TONICS.—In a large proportion of cases tonic medicines accomplish but little good. If we suppose a bottle of hypophosphites, holding 96 teaspoonfuls to represent ninety-six units for vitality, overwork, worry, sleepless nights or any continous brain-and-spine strain will counteract this twenty fold and leave a large vital loss at the end of a month. Taking a tonic under certain circumstances is like paddling up Niagara river with a lath or fighting a conflagration with a syringe. But if brain-and-spine depressors, devitalizers and impoverishers are eliminated from the case the monthly balance will be all on the side of gain. Ninety phosphorus pills, reïnforced by 90 hours of oxygen inhalation (out of doors), 90 hours of extra sleep, 90 hours of recreation, 90 good appetites and 720 hours of brain-and-spine peace, will almost realize the promises of the nerve-food man.

XXIII

DRUG VICE AND MEDICINE HABIT

THE BRAIN AND NERVE POISONS.—Since morphine, chloral and the bromides became well known to the people, three new nervous diseases have been added to the list, books are written on the treatment of morphino mania, chloral and bromide addiction, and asylums are built to accommodate the increasing number of victims.

The new nervines, cocaine, antipyrine, acetanilide, and others still newer, are becoming popularized with alarming rapidity.

Dr. Warren-Bey writes to the *Virginia Medical Monthly*, that the extent to which antipyrine is employed in Paris is incredible. The average French doctor prescribes it for all the ills that flesh is heir to; it has become as necessary an article in every lady's boudoir as her perfume-bottle; scarcely a man can be found who has not some of it carefully stored away in his pocket-book; children are raised on it, and cry for it as for their *biberons*; and, in fact, they all take it, and for all things, but especially for *migraine*, which, as you know, is pre-eminently the malady of those who indulge in social dissipation. "That you may form an idea of the extent to which it is the rage, I will give you an incident as it was told me by the party immediately concerned: Mrs. P.——was dining out recently in the Faubourg St. Germain, when she chanced to mention that she had suffered with headache during the day. Instantly, from the pockets of thirteen of the fifteen guests who were present, antipyrine was produced—in capsules, wafers, powders, and elixirs—and she was compelled to take a dose then and there, nothwithstanding her earnest protest, and her assurance of entire relief before starting from home."—*N. Y. Medical Record.*

Although the recent nervines are not yet seen to be very injurious (as chloral was not at first), yet our experience justifies us in formulating a law that the habitual

use of any drug which quickly and powerfully influences the nervous tissues is injurious to their nutrition.

If we seek the causes which have led to the wide-spread and spreading drug-intemperance, we note first of all the example of the physician. The great use of stimulants and sedatives by medical men suggests the idea that there is virtue in them, and in action the drugs speak for themselves. The patient does not always realize that that which is simply a tonic or a stimulant or a sedative in skillful hands may easily become a poison in unskillful ones, and thus he is often betrayed into tampering with dangerous agents. We do not give our patients the best service of which we are capable when we resort too readily to palliative drugs. Probably we should more often teach that pain, sleeplessness, headache are beneficent warnings, reminders that something needs adjusting, rather than evil spirits to be cast out by chemicals. But weak as we are, and desirous to please, we find the magically acting drug a greater triumph, at the time, than any ascetic doctrine of vital economy. When these drugs must be given, it would be better if patients remained in ignorance of what they are taking; such ignorance could do no harm, and here very often, "a little knowledge is a dangerous thing."

The enterprise of certain manufacturing pharmacists has of late become active in cultivating the use of powerful drugs among the people. Seizing upon the labors of the physiologist and the clinician these gentlemen devise combinations of the most potent drugs and exhaust their fertile imaginations in advertising them—ostensibly to the medical profession, but practically to the people.

To our shame, there is no lack of physicians who, in ignorance, or for the paltry gratification of seeing their names on a proprietary medicine wrapper, laud these preparations to the skies. Some of what should be the most honored names in American medicine are flaunted,

million fold, in the face of the public, and given the appearance of recommending this man's "powerful tonic," or that one's remedy for headache.[1] With unique impudence many manufacturing pharmacists have undertaken the education of the medical profession, and from among their boxes and barrels issue books and circulars on the art of curing disease which have no little influence upon those of our 90,000 physicians who are ignorant, or feeble-minded, or who have no other source of information. One of over a hundred physicians' testimonials to the virtues of a certain widely advertised sedative is so illustrative, so suggestive and withal so naive, that I quote it; the italics are mine.

