GOOD HEALTH
AND
LONG LIFE

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Means of Increasing Health, Preventing Disease and Prolonging Life, by the aid of Therapeutics and Hygiene.

By

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"Apoplexy and Other Brain Troubles, with Hints on their Avoidance,"
"Inveterate Insomnia, Cause and Cure,"
"Cardiaphobia or Heart Fear."

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DEDICATION

DEDICATED to my friends and patients, with kindliest wishes for health, happiness and a long life, and to suffering humanity who are in need of enlightenment on the all-important and interesting subject of health.

PREFACE

THE author has written this work with the end in view to give a better understanding of Disease in relation to Health and the reaching of higher ideals. I have stated in this book, Disease is not an entity, something to be fought, to be gotten rid of, but a condition to be righted. We hope to show that the degeneration of the system following bad habits and methods of living is amenable to treatment, and by care we can prolong the natural term of Life and increase our present capacity for health and enjoyment. The germs of disease are really powerless for evil excepting where there is to be found a suitable soil for them to thrive in, as in those living an unhygienic and unhealthful life. For Health belongs to us naturally and we have a right to it, and if we have deviated from the path of healthful existence we can return thereto and gain our lost inheritance.

The writer, himself, must take the responsibility of sifting all evidence, and the conclusions that are practical and lucid. It is a prevalent custom to skim over a volume, then praise or condemn according to the preconceived notions of the reader. In a work of this kind it is impossible to arrive at correct conclusions without a careful perusal of its contents.

DR. WM. D. H. BROWN.

Chicago, Illinois.

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CHAPTER I.

GOOD AND ILL HEALTH.

The body—'tis in ourselves that we are thus or thus. Our bodies are gardens to which our wills are the gardeners, so that if one will to plant nettles or sow lettuce, set hyssop and weed up thyme, supply it with one gender of herbs, or distract it with another, to have it sterile with idleness or manured with industry—why! the power and corrigible authority of this lies in our wills. If the balance of our lives had not one scale of reason to poise another of sensuality, the blood and baseness of our natures would conduct us to most preposterous conclusions, but we have reason to cool our raging emotions, our carnal stings, our unbitted lusts.—*Shakespeare's "Othello."*

What is Health? When the functions of the organism are carried on easily, fully, and harmoniously, without calling attention to them, we may call this good health.

What is Disease? Disease is not an entity, something to be fought, to be gotten rid of, but a condition to be righted.

Health belongs to us naturally and we have a right to it, if we come into harmonious relations with life, and if we have deviated from the path of life and healthful existence, we can return thereto and gain our lost inheritance.

There are some who think the less we know of our body, the better; but in modern times we want to make the discoveries of science available for human welfare, and what is more important than that we should care for our body while we are developing our minds in order to bring us up to higher

physical and mental standards? The fully developed man recognizes he should care for his body as the instrument with which he works, neglect of which must be paid for with compound interest. In other words, mind and body must move along together as a unit, and we are apt to err by making too much of the mind without due regard for the body. We are too prone to neglect the physical, and consequently fail to regulate and use our nervous forces to advantage. We want to get the most out of our instrument, the body, for our own comfort and happiness and perfect it more and more.

Sickness and health are relative conditions. It is said seventy-five per cent of all people are in ill health, and only twenty-five per cent do not know they are sick, but seventy-five per cent know it, or think they know. The thing to do is to determine what your condition is, and then go to work to improve it. Those who contend that disease is an entity or reality seem to place themselves on the level of the mathematician who mistakes the x's and y's with which he works his problems for the real thing or entity. It has been erroneously stated that organic disease is incurable. The truth is, no limit can be set to the curability of disease, organic or functional, in a rightly treated and a rightly cared for body; and once the fact is fully grasped and we recognize it, we can see the enormous mischief which disregard of nature's methods has caused to humanity at large. So the old adage, "An ounce of prevention is worth a pound of cure," has some truth to it.

The actual departure from healthy conditions is a process rather than a product. If we remove the

morbid conditions by converting them into healthy processes by increasing our vital power, they cease to exist and the cure is complete.

Did it ever occur to you that the germs of disease are really powerless for evil save where there is found a suitable soil for them to thrive in as in those living an unhygienic existence?

A predisposition or tendency to disease does not develop into the maladies with which our parents may have been afflicted except by persisting in indulgences and unhealthful methods of living, which puts it up to us, and we must remember that these indulgences and dietetic errors constitute a large share.

Nature is always kind to those who obey her laws, and makes them happy; but to the transgressor the way is hard. If we aid her, we will know her signals and understand the mystery of pain and find it is but a danger signal that something has gone wrong.

Many conditions are self-imposed, as by overwork, overconsumption of foods and drink, overexercise, study, occupation, passion, and all harmful indulgences. These are causes born of a free will. We must attack them at once as among the controllable errors of our life.

The practical aim of healthy life should be to live orderly and naturally, and leave contingencies, as climate, etc., to be met by the force and strength developed by such living and care. Those who live in this way have confidence in the body to triumph over ordinary difficulties and surmount the things that they can not escape. Orderly activity, in preference to disorderly, should be our aim and idea.

Do not practice severe austerity, for it is opposed to conditions of healthy life. A life by rule is a mill-horse grind that is tiring, and takes the buoyancy and expectancy out of life, and to most people becomes a labor of toil. The unceasing solicitude about what to eat and what to drink really squanders the nervous energy of the body, and is wholly different from a wise care. It is a species of fear to be gotten rid of.

In all conditions of chronic disease there are days, weeks, months and years when the trouble is increasing. It is perceptible in many of the organs of the body, and yet the person has not started in a right way to rectify it. What shall he do? Ignore it and say it is not there, or find a patent medicine that does not exist to cure it? Best of all, go to a physician who has a broad outlook on the field, and have him help you on the vital roadway. It will cost you less in the long run and you will be sure of the outcome, and likewise of your life.

The best men of the day, longest in practice and most esteemed, have come to see the mistakes of the profession in pinning their faith on drugs alone, when there are so many things of greater value in practice and more immediate in effect than drugs. Many of the remedies supposed to be harmless are poisonous, and lower the action of the heart and the vital tone of the entire organism; and, if continued, we have a lowered vital tone instead of the fairly good health previously noted, which leaves its memory and effects on the system. We see this frequently after the use of headache and cold remedies.

The point that we contend for is this: had the

patient known the outcome, as he will later on from sad experience, he would be slow to use the above remedies in preference to the better methods suggested in the different chapters of this book.

Dr. J. A. Witherspoon, President of the American Medical Association, states "The better the doctor the less medicine he will administer."

Herman Schneider, Dean of the College of Engineering of the University of Cincinnati, December 7, 1912, as an outsider, asserts in medicine there are two types of doctors: one treats superficial symptoms; the other searches for the basic cause, and then prescribes. The first gives a headache powder; the second finds the functional disorder which causes the headache, and works to remove it permanently. In the long run the first doctor weakens the resisting power of his patient; the second one strengthens it.

Why is it that iron or phosphorus tonics, so prominent for years, have almost fallen into innocuous desuetude; yet the blood must have iron and phosphorus. Where is it to get it from? Those who use much iron in the metallic form of the drug are rendered a much greater prey to tuberculosis. Nature has an abundant supply of iron properly organized for quick appropriation and suitable to build up the organism. There are certain varieties of pears that have it in great abundance. It is also contained in the apple and grape, and in a large amount in vegetables, as peas, lentils, beans, lettuce, potatoes, and spinach; also in grains, as whole wheat, oatmeal and rice, eggs and meat, and without injury to the teeth and stomach.

The only organic iron in a prepared form for

medical purposes that I have come across is Iron Tropon. It is easily assimilable and, like all organic iron, helps to regenerate the hæmoglobin of the blood, which is built up from organic or food iron.

The same reasoning applies to phosphorus compounds. We all know that the brain and nervous systems need phosphorus and are dependent upon it for perfect work, for it heats up and sustains the vitality of the nervous system. It is one of vital import to the human body; but between the phosphorus found in medical compounds and that in food there is as much difference as that in ordinary salts and that found in fruits, namely, that the latter are organized and fit for immediate assimilation into the body.

Phosphorus is also an important element in building bones as well as nerves. Acid phosphates, phosphatic flours and baking powders or mixtures and compounds of these substances are useless and harmful. Get it from nature already organized and there will be no mistake about its value.

MEDICINAL TONICS.

Medicinal tonics generally prove to be a delusion and a snare, and the system is aroused to expel them from the body and this falls to the liver and kidneys. They generally prove to be stimulants due to the alcohol contained, and this stimulating effect is supposed to do good; but all of such stimulants are only a draft upon the vitality of the body which lessens its supply and makes it give up more of the energy which has been stored up. Some do not feel it as much as others on account of having a greater supply of this energy and being of a nature that does

not give out as rapidly as others do. Strychnine liberates energy very rapidly, and so with quinine, both of which are in most tonics. Kellogg says these aggravate the very conditions they are supposed to cure. Every year wonderful nerve tonics come and go with their disappointing results. What the large classes of invalids need is the awakening of the great sympathetic nervous system by natural means which gives renewed activity to the body; especially is this so for the chronic invalid, for it controls all organic life as well as controls the blood vessels, heart, secretion and excretion, and all vital functions of the body (see Sympathetic Nervous System). It can be acted on directly through the spine; but whatever increases the power of the body (see Personal Hygiene) helps the sympathetic nerve (see The Nervous System).

Health and Nature go hand in hand, and we must assist, but not force her into methods foreign to her own, or it will be like the spur to the jaded horse. Nature is not fickle, neither is she unreliable. Many of the symptoms that we call disease are but the defensive action of the vital force — a remedial effort to get rid of the effete matter clogging the organism. This is not a downward action of the vital force, but an upward effort to restore things to normal. This great force acts for self-preservation, and will assert itself if we give it a chance. Let us get into harmony with it. It is a good friend to husband and care for in time of need.

The question of health was for a long time regarded as one over which man had little or no control; that day fortunately for us has disappeared.

We must remember that right conditions are needed at all times, both mental and physical, and the same conditions that cause us to grow to vigorous manhood are necessary to keep us in health and vigor.