Dr. ———, ———, writes: "——— gives more relief in cases of headache than any remedy I have used before. In two cases of nervous prostration where other remedies failed to give relief, both ladies being married, and great sufferers from almost continuous headaches, your ——— gave permanent relief without any bad effects. In some cases, I find the remedy has to be persisted in before permanent cure is effected. *To my certain knowledge, I have now six families on my list who are never without a bottle of ——— in the house.* It is a welcome medicine to my suffering patients."

We may safely suppose that the "permanent cure" will continue until the "bottle in the house" has lost its power, and that the gentleman can give his two patients (both married) better care than dosing them with bromides is.

[1] Many proprietary preparations, it is fair to say, are more elegant, convenient and portable than any prescription of the same ingredients could be made; specialism in pharmacy, as in medicine, excels in some respects. But "good wine needs no bush" is not an axiom with the manufacturing pharmacist, and the specious, ignorant or false statements which some manufacturers see fit to supply with their bottles make them infinitely mischievous. Having some acquaintance with the proprietary preparations on the American market (which differ from patent medicines in being non-secret, often meritorious, and in being—ostensibly at least—addressed to the medical profession) I can at this moment scarcely recall two whose advertisements state the truth, the whole truth, and nothing but the truth, and do not, designedly or otherwise, suggest a false idea of their real power and uses.

Abuse of Tonics.—Sufferers from any chronic disease are apt to 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. We prefer to find health rather than try for it, just as we prefer winning a fortune to saving it. Marvellous cures, faith-cures and every novelty in cures that promises restoration of health without penalty for hygienic sins, and without the price of effort, are welcomed by the people; false teachers in the gospel of health flourish. Remedies about which there is no mystery—sunshine, pure air, proper food and correct habits are not very popular; though their value is felt and admitted; they are too homely and slow. In spite of repeated disappointments the sick turn again and again to the druggist. The druggist, in his turn, does not use much medicine; for him the element of mystery is lacking.

Patent Medicines.—Since the time that men first saw in the misery, the ignorance, the vain wishes and the credulity of the sick a fine field for commercial enterprise, and assumed the responsibility of advising and treating them by wholesale, self-drugging has increased until it has now reached the proportions of a national evil. More than twenty-two million dollars are annually expended in the United States for patent medicines alone, and between five and eight million dollars are paid for advertising them. Before the abolishment of the stamp-tax a few years ago, patent medicines brought the government an annual income of one million eight hundred thousand dollars. The advertisements of patent medicines are nearly as great an evil as the medicines themselves are, since their artful descriptions and sensational appeals influence hundreds of thousands of well persons into believing themselves sick.

The universal habit of medicine swallowing immensely increases the aggregate of medical pratice, and it is not exactly worldly-wise in a physician to rail 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 who realize the words of the great Abernethy, "Medicine is the noblest of professions, but the meanest of trades."

Professional egotism is a fault from which medical men are not exempt, but it is not so unfounded nor so dangerous as lay egotism. There is no other scientific subject in which the people feel so much ableness as in therapeutics. Men and women who would not meddle with a watch or a piano do not hesitate at the human body. Not a few persons even distrust physicians, seeming to think that a medical education warps or stunts, or in some way unfits a man to care for disease. I remember being called many years ago to the bedside of a young woman, who had been treated without much success for three days by her mother. The good lady wished no more from me than the name of the malady; "we have Dr. Gunn's Family Physician in the house," said she, "and we always treat by that." I had lately to envy the complacent completeness of a system of medicine, propounded by a man who is wise enough in his own trade. Said he, "all diseases come from the blood; all you have to do to keep well is to thicken it up in the fall with a little sarsaparilla, and thin it down in the spring with a little blue mass." The lay egotist observes

one case, and makes rules for all the world; the scientific physician observes twenty cases and is silent.

The most pathetic (and of late too frequently reported) instances of lay egotism are those in which a deluded mother, convinced of her supernatural healing power, permits a helpless child to die without earnest skillful effort to save it.

Amateur Physicians.—The popularizing of knowledge, which is one characteristic of the mental activity of our time, has drawn the veil from all the sciences, and from none more completely than the medical sciences. The reading public feels some familiarity with medical theories, and is more or less informed in new remedies. This is desirable, for intelligent men make the best patients. But a certain proportion of intelligent, imaginative and self-confident persons make the mistake of practising medicine upon this imperfect knowledge. The amateur doctor is everywhere about, and manages his own ills and advises in those of his friends with a confidence which the oldest physician might envy. Such a man is above patent medicines; he reads standard medical treatises, and uses the tools of the educated physician. Many invalids enter upon this amusement as they would upon amateur photography, or bicycling, and I have known a gentleman to spend large sums of money on books and apparatus, and treat himself for months, before discovering that he was treating the wrong disease. New drugs as fast as they appear are known to the amateur doctor, and used by him perhaps more extensively than by physicians. Coca, cocaine, antipyrin, antifebrin, caffeine, and other drugs are to-day largely in the hands of the laity.

There are three good reasons why amateur drugging is not wise, and why it seldom permanently benefits:

1. It is based upon unskillful diagnosis. The art of knowing how, and how far any man varies from the nor-

mal standard is the finest in medicine, and is essential to wise treatment. A sick man's mind is not to be trusted to decide upon the nature and degree of his disease. It is apt to be biased by its own fears and wishes. Physicians know this, and when sick, rely upon some professional brother.

2. It lacks wisdom in selecting remedies. 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.

Intelligence without experience is misled by taking theories. Immense sums are spent annually in this country to persuade that certain drugs have a specific power over nervous weakness. The plausible logic of the nerve-food and nerve-tonic man 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.

3. It lacks judgment, proportion, discretion, in applying medicines. Degree is everything in therapeutics. Every drug, indeed every force, which has real power against disease, has a certain action and produces a certain reaction in the tissues; the management of these actions and reactions is an important part of the physician's skill. It is very easy for stimulation to become over-stimulation (irritation and exhaustion) and for seda-

tion to become depression. A few facts may serve to indicate that drug-giving is a more intricate science than many suppose.

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.

It would be a great blessing if a safe and sure method of home treatment for every disease could be perfected and taught; tens of thousands of the sick poor are unable to secure adequate medical aid, and only a small portion of the sick are treated by physicians.

But skill comes only by practice. A novice in rifle-firing sees the target and has intelligence to estimate the distance and point the gun, but he cannot hit the mark. The inexperienced young housewife may study the recipe and measure the ingredients ever so carefully, but the bread is a failure. 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. Most of the advertised remedies against nervous impair-

ment are manufactured to sell, and have no relation to scientific treatment. But if a physician were to lay before his patient a carefully selected stock of instruments and medicine, in many cases he would injure rather than benefit himself with them. A set of watchmakers' tools may be used to ruin a watch as effectively as a crowbar.

There is no work in which trained perceptions, the habit of study, solid thought go for more than in the work of curing disease. 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.

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.

The story of one case 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 salt water 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.

XXIV

ELECTRICITY AS A REMEDY

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 merely a superficial sensation; it is a silent current of great quantity but of low intensity. The Faradic current, on the other hand, is readily felt within 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 milliampéremetre. A recent writer remarks: "I can as easily imagine a drug store without scales as a medical battery without a metre."

The electrical procedures used in nervous impairment are:

1. "Galvanization of the Neck" or "of the Cervical Sympathetic." In this operation the circuit is made to pass through certain nerve-centres which have an important influence upon the circulation and upon the nutrition of the whole body.

2. Central Galvanization, in which the negative pole is placed over the stomach (and thus over the great solar plexus of the sympathetic) and the positive pole at various points upon the spine and neck. This procedure powerfully influences the circulation, excretion in skin, and nutrition in brain-and-spine.

3. Spinal Galvanization, in which the entire spine is subjected to the galvanic current.

4. Abdominal Galvanization, includes the spine and, in turn, the various digestive organs within the circuit. It is a powerful stimulus or tonic (according to degree), increasing liver-action, bile-flow and in some cases removing chronic constipation.

5. Genito-Spinal Galvanization subjects the entire reproductive apparatus, including the lower spine, to the galvanic current. In sexual neurasthenia this operation has the power of allaying irritability and improving nutrition in a remarkable degree, and in functional pelvic disorders of women it is one of the most efficacious remedies.