We are living in a civilization of unnatural hurry and worry, which has given us unnatural methods of living, namely, in eating, sleeping, clothing and breathing. We must get back to nature some way as quickly as possible, to get back to health.

Emerson says the first wealth is health. Sickness is poor-spirited and can not serve any one. It must husband its resources to live. But health or fulness answers its own ends and has to spare, runs over and inundates the neighborhoods and creeks of other men's necessities.

It is almost impossible to realize the influence of disease in retarding the evolution and progress of mankind, or of hygiene and healthful living in helping along the same. It is said the bringing of disease in the way of malaria into Rome, together with the luxurious and unhealthful habits already grown on its people, was the cause of the fall of Rome and loss of her activity. Let us compare the degenerate, inactive people of modern Greece with their wonderful Spartan forefathers: what could have caused such a change?

Professor Jones of Cambridge has shown by both medical and lay writers that malaria and other diseases were introduced into Greece during its wars; this, together with the same degenerate habits of the Romans, made them lose their patriotism and love

of work and activity, a marked change in the Greek character and stamina.

In coming nearer home we see the failure of the French to build the Panama Canal was due to the fact they were not able to overcome the diseases of the tropics more than to their want of skill as engineers. With characteristic energy our federal government started in at the same job and soon found sanitation and healthful living would, and did, overcome what failed previously. The cost to the world of diseased conditions in individuals amounts to something phenomenal, and we are now only awakening to a realization that it is largely due to two factors — carelessness and ignorance.

CHAPTER II.

THE VITALITY AND HEAT OF THE BODY.

The vitality or life principle of this body of ours can not be fully explained; but, like electricity and heat, we know it only by its manifestation. It moves the organs of our bodies in an orderly and rhythmic way, even the involuntary muscles, without any effort of our will, e. g.: The stomach digests the food. The lungs breathe in and out and aërate the blood. The heart pumps regularly and circulates the blood. The stomach churns the food. The intestines move continuously in their wonderful vermicular or wormlike motion which urges on its contents. And all this work is done by the vital force acting through the nervous system. It can be strengthened and allowed to accumulate so that it can be drawn upon, as we have seen, or lowered and exhausted.

We must also remember that this human body is the most wonderful machine ever constructed; but, unlike any machine made by man, it builds, operates and repairs itself at the same time; building up the body as well as increasing vital force, so really the great work of this vital force of ours is the preservation of the body. It converts food and all nutritive material, fluids and air into vital force; anything more than it needs interferes with this vital force.

The constant keeping up of the heat of the body, like the other myriad operations of the life force, is a wonderful thing. It is a good rule of health, if persons sufficiently clad can not keep warm and have

to depend on their supply of heat from without, as from stoves, hot-water bottles and other appliances, especially to keep their feet and hands warm, something is radically wrong and their vitality is at a low ebb. As a rule, the person who depends on such artificial methods of heat will prevent the natural production of his own; the oxidation or combustion of waste material in his body is not going on normally.

Many persons living in warm climates go away each winter to get their systems invigorated, and these same people who stay a short while North find when they return that this generation of heat remains increased for a long while, on account of the better oxidation or combustion which has taken place in their bodies on account of breathing cooler air.

One can experience the wonderful glow of the body when exercising on a dry cold day; you will feel the cold less than on warmer damp days because the heat is not carried off from the body by the moisture, and combustion or oxygenation in the body is more complete. The vitality is manufacturing more red blood corpuscles and increasing the vigor of the system, at the same time the lungs are oxidating or burning up the refuse of the system. The worn-out cells die and new cells are built up, as Draper says, every second, so we can see the necessity for cool fresh air to vitalize and clear out effete material without chilling the body, for the temperature of the blood must be kept at ninety-eight degrees body heat. The body has in it, its system of monitors, distributing over the surface the manu-

factured heat, to be carried away, and if this process is interfered with and it can not escape, a fever ensues.

It is from the food the blood is made, and when the vitality is vigorous and oxidation or combustion is good, we digest and assimilate more food and make more and better blood, and it contains more red corpuscles to vitalize the system. Actual experiments show that our living rooms are kept at too high a temperature, and thus the red corpuscles are destroyed almost as fast as new ones are manufactured by this too great heat; and even if we eat nutritious food, a cold may ensue and we wonder why, and say, "I must have been in some draft." It is not so, for colds commence more frequently as soon as we begin the closing up of our homes in winter and increasing their heat and shutting out the air. If we would put on warm, dry clothing and lower the temperature of the rooms, letting in fresh air frequently, and use plenty of friction to the skin and muscles of the body to equalize the circulation, the process of oxidation would increase, and digestion also, a more natural glow of warmth to the skin balancing the circulation, and what seems to be a cold would at once disappear. The increase of the processes of the body will cause diffusion of heat over the body naturally, instead of an internal congestion or stagnation at some part, which a cold really is; in other words, unbalanced circulation. You are not cold or chilly because you have been in a cold or felt the cold, but because the heat-balancing processes have been disturbed as above. Dr. George F. Butler made the statement a short while ago that

taking cold is the result of taking too much food into the stomach; another name for foul air, an overloaded stomach and a disordered liver. Taking cold is a medical bugbear.

The air of sitting-rooms should not be over seventy degrees, with fresh air admitted frequently without draft, or chilling of any part of the body. It is a mistake to stand by stoves or over radiators, or putting one's feet in the oven or on some hot substance; better use friction to the skin with deep breathing instead. There is nothing equal to a well-developed pair of lungs to warm the feet. If a cold has developed, take a mustard foot-bath twenty minutes (see Baths), protect body and knees and limbs with blanket and induce a perspiration. Next take a tumblerful of hot water and add to it ten drops tincture camphor and a few grains of red pepper; drink the whole amount, go to bed, perspire and sleep it off.

Moisture is a great conductor of electricity as we all know. E. g., if the sponges of the different poles of the battery turned on are dry, little or no current is felt at all; but if moistened, the volume of current passing to and fro is greatly increased. During damp spells, both summer and winter, fire and burglar alarms and door bells ring frequently, and houses have been set on fire by the power of moisture in conducting the electric current.

In the human body, which has its great electric system of nerves, we find moisture conducts away the nervous power and heat of the body, which lowers the vitality and electrical condition of the system. Especially is this so in vital parts, as

chilling the feet by standing on damp ground when the feet are thinly clad, which rapidly conducts the heat away. The feet should be kept warm and dry, as they need more protection than any part of the body. Keeping on damp clothing, chilling vital parts, as the kidneys, bowels and spine, are conditions that are sure to be at once felt.

The best means of insulation of the body is to keep it dry by dry clothing, as dampness is one of the great enemies of the human system, and if not guarded against, it exhausts its vitality and conducts it away. On dark, damp days more energy and vitality is called upon to overcome its effects and we feel the depression. The great thing to do under the circumstances is to keep the electrical condition of the system at high tide, or in other words to keep the body in good condition. Many of us, who ought to know better, pay more attention to our dumb animals, and even to our houses and lands, than we do to our own health until something comes to break us down; then we see the value of it. This vitality that does so much for us is a principle and impulse of nature. It is more than food, drink, and breath, and conditions must be right so it will be renewed and keep the body young and vigorous. Nature gives us the power of self-protection to a great extent if other conditions are made good. When we speak of the vitality of the body, few realize its full meaning. It is the great source of health. It is said by some to be life itself. It can be increased or lessened accordingly as we use the body rightly or wrongly. If the hand or foot is cut off, it is vitality that heals. If the bones are broken, it is the same.

In a wound, if the vitality is good, the cut surface heals quickly; but if vitality is low, the work of healing is low. So it is with all the vital processes.

Some of the things that interfere with the vitality of the body are:

1. Overclogging of the system with too much food and retaining the refuse in the system, causing catarrhal conditions.

2. Too little fresh air, making incomplete oxidation or combustion of the refuse matter of the system.

3. Want of activity or interchange within the system.

4. Overactivity and high tension, exhausting the nerve force.

5. Dampness conducting away the magnetism of the body.

THE HEAT OF THE BODY.

Strange as it may seem, heat production is regulated by oxidation, either increased or decreased as it is perfect or below par. Air, especially cold air, is effective in stimulating the appetite and also the heat-making processes. We increase our food, and if hunger is properly used, it is a good regulator of the food needs of the body. Heat regulation or its loss in production is regulated by what we call the vaso-motor nervous system or regulator, which aims to keep the body at an even temperature, controlling the loss of heat as well as its production. Wood says "This center is in the medulla oblongata of the brain, near the pons." Bernard says "in the cervi-

cal sympathetic." Sajous says it is in the pituitary body in the brain. If we are not certain of the exact centers, we know they exist.

There are many ways that heat is conducted away from the body and lost. First, warm air breathed out takes the heat of the body to heat its moisture. Second, the perspiration of the skin quickly lowers our heat. Third, the secretions and excretions, as the saliva, the bowels, and the urine. The heat produced by oxidation or combustion of our food tends to keep up the heat of our body at a high level, and produce its energy. Heat production also takes place in the muscles, blood and tissues, and the circulation helps to equalize and distribute this heat.

It is a known fact that many a fine watch has stopped or snapped its mainspring by great extremes of temperature in cold weather in being transferred from a warm vest-pocket to a cold room with a temperature below freezing. So in the human body, one can see the effect on the nervous system in balancing a shock of sudden transformation from very high temperature of eighty degrees, as we often see in our homes, to sudden cold below zero, and this is the reason why it is not best to keep our rooms too highly heated in very cold weather, in order that we may stand the cold and shock better and avoid pneumonia and other such troubles.

PNEUMONIA.

While speaking of this disease, we may say pneumonia is conceded to be the most fatal of all the acute infectious diseases, and the deaths from it have steadily increased. The last forty years they have increased three and one-half times. The early

years of life up to five years of age and after sixty years show the greatest death rate because resistance is low. It has come to be looked upon as one of the greatest foes of humanity, and it would not be so if we would look to the predisposing causes.

The *direct cause* no doubt is the pneumococcus of Fraenkal and the bacillus of Friedlander, which attacks the system when the auto-toxin or poison destroying principle of the organism is low. The *predisposing cause* is the lowered vitality and exhaustion of the organism, when the body is overwhelmed by the toxins or poisons spoken of, which have increased because functional activity is low. Whatever lowers the vitality, e. g., too hot rooms, bad air, bad food, overwork, overfatigue, loss of sleep, excessive indulgences and wear and tear of the body, mental and physical worry — all of these predispose to toxic waste.