6. General Galvanization subjects the entire body, from neck to feet, to the action of the galvanic current.

7. General Faradization consists in subjecting the whole body, from neck to feet, to the induced current. It is useful, but less so, in my hands than central or general galvanization.

8. The Electrical Bath, much thought of by some, has in a large proportion of cases no advantages over less troublesome methods. It diverts, instead of concentrating the current—a disadvantage where local organs are to be influenced. Local forms of electrical bath are, in some cases, very useful.

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.

4. It can be made to counter-irritate and powerfully impress superficial nerve-ends, and thus, through them, the central nerve-cells.

The power of electricity to influence nutrition in brain-and-spine constitutes its greatest usefulness in nervous debility. In the treatment of all the functional nervous disorders—epilepsy, St. Vitus' dance, hysteria, writer's cramp, neuralgia, sick headache—this tonic influence of electricity is one of our chief resources. In the various local phases of nervous impairment—in the irritable spine, the irritable ovary, the irritations and weaknesses about the male reproductive organs, the most gratifying results are often obtained with this remedy. The stimulant and the sedative action of both the galvanic and faradic currents is sometimes efficacious against the paroxysms of sick headache and neuralgia.

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 gets 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 this, "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 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.

XXV

SURFACE REMEDIES

The skin is not popularly thought of as an organ, but, with its 2,500 square inches of surface, its 7,000,000 follicles, its 1,750,000 inches (28 miles) of perspiratory channel, its unnumbered nerve-ends, it is one of the most wonderful and important organs in the human body. It serves as a tegument to protect the internal parts; it is an excretory organ second only to the kidneys; it is an organ of perception—by the tactile sensibility of the skin man largely, unconsciously, estimates his relation to the outside world.

The great extent of this superficial organ, its sensibility, its extensive communication through nerves with brain-and-spine, all enable us to powerfully influence the organ of vitality through the skin.

BATHS may be made 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.

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. The danger in the cold bath

is in cooling the body below the normal (98.6°) temperature, and thus depressing. When the body temperature has been raised above the normal, cold may be applied without danger down to 98.6°. We read that the Russian will emerge from his hot vapor bath and roll himself in the snow.

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.

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 inadmissible.

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 warm (96° to 104°) or hot (104° to 114°) bath is safer for the thin and the enfeebled than the cold bath; they do 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.

Artificial hot sea-water baths may be improvised at home by adding 3 per cent. of salt to the bath—nine

pounds of salt to thirty gallons of water. Ditman's Sea Salt may be had of the druggist in five-pound boxes; ordinary rock-salt will do very well, though it is more or less dirty and the resulting water needs straining. Various substances are added to the hot bath for the purpose of rendering it stimulating or tonic instead of weakening. Chopped sea-weed or a decoction of sea-weed makes the Fucus bath or, as it is called in England, the Ozone bath. The Pine bath, prepared by dissolving one half to one pound of the extract of pine-needles in warm water is in use in the German institutions. The essence of pine-needles added in small quantity to a warm bath floats on the surface of the water and clings to the person on leaving the bath, enveloping it in an agreeable aroma. The extract of aromatic herbs (one pound to a bath), chamomile, gentian, calamus, mint, juniper, marjorum, clover-blossoms, etc., is also used in Germany to render the warm bath stimulating.

The alternating Hot and Cold Salt Sponge Bath is one that I frequently recommend. A large bath sponge is alternately loaded with hot and with cold salt water and expressed over limbs, trunk, and especially over the spine. Begin with the hot water and end with either hot or cold, as most agreeable. This bath, lasting two to five minutes, is a powerful tonic.

All but complete immersion in a hot bath, to which a handful of powdered mustard has been added, has served me well against sleeplessness. In a half or two-thirds full bath-tub one may so arrange himself that nostrils and mouth or the nostrils alone are the only parts of the surface out of water; the extensive sedative and blood-diverting influence of this bath powerfully calms an irritated nervous system. Two to five minutes is long enough. Of course such a bath would not be advisable in cases of weak or fatty heart, and is not to be made use of alone by very debilitated persons.

The Vapor (Russian) and the *Hot-Air* (Turkish) baths are useful in certain cases as a powerful remedy against sleeplessness, but these baths have their dangers, and more than any other form of bathing need to be directed by the physician. In them the body is subjected to a heat of from 113° to (in some cases) 140° or more. A vapor bath may be taken at home by placing a shallow vessel of boiling water under a chair, adding one or two hot bricks and enveloping the body seated upon the chair with blankets. Vapor baths are sometimes rendered more stimulating or agreeable by passing the steam through bunches of fresh aromatic herbs or by adding pine-needle extract or Canada balsam to the water.

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 hot water is 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 weakened 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.

HEAT AND COLD are forces of great power in many of the symptoms of nervous impairment. One who is liable to any form of neurasthenic pain should have, and especially carry with him when he goes from home, two large rubber bottles for hot water which may be applied to feet, abdomen, spine or face in different cases. Heat to the small of the back is a powerful stimulus to the circulation and may be employed against "a cold" or any condition of depression. A small can of powdered mustard, with which and a handkerchief a powerfully sedative application can be made in half a minute, and an alcohol lamp should form part of the armamentarium of the neurasthenic on his travels. Pain can sometimes be ironed out of a face, neck or limb by means of a hot flat-iron and a piece of flannel. Evaporating lotions of any alcoholic liquid and water, so commonly used in headache, are only a means of producing cold; cloths wrung in ice-water are preferred by some. A hollow helmet filled with ice-water is part of a plan of treatment of St. Vitus' dance recently praised by Dr. Corning of New York; this refrigeration of the scalp, used in connection with the galvanic current, contracts the brain-vessels and secures the brain rest for which Dr. Corning has long been so able a pleader. Ice-bags over brain-and-spine, gradually contracting and expelling blood from the vessels of the central nervous system, constitutes a successful treatment of many nervous symptoms, of which the philosophy has been ably taught by Dr. John Chapman of Paris. The permanent arrest of neuralgic pain by means of intense cold (produced by the application of chloride of methyl) is reported by certain French physicians. Cold, locally applied, is sometimes of great service against deep reproductive congestions in either sex; thus the "psychrophor," or cold carrier, of Winternitz of Vienna, a hollow blind tube, through which a current of ice-water

is passed from a high reservoir, is a powerful measure against deep urethral and prostatic congestion.

Counter-Irritation, influencing the nerve sources by means of stimulants applied to the nerve-ends, has been in use from the dawn of history, and is practised by the most primitive peoples. A mustard poultice, a spice-bag or a plaster which relieves deep-seated pain, congestion, or inflammation, is popularly supposed to act by "drawing out" the soreness or the inflammation. In this, as in hundreds of other medical phenomena, inexperience observes correctly enough, but deduces incorrectly. The physiology of counter-irritation includes the stimulated nerve-end, the in-going sensation-bearing nerve, the ultimate receptive and reactive nerve-centre, the out-coming impulse-bearing nerve-fibre, and the deep tissues—relaxed or contracted, soothed or stimulated according to circumstances. The essential factors in counter-irritation are the nerve-centres of brain-and-spine and sympathetic. In deep-seated irritations, congestions, relaxations, inflammations, counter-irritation is still one of the most efficacious procedures. Rubefacients, the galvano-cautery, and the thermo-cautery, never pushed so far as to injure the skin or to cause much pain, are especially useful in certain spinal and deep reproductive disorders

Counter-irritation is one of the oldest procedures against pain. Equal parts of camphor and chloral-hydrate rubbed together will form a liquid, which is of great service as a liniment in neuralgia. Liniments containing chloroform, aconite, alcohol, tincture of cayenne-pepper, menthol and alcohol are much used. A mustard plaster, or spongiopiline wrung out in hot water and sprinkled with the compound liniment of mustard, and even flying blisters not larger than a quarter of a dollar over the painful point are often highly effective.

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.

Clothing has an important bearing on nervous impairment. Those whose vitality is diminished, whose resistant or re-active powers to cold are deficient, easily "take cold". My neurasthenic patients are constantly taking cold. Taking cold is a purely nervous (vaso-motor) phenomenon. A draft strikes the surface, or a cold damp air chills it; the nervous mechanism of the sympathetic contracts the vessels of the skin temporarily suspend its function of excreting (perspiration) and throw a disproportionate part of the blood stream upon certain internal organs. The blood thus precipitated internally is not a pure blood; it is a blood which has failed in relieving itself, in the skin, of certain excrementitious substances.