The important indications to be met with in this disease are: To keep the blood alkaline by saline and other injections; to keep down the fever and other conditions by hydriatic applications; to meet each condition arising; to balance the circulation naturally.

Hobart O'Hare, one of our best authorities, says of all diseases pneumonia is the one which will bear the least misuse of drugs, such as cardiac or heart depressants, alcohol and vaso constrictor drugs.

Pneumonia, strange to say, does not make its greatest ravages in the coldest climates, as in the coldest climates it is very rare, e. g., artic regions and far north or in high altitudes. Catarrhal conditions from uncured colds prepare the way with the

other predisposing causes. I am inclined to believe keeping our rooms at eighty degrees, as spoken of, and then suddenly going out into damp frosty air without any preparation, has a lot to do with bringing it on when people are in the conditions mentioned as predisposing thereto.

CHAPTER III.

CLOTHING AND SUNSHINE.

CLOTHING.— In reference to clothing, it is interesting to note that wherever God has placed the brute beast he has given him the covering that is best fitted to his native climate and supplied his food close at hand. But man was placed here naked and given a wonderful brain to work with, which the beast has not, and was left to seek for himself the food and clothing best suited to the climate in which he lives. If he had been given hair-covered skin, he could not have gone from place to place with any degree of comfort, so man was left naked to reason out these things for himself as to what is best, which the animal could not do, one being a creature of circumstance while the other is a Creator. So man began to use the skins of animals for covering at first, and finally, as he grew wiser, used their wool and hair, and then silk and cotton, in every stage using his reason.

KIND OF CLOTHING NECESSARY.— In damp climates cotton and linen are too cool, except in summer, and chill the surface of the body; better to use a combination of cotton and wool, or silk and cotton, or silk and wool, or fine wool, as these combinations more readily absorb the moisture and prevent chilling. The influence of clothing on health has received much less attention than it deserves. There are few people who realize that the color of a garment has some decided bearing on health. In old age and in weak conditions of the system there is less heat pro-

duced, as there is less vitality, consequently these people need more warmth from clothing to prevent too great radiation of the heat generated, which would chill and weaken them. In these people it is especially necessary to keep the feet dry and warm.

I have for a number of years noticed the effect of black on those using deep mourning, and the changes which take place in the same person when deep mourning veils are removed and black exchanged for light bright goods. They do not realize that black absorbs and does not transmit the sunlight to the skin. Black is warmest in strong sunshine, on account of its absorbing power, but coldest when the sun is not shining. Try for yourself these experiments: dress in black and see how much easier you will tire than in light clothing, and how much more vivacious you feel when dressed in white or light, bright goods.

Black or dark clothes should not be worn in a sickroom, because black or dark clothes seem to absorb odors and infections and retain them much longer than white. You can prove it for yourself. Expose the light and dark clothes to the fumes of tobacco and it will be found the dark clothes smell much stronger and retain the odor much longer than the light.

The English scientist Sir William Crookes invented an instrument called the Radiometer, that rotates under the influence of the sun's rays. The more intense the light the more rapid its motion. This shows the force of light, and this force coming in contact with the body through white clothing acts as a tonic and stimulant.

I was led to these ideas by the potato vine and watching the effects of plant covering on the grass. For example, the grass beneath the dark black cloth was pale and actually withered, while under closely woven fabric which admitted some sunlight, it was pale and green but growing. Under white cotton and light goods it was green and thick, even better than when not covered; the colors of the goods were faded out entirely. We all know the sun has been used for a long time to bleach out unbleached cotton, pure and white.

Light hinders the growth of all bacteria; especially is this so of sunlight. It is the most penetrating and powerful of all natural curative agencies. The growth of fungus and molds are hindered by it, and all microbes are soon destroyed by its direct rays which are both disinfecting and sterilizing, and it has an important bearing on health. There is nothing that will so nicely disinfect and purify clothes as the direct and continuous rays of the sun, and it has a life-giving and soothing effect on the wearer. Clothes dried in a close hot room are not nearly so healthy as those put out in the sun and air to dry where they can be acted upon by the oxygen of the air and sunlight. A free exposure of people and homes to the sun's influence has also a great effect in diminishing the tendency to disease. Sun baths diminish the sensitiveness of the nerves and stimulate nutrition generally. They have a soothing effect on all the organs. In poor circulation they are a valuable agent for good. In scrofula, colds and bronchitis they have a specific action.

Now if the absorbing of the sun by dark goods and not radiating the same to the grass as we have seen acts so badly on plant life, is it not natural that it will do so to the human body? There is another reason why the wearing of white clothes in summer makes one feel so fine. It is because the skin is stimulated by the light, exerting a cheerful influence on the nervous system, making one feel lively, while black clothes make one look as well as feel sedate. Black is used for mourning, ministers, and professional men, as they think it makes them look more serious and professional. It is also used to typify sadness in life, as mourning, grief and sorrow, while light bright goods accord with a hopeful, happy, gladsomeness of the child and the bride. Light and bright colors are nature's garb all around us, as we see in the brilliant hues of the flower, magnificent plumage of the birds, the varied colors of the leaves, grass, animals and insects of every hue and color. The black as exemplified in the crow and the raven is greatly in the minority, and these are the birds that suffer most with the heat of the summer. Did you ever notice that the most luscious and highly flavored and colored grapes and peaches were the ones grown in the sun? As in vegetation, so in the human, the girls and women and men with the bright red checks are the ones who seek the sun and get baptized in it. The sunny side of the street is always better and selected for residence, as it is more healthful. The close shading of homes by trees is a great mistake. It has been found in flats and buildings that the south and west sides, which are sunniest, are always healthiest. In the soldiers' barracks, the

sunny side shows less disease. In some barracks in Russia it was found where no sun penetrated that there were three cases of sickness for every single case on the side exposed to the sun.

In Italy it was found that malaria seldom attacks people in apartments or houses which are freely exposed to the sun. The same experiments were conducted in Great Britain with same results. We don't seem to realize that the sun is the great source of energy of this great universe of ours, and we are all dependent upon it for our heat and vitality and for the growth and development of all nature around us. Anybody can experience the want of vitality without the sun if he will go into a damp cellar from which the sun has been excluded.

We should allow the sunshine into our cellars and homes for the production of greater health and life. In cellars, mines, caves, and all places where light and sun are excluded, plant life will not grow; under such conditions animals would soon sicken and die. The rays of the sun in early morning have been considered most beneficial, decreasing in benefit as the day goes on. It is certain that plants always look fresher and are more fragrant in the early morning sunshine, and perhaps this is the reason, for nature teaches us many mute lessons.

SUNSHINE AND PLANTS.

Plants, besides becoming pale when removed from the sun, become infested with parasites. Such parasites are soon destroyed by the direct rays of the sun. The days when the rays of the sun are hidden, we feel depressed in body and mind; during such

days nature rests to a certain extent and the functions of the body are going on at a slower pace, the organs are less active and toxic products are not so actively eliminated, and the skin and kidneys are less active. Such inactivity and slowing down is nature's method of resting and rebuilding the organs which are so constantly active during bright days. It is unwise to be unusually active or work too hard at such times; it is best to follow nature's indications and build up by rest. On bright sunshiny days we feel the activity of nature inspiring us and we feel its effect on both our mental and physical condition; it vitalizes every organ of our bodies and adds to our vitality. It has been noted for a long while that epidemics of infectious diseases begin during such dull dark seasons, as well as diseases in general. Clear, bright, dry, frosty weather soon ends an epidemic of la grippe. From time immemorial people have recognized the value of sunlight; the old Romans regularly took their rubs and oil baths and laid in the sun on the roofs of their houses to vitalize themselves. Animals intuitively seek the sun for comfort and to invigorate them when unwell. The growth of bacteria when exposed to the sun is at once checked and these organisms killed entirely. It is the vitalizer of all nature, and we should become as fond of it as the flies that seek the window-pane. If we did, life would be prolonged, and the organs of our bodies made continually more active and the metabolism or change increased, and the nervous system quieted and invigorated.

When spring comes and the leaves and flowers burst forth and fairly dance with the warmth and

radiance of the sun, and the birds break forth in song, and as its life pervades every fiber of our own being it makes us feel as if we were in fairyland; then we can fully appreciate its beauty and value to us.

SUNSHINE HOLIDAY.

To hear the lark begin his flight
And, singing, startle the dull night
From her watch tower in the skies
Till the dappled dawn doth rise,
Then to come in spite of sorrow
And at my window bid good morrow,
And young and old come forth to play
On a Sunshine Holiday.— *Milton.*

CHAPTER IV.

THE LUNGS.

No instrument made by man can excel the marvels of the human lung for delicacy of structure, perfection of mechanism, and power of expression. The respiratory apparatus consists of the air passages, lungs and thorax. The air passages consist of the nose, pharynx or back of mouth, trachea or windpipe, the upper part of which is called the larynx, and the bronchial tubes which connect with the lungs.

The nose, or nasal cavity, consists of the hollow between the bones of the face and those of the skull, which is divided by a bony and cartilaginous septum, each compartment communicating separately externally through the anterior nares and the back part through the posterior nares. The function of this part of the respiratory tract is, when we breathe through the nose as we should, the air is warmed before passing into the lungs. This also prevents dust from getting into the lungs, as it filters or catches the dust. The trachea or windpipe is a flexible, open tube situated just in front of the gullet or œsophagus or stomach tube, and composed of rings of cartilage connected by membrane. The ribs or chest box are twenty-four in number, twelve on either side of the lungs, and are attached to the spinal column behind. The upper seven are known as the true ribs, attached to the breastbone in front, while the lower five pairs are called the false or floating ribs, because they are not fastened to the breastbone,

but are fastened by cartilages to the other ribs; the last two pairs have their ends free so as to give the lungs and body more freedom of expansion in every way. These free ribs are often called the floating ribs. The thorax or part enclosed by the ribs extends from the neck to the abdomen and is occupied by the lungs and heart, and is generally called the chest. The ribs are drawn up and down in respiration by two sets of muscles called the intercostal muscles, or muscles between the ribs as the name implies, aided by the diaphragm.

The lungs could not expand without these muscles, and if they are allowed to grow strong by proper use they tend to increase the amount of air and expansion of the lung at each respiration, and increase the vitality of the body by an increased supply of oxygen. These muscles are always illy developed in the consumptive, who is narrow-chested and has thin chest muscles. On this account a considerable portion of his muscles remains inactive and unused. Developing the intercostal and deep-breathing muscles helps to equalize the circulation of the blood, and hence better nourish the system in all its parts, as every part is dependent on a proper supply of blood. Weak and undeveloped lungs can not make use of the oxygen in the air that strong lungs can, as the vital power to absorb oxygen freely is lacking. There are two ways of feeding the body: one by food through the stomach and intestines, and the other by air through the lungs. The stomach and intestines receive the material and prepare it for use, but the lungs assist in its purification, making it into good red blood out of the dark-red fluid that it receives.

After this process of oxidation it is ready to vitalize the body, so we can see the force and power of good lungs and muscles and breathing capacity on the food, blood, and system generally.

The structure of the lungs is both wonderful and beautiful. They are made up of small air cavities and minute capillary blood vessels, together with small bronchial tubes. These are held together by bands of elastic tissue, of which a great share of the lung substance is composed.

These cells or air cavities are arranged in groups of fifteen or twenty, called lobules; each lobule is attached to the end of a bronchiole. The lungs are spongy, light and porous, very elastic, and covered with a delicately constructed sack, known as the pleural sack. This sack is attached to the lung on one side, and on the other to the inner wall of the chest. This porous sack secretes a fluid which allows the inner surfaces of the walls to glide easily on each other in breathing. It is estimated there are 1,700,000,000 air cells in the lungs. The lung cells and air passages are lined with a thin, delicate membrane, and under this membrane is a close network of capillaries, so small that only a single corpuscle can pass through at a time, and placed so near that they occupy three-fourths of its entire space. Through these small channels pass the large quantity of blood every twenty-four hours. The lungs occupy the two sides of the chest and almost fill its cavity. The right lung is divided into three lobes or fissures; the left into two.

The lungs receive air in the form of gaseous food ready for use in the organism without any prepara-

tion, and it is most essential for the life of the individual. One can live a good many days without food, but only a few minutes when the supply of air is cut off, e. g., by drowning or suffocation.

The respiratory act consists of two movements: inspiration, or taking in of air; and expiration, or expelling it out.

In inspiration the thorax is made larger by depression of the diaphragm, or muscle which elongates the chest cavity, and by elevation of the ribs enlarges the chest laterally or from side to side. In consequence of this increased space, the air rushes in to fill the space thus created.

The diaphragm is a strong, flat, sheetlike muscle stretched across the chest, separating the chest from the abdomen. It is automatic in its action like the heart, and this very suction action of the diaphragm assists in the circulation of the blood, drawing it on.

In expiration the opposite takes place. The ribs are lowered, the diaphragm relaxed, and it is pressed upward into the chest by contraction of the abdominal muscles, pressing the blood out, aided by the elastic tendency of the lungs themselves.

There are three kinds of respiration, including the parts rendered most active. When performed mostly by the diaphragm it is called diaphragmatic or abdominal; when by lower ribs, infracostal or lower-chest breathing; and the upper part of the chest, supracostal, or upper-chest breathing. The latter is seen in most women, and is due to the fact that their mode of dress tends to bring this about. We do not see this prominent in youth, as their ribs by their loose dress allow free motion, while

tight lacing prevents lateral or side expansion, as well as free abdominal breathing, and lessens the full play of the lungs.

FREQUENCY OF RESPIRATION.— The frequency of respiration is one to every four beats of the heart, as the heart beats 72 to 80 per minute in an adult, respiration is from 18 to 20, and its tone either quiets and rests or excites the heart. Respiration is greatly stimulated by cold, heat, stimulants and exercise, and diminished by anger, heat, cold, sleep, and whatever quiets or depresses the system, as grief, anxiety or anger.

THE CAPACITY OF THE LUNGS.— In a well-developed person the capacity of the lungs is about 320 cubic inches. In ordinary respiration we use about 20 cubic inches, or not much more. After an ordinary expiration of the above amount it is still possible to force out 200 cubic inches more, but there always remains 100 cubic inches of air in the lungs which can not be expelled. This is called residual air and allows for quick demands which may arise for an increased quantity of air in emergency, showing another of nature's wise provisions.

The vital capacity of the person is the amount of air that can be changed at a respiration. It can be greatly increased by training.

THE CHANGES OF BLOOD IN RESPIRATION.—There is a very marked change which occurs as the blood passes through the capillaries of the lungs. The blood enters the lungs by the pulmonary artery, very dark in color, due to the impurities it has collected on its way, full of carbonic acid gas; but after

being exposed to the oxygen in the lungs, whereby it is cleansed and purified, it leaves the lungs of a bright red color, due to the absorption of the life-giving oxygen which it has received in exchange for the poisonous carbonic acid and other effete matters it has parted with.

Oxygen has been absorbed by the hæmoglobin of the red-blood corpuscles to be conveyed to every part of the system to vitalize and build it up, and help throw off effete matter and change old conditions. The blood also loses some of its moisture, watery constituents and organic matters, and is some cooler by passing through the lungs. There is only a very thin, delicate membrane separating the blood and air while it is being aërated in the lungs, so changes take place easily and rapidly. When we consider the number of gallons of blood that the lungs purify in a day, the great necessity for the large area of membrane used for this purpose is seen. When the oxygen in the lung comes in contact with the blood through this thin membrane, a certain kind of combustion takes place, and the carbonic acid is released and oxygen absorbed. Much more carbonic acid is produced during digestion than at other times. It is also modified by age, sex and diet. Females exhale less carbonic acid than males; it increases from infancy to old age. It is most during the prime of life, declining as old age advances and diminishing during sleep. Digestion and assimilation depend on oxygen, and if the blood is well charged with it before meals, digestion will be more perfect at the meal time and appetite keener.

Certain articles of food, as animal food, sugar, stimulants, beer, wine, hard cider, tea and coffee, are said by some authorities to diminish the waste of tissue; but it is evident that they increase it, which has been proven by actual experiment.

CHAPTER V.

BREATH AND BREATHING.

There is no function of our daily life that is so essential to existence as respiration or breathing, for "He lives most who breathes most perfectly." In this process the air is taken into the lungs at every inspiration and ejected by expiration. In this way the blood is purified and saturated with oxygen. The effete gases, as carbonic acid gas, and decomposed products are disorganized and removed from the blood. In the case of fishes, water is made to act as the medium of conveyance of air and answers the same purpose as the atmosphere in air-breathing animals. The higher classes of the animal kingdom, of which man stands supreme, are very dependent on air for the maintenance of life. The disorganization of the effete waste from the blood takes place in the lungs, and, as we have seen, the oxygen purifies and cleanses the foul stream of dark venous blood into clear, bright arterial blood, which feeds and renders active every part of the body. The vital processes of the body are in a large measure chemical. The process of feeding consists of interchange of oxygen, hydrogen, carbon and nitrogen, contained in the food, and the oxygen derived from the atmosphere is the potent factor in the production of these changes, and if the supply is not sufficient, the result is disastrous. The first concern of every person should be to secure for himself an abundance of fresh air. Children need it even more than adults, as the changes are more

active and rapid in their bodies, and it would be well if parents could be brought to understand that bad weather is no excuse for housing children indoors. The dangers of taking cold are only increased by this plan, and children who are delicate are only made more so by too much bundling up, as they are liable to perspire and are made more susceptible to every climatic change that takes place. The more air we can take without chilling the body, the better. It should not be the least we can get along with, but the largest amount and the purest quality. High winds, though at times disagreeable, are our best friends, as they make us force more oxygen into our lungs, which purifies the blood and invigorates the body. They also purify our surroundings, as bad soil and the deleterious exhalations and pollutions of gases arising therefrom. These winds are nature's method of purification and prevention of disease. In many cases morbid and mistaken habits of protection and overprecaution have made the organs of the body so susceptible to the slight changes of temperature that danger would attend exposure without proper precautions; this drawback does not affect the value of the remedy, but limits the use we make of it. Those who would be healthy must cultivate the habit of free and full respiration, and here is where judicious exercise in fresh air is of so much value. Cases of indisposition occurring in early life with the above coddling, and low condition of health following this morbid state, by judicious care can be changed into those of vigorous health. If we value good health, we must have an abundance of good fresh air. Good

food and judicious exercise, and a healthy mental attitude of cheerfulness, are potent factors in the production of such conditions. The obstacles we encounter in the use of the breathing organs are of our own making entirely, and it is indispensable that the breathing apparatus should be free to vary its movements, as special need in inspiration and expiration arises. Women by the wearing of stays, corsets and stiff supports and stiff clothing assail the vital energy of the body at its center, interfering with proper breathing and compressing the nerves of the part controlling the blood supply.

The fact remains that the wearing of such garments, though the wearers think they add beauty of form, no matter how skilfully made, are a fruitful source of misery and derangement of the organs of the body, which are necessarily cramped and unable to perform their function fully, and no real and full expansion of the lungs can occur in such cramped condition.

THE MODERN YOUNG LADY AT TWO PERIODS OF HER LIFE.

I can not do better here than insert an interesting description of the modern young lady at two periods of her life, by the *New York Graphic.* "Behold her at eleven, her limbs unfettered by the long skirts of the so-called conventionality; she runs, she romps, she slides on the ice-pond, she rolls hoops, runs on roller-skates, she leaps, kicks, runs races, and is as fleet of foot as a boy, and for this her appetite is good, her cheeks rosy and her

movements unconsciously graceful, and her health perfect.