Perspiration is, to some extent, an excretion like urine; it is one of the fluids in which the body washes out its waste materials. Every household produces a certain quantity of garbage, which is promptly and regularly removed; when, as recently happened in this city, the scavengers go on a "strike," a short accumulation is offensive and unwholesome. The function of perspiration, to which modern physiologists attach the greatest importance, is regulation of the bodily heat. It is largely by evaporation of sweat that the body is steadily maintained at a uniform temperature. When sweat fails the internal heat point is raised above the normal and internal

fever occurs. In temperate weather an adult perspires about two pints in twenty-four hours. In a Turkish bath the body can lose two pints of sweat in a single hour. "Sensible" perspiration occurs when drops appear upon the skin: insensible perspiration is going on, in places, continuously. The physiologies used to record the story of a child who was gilded all over, to represent an angel in a papal festival at Rome, and who died in four hours, from suppression of this excreting and heat-evaporating function.

When a cold drives back an excess of impure blood from the surface it is not accommodated by all internal organs equally, but largely by certain tissues which seem to have a compensatory or complementary relation to the skin. The blood-wave rejected from the skin by a cold does not often "settle" in bone or ligament or brain, but is very apt to engorge nasal, bronchial or intestinal mucous membrane. Any internal mucous surface which has been diseased, and thus weakened and rendered less resistant, is liable to feel the effects of a cold; even the urethra in certain chronic cases is a perfect barometer; in others the spine is very sensitive to cold.

For several reasons the nervous should wear woolen under-garments. Wool protects against draughts, it absorbs moisture (perspiration), it absorbs odors, keeps the flesh sweet-smelling, and exerts a gentle stimulating, derivative influence on the surface which favors excretion and softly counter-irritates brain-and-spine. Those who are subject to bronchitis may advantageously wear a second woolen under-garment in the form of a vest: this complete chest-protector is perfect where the front, or front and back, (side neglecting) protectors ordinarily sold are very imperfect. In spinal irritation and other spinal disorders, a broad band of flannel about the loins gives great comfort and wards off many an ache; I have known such a band to cure chronic diarrhœa. There

is no such thing as medicated flannel: red flannel has no advantage and some disadvantages over white or gray. The heaviest men's gray Scotch wool under-garments to be had at men's furnishing stores, re-inforced, in delicate persons, by an undervest of Bulle flannel, are excellent. Better are the garments of the Jaeger Sanitary Woolen System Co. (N. Y.), which are now to be had in most large cities. Dr. Jaeger would have us discard cotton, linen and silk and dress altogether in wool, from hat to boot, and even sleep in woolen sheets, under woolen blankets and counterpanes. This idea, which seems extreme at first sight, is supported by good reasons and by experience.

The little plug of cotton in the ears—when one is driving in the wind or has a sore throat—wristlets, felt slippers and cork-sole shoes all afford protection or comfort in certain cases.

XXVI

THE SURGICAL TREATMENT OF NERVOUS IMPAIRMENT

The fact has been more than once noted, that in certain cases of nervous impairment the skill of the surgeon must accompany the wisdom of the physician. When a chronic *i.e.*, thoroughly established, disease-process is acting backwards to irritate and depress the brain-and-spine, its removal is the first thing in order. Sometimes this may be effected by hygiene and medication; more often it requires direct local treatment.

When hurtful tension of one or more of the ocular muscles involving eye-strain, and thus brain-strain—tenotomy—division of the taut muscle has produced brilliant results in epilepsy.

In hay fever, asthma, and chronic nasal catarrh irritations about the nose and upper air passages can sometimes only be cured surgically. The five indications in the local treatment of chronic nasal catarrh are cleansing of the diseased surface, disinfection, soothing or stimulating the mucous membrane, reduction of engorgement and congestion, and removal of redundant and diseased tissue. When the last of these indications exists some surgical procedure —the cautery, the galvano-cautery, the snare, the curette or the knife—is the only certain resource. As an eminent rhinologist, in summing up the modern treatment of chronic catarrhal disorders, recently said: "The sooner we cease to be throat doctors and become throat surgeons the better will be our success in the management of diseases of the upper air passages."