"Behold her again at twenty. No more does she run or jump, or roll the hoop, or run races, or slide on the ice. It is not 'proper' now nor lady-like, but more than that she couldn't if she would, for she is a fettered prisoner with long tight skirts and underskirts, the tighter the better; high, tight shoes and tighter stays. How terrible. Her movements are no longer graceful. She is trying to balance herself, for now where she walks it is not unconsciously but to be looked at, to make a sensation, which in her changed aspect and estimation is the main object of walking. She is already in delicate health and has a doctor who gives expensive advice and writes prescriptions for her and ascribes her complaint to anything and everything but the real cause, and that is simply her fetters of fashion. Now she is physically a prisoner, while at eleven she was free. The doctor advises travel. A long, expensive trip; but not to change her fetters. Anyway she wouldn't do so, if he did, and he wouldn't advise her if he knew it would bring relief, for she would no longer believe in a doctor who would make her dress like a guy, and being like a guy is not being dressed in style of Dame Fashion."

Diana never could have hunted in a tight, trailing, narrow skirt, high-heeled gaiters and a pinched corset waist, and, if she did, she would be bounced off Broadway by the nearest policeman to save her life; but dressing for health and freedom of body is one thing and dressing for fashion another. A man couldn't endure such pinching encumbrances

for an hour, and a pitiable spectacle he would make rushing around to business panting for breath. When the westernizing of China began, a Chinese diplomat, in defending his country against the charge of being barbarian, amused many by his reply. "Yes, possibly," he said; "we squeeze our women's feet, but you squeeze their waists. Which is the worst?" There was no room for argument.

The vogue of the high heels and hobble skirts is blamed by railroad people in the reports for the increasing number of accidents of women falling and tripping and becoming injured. The insurance people have made the statement, "The more fashionable and prettier the woman, the poorer the risk." To dress after correct style, after all, uses up half a woman's time and two-thirds of her strength, and tends to make her an invalid in many cases.

Robust health requires joyous activity, and this very activity forms the habit of deep breathing. The baby cultivates it naturally by crying, laughing, shouting and playing, and what we call boisterous games with children are more valuable than otherwise because they call for a continuous and greater supply of fresh air. The more exercise an adult man takes, the greater is his demand for air. Even in the state of comparative rest, the need for it is very considerable, in fact more than we realize; and if good health is to be kept up, it should be in excess of actual standard requirements, for in truth the more air the better, and the fresher the quality the better.

It has been proven that when the blood is poor in oxygen, and when the vitality is low, the tubercular

bacilli can be found in the blood. Increase the functional activity of the lungs and augment the oxidizing power of the blood and there will be a destruction of the bacilli, even if they are to be found, and this will assist in producing an antitoxin to destroy the germs. This is nature's method of protection, when given a chance, especially if we add sunshine to the fresh air. Cold air contains more oxygen than the same volume of warm air and also reduces the fever. If the person uses plenty of good milk and eggs, vegetables and fruits to get the potassium salts, the alkalinity of the blood will be much increased and the vitality increased as well.

In these days of tension and nervous breakdown, poise and deep breathing is a safety-valve.

We can stop the supply of food and drink for a considerable time, but if air is withheld we quickly succumb.

Oxygen in the air is the great natural stimulator of vitality, and cleanser of the effete or waste matter of the system.

No greater mistake can be made or perpetrated on our bodies than to neglect the function of deep breathing. Diaphragmatic or abdominal breathing contains adequate means for obviating disease that already exists in different parts of the organism.

This wise provision of breathing exists in all animals, but much more perfectly in man, as in the latter it is under the control of his own intelligence, which renders its power and effects perfectly controllable during his daily life.

The cause of disease in the human body in most cases is a defect in the nutritive powers of the body.

Oxidization has not been sufficiently intense in degree to eliminate the retained products and there is stagnation; auto-intoxication or self-poisoning ensues. Free and abundant oxidation then is needed to use up this morbid material, to burn up the coal and clear out the loaded grate of the system, so that the fire can burn brightly.

METHODS OF BREATHING — NOSE AND MOUTH.— It is a very important thing to breathe correctly, which always means through the nostrils. If one has contracted the habit of mouth breathing, see to it that it is corrected. Enlarged tonsils and adenoids have a good deal to do with this faulty habit. Our mechanism is so constructed that we can breathe either way, but it is the design of nature that it should always be right, and it means a good deal to us which way we follow. One is for health and improvement, and the other, the opposite. It is noted that mouth-breathers are more liable to disease, infectious or otherwise. It has not been noted among soldiers and sailors, who get such an abundance of fresh air and exercise. As we have stated, nature has prepared the nostrils with a large surface of mucous membrane and an abundant supply of secretion to overcome irritation, catch the dust and impure substances and clarify the air before it reaches the lungs, where these foreign substances are hard to get rid of. Nature intended that the air should pass through the nose so that it should be warmed before reaching the lungs, as inflammatory conditions are often the result of not paying attention to this. At the same time, breathing through the mouth leaves a dry, parched feeling of unpleas-

antness in the throat and mouth. It also prevents the nostrils from cleansing themselves of their load of impurities and bad matter. When we come to the animal kingdom again, we find man alone the only one who is a mouth-breather. It is said that the Indians, savages and barbarian races do not do it, and it is probable that we get it through our unnatural methods of life, excessive luxuries, and too great warmth in our dwellings, which again brings on insufficient breathing. This too great heat in our dwellings can be laid to woman, who does not wear sufficient clothing to be warm in a healthy temperature.

HIGH-CHEST BREATHING.— High-chest or clavicular breathing, which elevates the ribs and lifts the collar-bone and shoulders and expands the upper lungs, is the type of breathing we see most in women, especially in those who lace. The upper part of the chest is used most and requires a greater expenditure of energy to get the needed result. It is harder on the breathing, and those who sing require a strong diaphragm, which is so vitally necessary to get the full tones. To show the truth of the above remarks, let one constrict the chest and abdomen by lacing and breathe by the upper chest alone, then try it with the full-breathing power, and you will soon see the difference even in the tones produced.

DIAPHRAGMATIC OR ABDOMINAL BREATHING.— We have seen that the diaphragm is the great broad flat muscle that separates the chest from the abdomen. When the diaphragm is strong, it acts freely on the abdominal organs, and really massages them.

It is one of the great means of urging forward the blood in the veins of the abdomen which have no valves. This form of breathing uses the diaphragm and mostly the lower lungs; but it is preferable to the high chest breathing alone, and of much greater value to the system, as the lungs are used more fully and are given freer play. It also gives a sense of greater restfulness and might well be called rhythmic breathing, for so it is, as it works to the rhythm of the diaphragm. Did it ever occur to you the rhythm of this universe of ours from the human body to nature in general? Everything has its seasons and perfect rhythmic vibrations. The ebb and flow of the tide. the earth around the sun, day and night, rise and fall of the sea, rain and shine, systole and diastole of the heart, the heave and fall of the chest, as in expiration and inspiration, contraction and relaxation of the muscles, and the rhythm of every organ of the body in like manner.

The more fresh air we inhale daily, the more complete is our oxidation, and the greater is the increase of red-blood cells, as is so often seen in those persons much in the fresh air. We see the opposite in those much in hot rooms, who are pale, have bad circulation, cold extremities, weak heart, poor breathing apparatus, half-way breathers; the overheated air has destroyed the red corpuscles almost as fast or faster than made. We must revivify ourselves by letting in outdoor air a number of times daily, if we are to remain well. It is a fact that if we double the amount of air breathed each day it would make a great change in our physical bodies alone by almost doubling the red-blood cells and

increasing the capacity of the lungs. If we want to keep our youth and live long, we must avoid close, stuffy, hot rooms and breathed-over air. Live as much as possible in the open air. This is why houses are better to live in than flats, because the air is in greater motion. Automobiling does a great thing for civilization in this way, in forcing into our lungs a much greater amount of air, improving sleep, appetite, and health conditions generally. Mountain air increases oxidation, because the air of the mountains is rarer and purer, and the climbing increases the depth of our respirations and forces us to breathe deeper. Many of us think it is necessary for us to go to the mountains and forests to get fresh air, but if we would make good use of that around us we would soon see the change taking place and become fond of the feeling of exhilaration produced by deep breathing.

Retaining the breath a minute or so helps us to force the air deeper into the lungs and overcome superficial breathing.

Another good method is to inspire one breath on top of another till four or five are taken and retain one-half a minute to exercise the capacity of the lung, for we often find cases of atelectasis or unused air-cell space of lung in people who are weak and do not use the lungs fully. If these exercises were used daily, no such condition would be found, as all the air cells would be in full use. The influence of this deep breathing in strengthening the lung cells has its influence also on the circulation and warmth of the body; deep breathing tends to keep the lungs and chest wall supple and elastic so

it will not stiffen, as in old age. If the intercostal muscles are well developed at the same time, one using these exercises is not apt to get tired easily after walks or on mounting the stairs or climbing a hill; showing that the breathing power has been permanently increased, or in other words we are not breathing with but a small part of our lungs and neglecting the rest. This is the great remedy for tuberculosis, weak lungs and low vital energy.

COMPLETE BREATHING.

This includes all the good points found in high-chest breathing, mid-chest and low-chest breathing, in other words, it brings into play every part of the respiratory apparatus and gives one the maximum amount of good to be derived from the least energy.

If you have noted the special features and advantages of the different forms of breathing mentioned you will see the benefit of combining the whole into one as in the complete breath, so as to get the best and most beneficial results of all. This breath has been considered by the Yogis of India as the acme of perfect breathing. It will take a little time and patience to master the science of breathing to learn to do it easily, for man has adopted unnatural methods of living as well as breathing.

1 — Stand erect; sitting will do, but not so well. First fill the lower part of the lungs, which is accomplished by use of the diaphragm, which descends and exerts a pressure on the abdominal organs, pushing forward the front walls of the abdomen; then fill the middle part of the lungs, pushing out the lower ribs, breast-bone and chest; then fill the

high portion of the chest, lifting the ribs; the lower part of the abdomen will be drawn in, which gives the lungs support and helps to fill the apices or highest part of the lungs. This will be seen when you get used to it as one single uniform breath, aiming to fill each part of the lungs. Do the breathing as evenly as possible, which will come with practice.

2 — Retain the breath a second or two.

3 — Exhale slowly, holding the chest firmly, and draw in the abdomen slightly, to relax chest and abdomen. Many people get it easier and quicker by exhaling a breath before beginning to take the complete breath. It is the most satisfying form of breathing and is very quieting to the nervous system.

Consumptives and weak persons are poor expirers of air, or in other words do not empty the lungs any better than they fill them, and especially do not fill the apices or upper part of the lungs or the parts which are always attacked by this disease — e. g., the air will be taken into the lower parts of the lung, while the apices will not fill at all during inhalation. When we take a full inhalation the superior vocal cords close simultaneously with the relaxation of the muscles of inspiration and contraction of muscles of expiration. These muscles of expiration drive the air upward, and it can not escape from the lungs because the superior vocal cords by their contraction have closed the glottis and they must be driven apart by the air forced up. While it is escaping it is driven into the apices of the lungs. All my experiments have proved that the apices

were always filled during the expiration of breathing. This action of the superior vocal cords in this respect can be seen, through the mirror or laryngoscope, that they act with the muscles of expiration. So this is really the use of the superior or false vocal cords supposed to be of little but really of great use to the lungs.

CHAPTER VI.

OXYGEN, OXYGENATION AND THE WASTE MATTER OF BODY.

Oxygen is the greatest and most important of the elements of the body, it is the vital principle of nature, and the chiefest in the life of mankind, and everywhere present. Combustion everywhere, be it in the human body or elsewhere, must be accomplished by the union of oxygen and carbon; its mission in life is to tear down the old, to build anew, to destroy old morbid material of all kinds; in fact it is the great builder of the human machine. There can be no combustion without it; e. g., take a large glass jar and fill it full of breathed air (which we know contains carbon dioxide — CO_2), and light a match in it, it will instantly go out; take the same jar, let it be filled with oxygen, and it will burn easily. Oxygen in its natural form of pure air is best for the human body, and far superior to that artificially prepared; the former has the life principle ready for prompt appropriation (we can not improve on nature). It has the vital principle back of it that makes the body alive again.

Oxygen in the artificial form used by those in good health or by the athlete, first excites then depresses, and its excessive use would seem to exhaust vitality. It has its useful place in medicine, as in pneumonia, croup, tuberculosis, carbuncles, anemia, but can not take the place of natural vitalized air. Oxygen is also found in an allotropic form, as ozone, after windstorms, thunderstorms. It is an electrified form of oxygen and is very exhilarat-

ing, especially in its natural form. It can also be produced artificially, but is too stimulating.

Oxygen plays a most important part in animal life, as the natural heat of the body, and a good deal of its energy is attributed to the oxidation of the products of digestion by the oxygen of the air in respiration.

Oxygen is separated from the poison carbonic acid or carbon dioxide (so often written CO_2) in the atmosphere by plants, which themselves retain the carbon and give off oxygen; while animals and man absorb oxygen and give off CO_2 — another of nature's wise provisions. Physiologically it is of great importance, as its free supply to the organs of respiration is absolutely essential to the maintenance of life. It passes down the lungs by way of the bronchi, trachea, larynx, mouth and nostrils, and unites with the hæmoglobin of the blood to form oxyhæmoglobin, carbonic acid or CO_2 being at same time given off. This interesting change in the capillaries of the lungs marks the conversion of dark or venous into bright or arterial blood. Of course the amounts of these gases absorbed and given off are proportionate and dependent on their chemical and physical relation. Oxygen is now given up to the products of digestion, but more largely to the tissues for the development of energy, gives fresh power to nutrition and secretion and excretion of the different organs.

OXYGEN AND OXYGENATION.

The last or final results of oxidation are carbonic acid, urea, water, creatine and creatine prod-

ucts left over from oxidation of food and animal tissues excreted in this state. It is these products that give rise to toxic conditions and produce disease, being the result of imperfect oxidation. Foster states that only about one-third or one-sixth of the oxygen in the atmospheric air as ordinarily inhaled is absorbed into the blood — e. g., if the grate-fire gets very low from too much coal and is choked by an accumulation of clinkers and ashes and almost going out, what would you do? Keep on putting on coal, or clear out the grate, ashes and clinkers and give more air to oxidate or burn up the material and not overload again too quickly? So it is with the human body, we have overfed and overloaded with material until the effete matter has lowered vitality and clogged the organism, and the fire is burning at a low ebb. We must clear out, oxidate and get the body free and not feed too much while breathing plenty of fresh air for oxidation. Rebreathed or vitiated air is quite different from vitalized air; it lacks the oxygen necessary to life and to carry off the above products. It is this kind of air that causes the blood to stagnate, the muscles to tire, the eye to lose its luster, the organs to lose their tone, and the blood to change and lose its red-blood corpuscles — a fertile soil in which disease can thrive and grow. The Chicago Department of Health made the statement that dirty air is far more deadly than dirty food or water. Dirty air kills nine thousand Chicagoans each year; dirty food and water claims only one-third that number. We breathe from infancy to old age, and as soon as we stop, life becomes extinct and we cease to be.

Therefore we are not only dependent on breathing for life but on correct breathing to lengthen our life and give us increased vitality and freedom from disease. Strange to relate, our civilization has changed us in our habits and we have contracted improper methods not only of breathing, but of standing, sitting and walking, and these have followed in the wake of our new furniture, cosy chairs, easy rockers, and the result is contracted chests, stooping shoulders and terrible increase in respiratory diseases. There was a time when chairs had no backs; then the spinal muscles were strong and vigorous, and always in use with plenty of exercise. Every procedure which encourages vital resistance and activity in the body helps in the destruction of toxins by stimulating the toxin, destroying cells of the thyroid gland, spleen, liver and lymphatics, as cold and hot baths, electricity, special exercises, friction to the skin and deep breathing; all of which increase oxidation or the burning-up process.

Assimilation.— Following complete oxidation we have better assimilation of food, which is the power a tissue has of drawing into and making a part of its own structure; it is one of the most vital and essential endowments of the organism, and its very existence depends on oxidation. Faulty elimination or deoxidation hinders this process of assimilation and allows an increase of poisonous products to be retained. Suppression of perspiration also causes retention of these products. We must increase the activity of the emunctories or sweat glands, which also assist in the removal of these products, by hot and cold baths and skin rubs. There is incomplete

chemical transformation, and the process may be arrested at any one of its stages with the products or poisons retained and thrown in upon the organism itself instead of out of it.

After the food is digested and made into blood and courses through the blood vessels, the pumplike action of the heart assisted by the lungs keeps it moving so it can be oxygenated in the lungs and there part with its waste matter and thus be renewed and vitalized over and over again. The heart, as we have seen in another chapter, beats four times to every inspiration of the lungs, and we find that if the atmosphere is laden with carbonic acid (CO_2) and deficient in oxygen, the heart will beat more quickly in the effort to get more oxygen out of the air and into the blood, and the lungs heave in their endeavor to get sufficient oxygen. As soon as we get out into the fresh air the heart quiets down again and the lungs take deeper respirations to make up for the lack. The lungs as well as the skin, bowels and kidneys must assist one another in this matter of clearing out effete material. If these organs are not active this poisonous matter is retained in the body and ill-health is soon observed. No wonder some people feel cross, grouchy, and unable for exercise and mental activity; they are half poisoned with the decayed and refuse matter of their own bodies. We should freshen up the air of our rooms several times a day, even in winter, in order to brighten up ourselves. If unable to get out, bring in air and sunshine; it will give more health and more abundant enjoyment of life.

Insufficient oxidation accounts for the so-called

blue Monday; following Sundays, the housing up and overfeeding without either as much exercise or air as accustomed to other days; the rest is greatly beneficial but we need air and exercise also.

HEADACHE.— Migraine, sick headache, also nervous headache, bilious headache, persons who suffer from such, eat too much, get too little fresh air, exercise too little or exhaust the nervous system. They are low-spirited, morbid, subject to the blues, very sensitive, up in the clouds or downhearted.

The toxic waste of the system we have been considering irritates or depresses the sympathetic nervous system by accumulation of these matters in the blood. This accumulation has been increased and hastened by indiscretion in diet, excess of food, midnight suppers, rich foods and sweets. To the above has been added alcoholic beverages, tea, coffee, cocoa, etc., which raise and keep up vascular tension.

Emotional states, as worry, anger, excitement, fear, grief, may also act as exciting factors. To get at the cause of these conditions, as described under "Sleep," we must not dose with depressing drugs, as much harm is done, but quicken elimination of the poisons from the body by flushing the intestinal canal (see "Intestinal Canal and Its Poisons"), drink one tumblerful of hot water with two teaspoonfuls of liquid soda-phosphate before breakfast for five mornings. Then wait a week or so and repeat. In headache of nervousness and from cold, a twenty-minute mustard foot-bath (see "Foot-Baths"), manipulation of the spine, menthol and camphor applied to the forehead to relieve the congestion.

NERVOUS HEADACHE.— Sufferers from nervous

headache think there is nothing so severe and so hard to endure. Consider that twenty-five of the greatest literary minds of the world were just such sufferers, e. g., De Quincy, Huxley, George Eliot, Carlyle, Spencer, Elliot, Whittier, Browning, Darwin, Nietzsche, Wagner, etc., all suffered the agonies of headache, nervousness, insomnia, irritability and severe dejection, and all caused by eye-strain produced by using the eyes too much in reading and writing. These people found it hard to stop, as it was their life-work; but they finally found lessening such work lessened their affliction. These people did not cause their eye-strain and nervousness and headaches in such foolish employments and waste of time as continuous card-playing, constantly watching moving pictures and devouring trashy novels.

THE LIVER.—Sufferers from headaches are those who know they have a liver. This organ, which is very long-suffering, soon begins to be responsive to the abuse of the digestive organs.

There is no organ, after it does get out of order, that exercises such a depressing effect on the human mind and body alike as the liver. It makes one melancholic, sours the disposition, inclines one to moroseness and pessimism, even if one would be otherwise. Most of the poisonous residue of digestion the liver converts into a harmless residue. We can not do without this organ, it is so important. There is an old aphorism that says "A good liver needs a good liver," which is only too true. If we exercised business principles in our treatment of the body and liver as in other things this would never be; but as soon as we are able to choose what we want we begin

to abuse our sound liver by eating and drinking what we choose, regardless of the needs of the body or ability of the liver to handle it. We are so very dependent on it, physically and mentally, that when it does become torpid, we want to correct it and atone for this bad treatment. Pills, salines and cathartics temporarily relieve it, but will not cure, and if used too often only aggravate the condition. The cure consists in changing our diet to a light one as already suggested, combined with outdoor air, exercise, deep breathing (see chapter on "Breathing"), percussion (see "Constipation") plenty of water and fruit juices.