The surgical treatment of neuralgia is all that remains in some cases. It includes acupuncture—thrusting

needles beneath the surface—the injection of various solutions deep into the tissues and alongside the nerve, nerve-stretching, and nerve-section. All these operations are successful in certain cases, but the result cannot be positively promised in any single case.

It is a singular fact that a surgical operation of itself, without any special indication, will sometimes arrest nervous disorders for years, or even cure them altogether. The operation of trephining the skull for epilepsy undertaken in the supposition that depressed bone is irritating the brain-surface, is often successful in curing the disease when no depression is found. The operation of ocular tenotomy in epilepsy, and the operations against neuralgia probably act in the same way, in a few cases, by the profound impression, or the counter-irritating effect which is thus produced upon the central nervous structures.

In many cases of nervous disease in children the operation of circumcision, or, what I often prefer, that of preputial dilation, will effect a radical cure. It seems supererogatory to assert that a natural organ, placed by the Creator, is superfluous, and should be removed. But no fact in neurology is better established than that the foreskin in sedentary neurotic children may be an irritant, and a cause of extreme nervous disease. In sexual neurasthenia, when urethral and prostatic morbid changes are present, but little progress can be made until these are removed.

In every large community there is a certain proportion of cases of ovarian disease which have exhausted the ordinary resources of medicine and surgery, without benefit, and in which life has become a burden. It was in this class of cases that removal of the offending organs was first practised with brilliant results. Since that time the operation of ablation of the ovaries has been abused (what good thing has not?) and medical men are ranged *pro* and *con*. This operation has not yet become established among the medical profession at large, but has

so among specialists in abdominal surgery. There is abundant proof that this operation is a blessing in suitable cases, but there is also, unfortunately, abundant proof that the good judgment which confines operating to suitable cases is not common.

In all surgery good judgment must precede skill; indeed, if one must be lacking I should in my own person, prefer less skill and more judgment. The readiness, even eagerness, of surgeons as a class to operate leads the laity to suspect some secret anatomical paranoia akin to that of "Jack the Ripper," but man loves to do that which he can do skillfully and this *penchant* leads to much needless operating.

An immense amount of local treatment is conceived and carried out in dishonesty. Every physician has seen patients who have been subjected to long and expensive courses of local treatment for which there was, to say the least, no legitimate indication. Some patients even develop a kind of mania for local treatment; "*folic gynæcologique*"—broadly "womb-doctoring foolishness," is a French term which might be paraphrased and become useful in America. An eminent surgeon recently remarked, "the favorite hunting ground of quackery is an obscure, mysterious, mucous canal"—where disease may be imagined but cannot be demonstrated. The urethra, the rectum and the womb are constantly treated for imaginary diseases, and an imaginary disease is often more injurious to vitality than a real one.

XXVII

APHORISMS IN NERVOUS IMPAIRMENT

1. The brain-and-spine is the organ of vitality.

2. The brain-and-spine may be crippled by any form of functional over-activity—wear, tear, strain, wrench, or over-draft—as certainly as the ankle-joint may be.

3. The manifestations of brain-and-spinal impairment are partly objective, but largely subjective.

4. The signs of distress which a crippled brain-and-spine hangs out are the most heed-worthy of all morbid signs.

5. 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.

6. The cure of nervous impairment is a combination cure, including many forces in proper proportion. It is a chain of which one broken link throws the whole to the ground.

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

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

9. 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.

10. Nerve nutrition requires a rich blood-stream, and hungry, unfagged, actively assimilating nerve-cells. The

four factors of assimilative (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.

11. Brain and nerve foods are useful as far as they are assimilated by brain and nerve-cells, and not farther.

12. Of the three great classes of foods—starches and sugars, fats and albumens or nitrogenized foods—the last two are essential to develop and maintain stability, endurance and reserve power in the nervous structures of the nineteenth century American.

13. A nervous cripple with a thoroughly imcompetent liver is like a steam boiler which has been condemned; both can only run at very low pressure.

14. 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.

15. 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.

16. 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.

17. 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 local phases of nervous impairment.

18. 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.

19. Rest, feeding, trouble, sacrifice, expense must be proportionate to the needs of the case; if these fall short or over-reach the cure is apt to be, so far, a failure.

20. Proportioning—the adaptation of restorative forces to morbid needs—and authority—the *vis externus* which maintains proportion—often constitute the great power and use of the physician in nervous impairment.