The class of persons mentioned above who suffer from headaches and liver troubles would do well to abstain from meat and live on a vegetarian diet, with milk and fruits, gradually adding eggs and cheese as the liver conditions improve. Meat, alcohol, wines, spices and condiments are injurious in such conditions, and especially so in hot climates and hot weather; as hot weather decreases oxidation of the waste products and leaves the liver in a more sluggish state, retaining its toxic products. Under such conditions increase perspiration followed by bathing, as it is a valuable eliminator at all times and under all conditions of disease. Strange to relate, most all of our severe colds seem to arrive when the liver is sluggish. When the liver is active and oxidation is good, colds are almost impossible and catarrhal conditions improve in proportion. Rheumatic conditions come under the same category and are improved in the same way, for rheumatism is simply a disease of bad elimination and suboxidation; the uric acid

and other elements, which should be easily gotten rid of in good health, in these conditions accumulate and deposit in the organs, muscles and joints, causing a systemic poisoning with all its misery.

CHAPTER VII.

SLEEP AND SLEEPLESSNESS.

"God bless the man who first invented sleep." —*Sancho Panza.*

"Sleep that knits up the ravelled sleave of care,
The death of each day's life, sore labor's bath,
Balm of hurt minds, great nature's second course,
Chief nourisher in life's feast." — *Shakespeare.*

Sleep is a physiological necessity and one of the most important factors in the life of the body. During its hours of quiet rest, when muscular and nervous activity are stilled, nature is at work among the cells of the body, repairing and renovating their waste, building up what has broken down and getting rid of toxic material. During this period the most important changes take place in the body, namely, repairing of structures, recruiting the nervous system and rebuilding worn-out tissue, allowing nutrition and building up of nervous tissue to go on at a greater rate than its destruction. Waste of tissue in the lower forms of life is small until we come to the animal kingdom, when it greatly increases. In man it reaches its maximum. The brain, with its emotional activities, increases it much. In man and animals, during hours of activity, waste is in excess of repair. During sleep, repair is in excess of waste; in organs like the heart and lungs, which never seem to rest, we wonder how they keep up with repair, and yet they do — the heart by relaxing its muscles and lessening its force and rapidity of beat, and so with the lungs. Repair is rapid when

all activity is reduced to a minimum as in relaxation leading up to sleep; and in this state repair is everywhere going on to make up for the waste already taken place; restoring the equilibrium of the body. In the early morning after sound sleep how keen are all the senses and organs of the body, showing how sleep has increased functional activity, and renewed the organism. The body manufactures its material to repair tissue waste each day and does not accumulate a reserve. If there is an excess it is eliminated. It is while resting and asleep it makes use of this material.

Sleep is really the laboratory of repair for the brain and nervous system, and in this overexcitable age in which we live, it is rare that people get too much sleep; in fact great numbers of people engaged in business pursuits and mental labor are victims of too long hours and overwork of the brain and nervous system, and the hours of sleep are far too short.

Amount Needed.—A normal amount is a necessity, but as we differ in our organisms and waste of our bodies we must seek the needed amount. The constitutionally inactive people — lazy, one might say — are great sleepers, sleep too much; those of the active, nervous temperament sleep too little. Lack of sleep deranges and harms the brain and tends to insanity just as too much sleep stupefies and dulls the brain and whole system. If when one awakes he has had six or seven hours of sound, refreshing sleep, he can scarcely go wrong. Six should be the minimum for most people. We need more sleep and rest in winter and in cold climates than in summer, as the intense cold tires the nervous

system and heart and keeps them on tension, which we all note during very cold spells of weather. The infant may sleep twenty hours out of twenty-four; the active, growing person is better for ten to twelve hours; but after middle age sleep is not so sound, and is more easily broken; in old age, as activity declines, less sleep is required. Young women and girls seem to require more than men. The necessary thing is to feel rested after sleep; if we do not we must get enough to catch up with needed repair. Outdoor occupation is the greatest inducer of sleep; but fatigue of any kind, either mental or physical, is liable to induce insomnia.

SLEEP.— There are three or four theories on sleep: Accumulation of acid produced, Neuron theory, the Anemic theory.

It has been known for a long time that during sleep there is a lessening of the flow of blood to the brain, producing a condition resembling cerebral anemia. In experiments on animals with the brain exposed it has been noted that the flow of blood to the cortex of the brain is diminished during sleep; that the pressure has fallen and the otherwise large amount of blood circulating through the brain is lessened. This lessened pressure is followed by an increase of blood to the skin and extremities; this regulates the circulation more perfectly in the brain and other parts. Some say this condition of relaxation precedes and causes sleep, others take an opposite view, namely, that it follows sleep. I think if we look carefully into the matter we will conclude that it precedes it, for we notice as soon as we get into a condition of relaxation and restfulness there

is always a sleepy feeling following. In all animals, as well as man, there are periods of activity followed by periods of rest, as night follows the day; we even feel it in the body; it is a period of construction following activity or the destructive period. If the catabolic or destructive changes far excel the anabolic or constructive or building processes, then there is breaking down of the bodily tissues. During sleep respiration becomes slower and deeper and the pulse lessens in tone. The carbon dioxide (CO_2) is lessened in amount as oxidation of the blood and tissues is also lessened in harmony with the restful tone of all the organs of the body. It is a strange fact, which you will notice on going to sleep, that the movements of the body are the first to be stilled and the sense of hearing last; on returning to consciousness the reverse is the case; one is conscious of sounds and yet does not seem sufficiently awake to make any movement. The period of deepest sleep is from the first to the fourth hour, and from this to the seventh or eighth it is lessened. There is a great difference in different people concerning the intensity of sleep; surroundings and mental condition have a good deal to do with it. There are many who pass into deepest and soundest slumber just after falling asleep, but in most people it is one to three or four hours. There are also differences in dispositions in regard to sleep. Some can go to bed and sleep at once, others contend they have to go to bed late in order to get any sleep at all. According to laws of nature and of God, night was made for sleep and day for all other pursuits, and to transpose this order of things and sit up to and beyond midnight and sleep next day is a trans-

gression of natural law, the effects of which are soon seen. If we turn to nature again, the birds, the cattle, and even insects, retire away for rest and sleep, only bats and owls are exceptions; these awaken to snap at all that oppose them, unlike the song of the natural, joyous bird. So if the birds and animals and all creation go to bed when the Creator lets down the curtains of night, should not the highest order of creation, mankind, do so?

The position during sleep is of some value. If we turn to the animal kingdom, especially those having a vertebral column, we find they seek repose off the spine. The horse, the cow, the cat and the dog sleep on their right abdominal side. For this, as in all nature, there must be a good reason, and we find it in the structure of the organs of the body, the ligaments holding the heart, lungs, stomach, liver, kidneys, intestines and other visceral organs in place are designed to hold the organs from falling forward, instead of backward. However, during sleep we ought to assume the position that gives the greatest freedom to each organ so its functions can be easiest performed. The circulation is freer and better when pressure is removed from the great system of spinal nerves, arteries and veins which carry the blood to and from it; hence the best position is off the back to prevent this pressure, for when we lie on the spine during sleep our dreams are more startling and we have more nightmare as it is called, caused by the pressure on the spinal nerves affecting the heart. Lying on the right abdominal side empties the stomach better than on the left, and consequently gives quieter rest; there is less pressure on the heart than

when on the left. It is well to change position, but most of the night's sleep is better on the right side.

CAUSES OF INSOMNIA.— Insomnia is due to many causes, among them, worry, excitement, overfeeding and improper food, starvation or inanition, dyspepsia, biliousness, excessive brainwork, tea or coffee, eating heartily of meat suppers when tired, constipation, organic heart trouble, asthma, emotional excitement, and whatever produces a congested condition of the brain as eye-strain produced by excessive reading of exciting stories before going to sleep, playing cards, watching the rapid moving-picture shows, and whatever strains the eye and excites the brain. Neurasthenic subjects, whose nutrition is deficient, are most liable to suffer; overexercise of the nervous functions in some of its departments; too great expenditure of nerve force; constitution, habit, circumstances and environment are also strong determining factors. Loss of balance of nerve energy causes hyperemia of the blood vessels, which are surcharged and dilated by an excess of blood. The hope of permanent relief is through natural law and harmony of rhythm of circulation, nutrition and rest to restore nervous tone, and the only way we can expect to finally attain this result is by the use of treatment that will not deal with effects but get at the causes from which they proceed.

TREATMENT.— The ordinary treatment of insomnia has become the opprobrium of medical science. The morbid conditions due to it include a deficiency of power and an excess of sensibility, and hence the accompanying manifestations. In seeking remedies or means of overcoming these conditions and induc-

ing sleep we are apt to select whatever will abolish or mitigate these sensations with little reference to the outcome or cause from which they proceed. We pervert the power of the sensory nervous system by using remedies which repress or diminish activity, such as narcotics, and in the end find a great error has been committed and the vital tone lowered considerably. The evidence is conclusive to the inquiring mind, that the physiological principles involved are misunderstood and such medication is only palliative and depressing, and fails to deal with the cause. Nothing permanent has been secured and the morbid results are soon reinstated. We are not accomplishing much if we simply palliate or antidote effects, while causes are at work far out of reach. In cases of long standing the action of the much-vaunted remedies must be taken *cum grano salis* ("with a grain of salt"). After la grippe how often are we confronted with patients coming to us and stating that they had the grippe and could not sleep, for which they took remedies, since which time they do not feel as they once did, considering only the grippe, while forgetting the effects of the long-continued use of such depressants. We have defeated the end in view, and why? Because, as I stated in the first part of the book, we have looked upon disease as an entity, something to be fought, to be gotten rid of, instead of a condition to be righted; forgetting that the equipoise of the system is dependent upon the natural motion and rhythm of all its parts. Repression of such conditions by narcotics may relieve the pain, restlessness and insomnia for the time being; but what has been gained as a result?

Depression, less vigorous action and weakened vital capacity. Drugs like trional, sulphonal, aspirin, etc., all produce general muscular relaxation and tiredness, and according to Sajous they lower the tone of the adrenal or immunizing center of the body. They have also a tendency to decompose the hæmoglobin or coloring matter of the blood, which no doubt accounts for the paleness of the habitual users of such remedies, whether for pain, or sleep, or colds. We must lessen the expenditure which causes this defective condition of the nervous system, and husband the vitality, thus assisting nature rather than forcing her, and the only way we can expect to fully attain this result is by the use of treatment that will not deal with effects, but get at the causes from which they proceed. If the above causes and conditions are looked into and prevented, there will be no neurasthenia following as is usually the case.

DIET.— In sleeplessness the subject of diet is of prime importance. The brain is tired and the nervous system irritable, it is unwise in this condition to eat a hearty dinner, especially of meat, if the person retires within at least three hours after the meal, as prolonged sleep inhibits the circulation and respiration and secretive processes, and hence retards the digestion of the meal, leaving an increased volume of blood in the stomach, while the cerebral circulation is modified considerably with the disturbed condition of sleep mentioned above. So long as there is flatulency, caused by overeating or heavy foods, sleep is impossible. A light meal followed by a short nap, has quite a different effect — the patient awakening refreshed. Overloading and forced feed-

ing is a mistake. Lessening the amount of easily digested food till the system demands more nutriment, is the better method. On the other hand, it is not wise to go to bed hungry, as the condition of hunger may bring on wakefulness and persistent insomnia.

MENTAL INFLUENCES.—The most inscrutable agency we have to deal with is the mind. We must look to mental influences, and no thoughtful observer can doubt the wonderful influence of the mind over the body in health or disease. Inculcate restfulness, as a restless temperament will soon wear out its owner. Cultivate optimistic tendencies, fully subjugate the emotions, avoid excitement and anger, as great mental agitation and prolonged effort of the will operate on the blood vessels through the nervous system, in the same way as any other stimulant improperly applied would do. At first exciting, then exhausting the vital energy, causing a restlessness that will not allow the brain to come down to profound quiet and sleep. Those of us who have closely followed the effects of anger can not but note the definite physical conditions that follow the mental act; the heart and brain are first affected, then all the functions in their train. The blood is withdrawn to the internal organs, producing congestion; a change is effected in the perspiration and destructive changes take place in the blood corpuscles. Anger also interferes with correct respiration. Oxygen for the time being is almost discarded, and nitrogen is generated and retained beyond its proper proportion, so we can readily see its effects in reacting on such a trouble as we have under consideration. In sleep

under such conditions the person, it seems, can hardly determine if he has been sleeping. It is always best to go to sleep under peaceful, quiet conditions; as the good book says, "Let not the sun go down on your wrath." Throw off all worry and care, reminding yourself this is the time for sleep alone and nothing else. Nothing is so fatal to sleep as trying to force oneself to sleep and worrying over the loss of it. The injury from the loss of one night is oftentimes not nearly so great as the worry over it, as the sleepless one sleeps more than he thinks. The sooner he drops all worry while overcoming conditions the sooner it will come fully and freely. Cardinal Newman once naïvely remarked, "There are some things that can be gotten only by renouncing them," and sleep is one of these. Many nervous people who suffer with insomnia fear it on account of the dreams and terrible nightmare connected with it. These terrifying dreams are due to some painful experiences they have gone through and are increased by this very fear. They are holding the wrong mental picture; let them change it, reverse the order, and see the results.

TREATMENT.— Many cases of intractable insomnia have been helped by the various forms of electricity after drugs have entirely failed; it is a valuable substitute for hypnotics. Galvanism, faradism and static electricity have all proved valuable; but galvanism in the form of central galvanization carefully applied seems of greatest value in quieting the restless nervous condition and inducing quiet sleep. Massage, vibration and percussion of the spinal centers are all valuable in producing sleep. When sleep-

lessness is produced by mental anxiety or exhaustion, removal of the cause is an essential factor.

FOOT-BATHS.— Plenty of fresh air, moderate exercise and freedom from worry is very necessary. A twenty-minute mustard foot-bath, adding hot water to keep up the heat as it goes down; finally, cool down the water, rub thoroughly and freely, dry and get at once into bed. This is useful for many forms of headache as well. The *wet sheet pack* is also a very effective means of relieving insomnia, applied at a temperature of seventy to seventy-five degrees. The sheet should be wrung very dry and the patient not too warmly covered in order not to perspire. The *moist girdle* or heating compress: wring thick flannel out of hot water and apply over the whole abdomen; cover with a thick towel in order to keep in the heat. The general warm bath before retiring is valuable to some, but too relaxing for others. An air-bath of at least ten minutes, exposing the body to the air while using plenty of friction to the skin till one gets up a glow and equalizes the circulation, is valuable. To those sleepless ones who have not overeaten, a glass of hot milk with a plain cracker, both eaten slowly, will produce sound sleep at times. Careful attention should be given to the sleeping apartment. The temperature of the sleeping-room should be at least ten to fifteen degrees cooler than that required for comfort during the day. Feathers, either in pillows or mattresses, are too heating and tend to debilitate, and so with down quilts. A thorough exposure of the skin to the air (as described under "Air-Baths") after disrobing is quieting and very valuable. The method of sleep-

ing with the head to the north is of some real value, and is due to nothing more than the effects of terrestrial magnetism; it seems to have a more quieting influence on the organism and on sleep when the declination is north to south. These methods are more valuable than the use of drugs, leaving no bad effects and no hankering till a habit is formed.

CHAPTER VIII.

DREAMS AND DREAM LIFE.

DREAMS.

If I may trust the flattering truth of sleep,
My dreams presage some joyful news at hand:
My bosom's lord sits lightly in his throne;
And all this day an unaccustom'd spirit
Lifts me above the ground with cheerful thoughts.
I dreamt my lady came and found me dead —
Strange dream, that gives a dead man leave to think! —
And breathed such life with kisses in my lips,
That I revived, and was an emperor.— *Shakespeare.*

As dreams are so connected with sleep I thought it would be fitting for this short chapter. There are few mental processes which form a more fascinating study than dreams or the involuntary action of the mind during sleep. It is doubtful if the most profound sleep is accompanied by dreams. The superstititious confidence which many persons put in dreams is in the highest degree unphilosophical and has very little to prove its value. Doctor Rush defines a dream as a transient paroxysm of delirium, and delirium a perpetual dream; but not many of us dreamers go insane, nor do all those who dream startling and heartrending dreams become inmates of asylums, although we may be fit subjects for a rigid hygiene. Though both of the same mind, our consciousness or intelligence during sleep is very different from the daily consciousness. The main difference lies in the fact that in the subconscious mind of dream life no reason is made use of. Memory and

will belong to both. While memory may be very unreliable in the conscious state it is exceedingly acute in its detail in the subsconscious mind when asleep, and presents records and events of one's life with startling exactitude, which every one who dreams has wondered at — e. g., a well-known lawyer of London, whom I knew, had been consulted respecting a case of great difficulty and importance; and after several days of intense attention and anxiety given to it became agitated over what he thought a clew, went to sleep and afterward got up and wrote a paper while asleep. The following morning he told his wife he wished he only remembered his dream clearly, for it would be of immense value to him in the case. She pointed to his desk where he found it written out and all the facts clearly stated. On this he proceeded and won his case.

Another case, to show the length of time dreams take, is related by Dr. Norman McLeod, chaplain to the Queen. He says: "Very late one night, when wearied in body and mind, I was dictating to a friend what required to be sent to the press the next morning. I spoke a sentence and fell asleep. I dreamed a long and very complicated dream and awoke feeling quite refreshed, but for a moment quite confused as to where I was or what I had been doing. Recovering myself I began to apologize to my friend for having so long detained him at that hour of the night, expressing the hope that he had been able to employ himself profitably. He asked me, with an expression of wonder and alarm, if I felt unwell or what did it mean. I wondered more when I heard he had never lifted his pen nor had

ceased writing and that I was aroused by his repeating the last word of the sentence, so that I could not have slept more than possibly two seconds."

Many dreams have come to us as premonitions and are of value — e. g., the late W. T. Stead tells the story of a blacksmith at a manufacturing mill which was driven by a water-wheel. He knew the wheel was out of repair, and one night dreamed that at the close of the next day's work the manager detained him to repair it, that his foot slipped and became entangled between the two wheels and was injured and afterward amputated. He told his wife his dream and made up his mind to be out of the way that evening for fear he would be wanted to repair it. During the day the manager announced the wheel must be repaired when the hands left that evening, so the blacksmith determined to be scarce before the time arrived. He fled to the woods to hide and came to a spot where lay some timber which belonged to the mill and saw a lad stealing some wood from the heap; he pursued him and became so excited that he forgot all about his resolution and was back at the mill just as the hands were dismissed. He could not escape notice now, and as he was the principal smith, he had to go to work upon the wheel, but resolved to be very careful. In spite of his care his foot slipped, just as he dreamed, and became entangled between the wheels and crushed so badly it had to be amputated above the knee, so his dream was fulfilled.

In the night terrors of adults and children, the nervous centers which have been concerned especially in activity during the day remain irritable and are susceptible to suggestion, and when the last

inhibition is removed or consciousness is being rapidly lost, then appear these motor sensations which constitute dreams. No doubt the dream in its variety of phenomena depends on the caliber of the channels through which they run, and these facts are determined by two factors: heredity and acquired habit, and in all states and conditions, from indigestion to fevers, neurasthenia to insanity. Currents arise in the brain cells which take their course along the best cultivated and most accessible pathway.

Plutarch mentions Cleon, who lived to an advanced age and never had a dream, an unusual thing in the life of the ordinary human. This year I met a gentleman who claimed to me he had never known a dream, much as he heard of them. What we do and will remember is true in dream life, but on what this wonderful power depends we do not know. Physiology does not account for it. Physicians, metaphysicians and phrenologists have added little or nothing to our knowledge of the facts. Those who observe closely will note that they will find the sensations which excite these dreams arise from peculiar conditions then present in the form of irritation of the brain and nerve centers. The order and nature of our dreams depend upon the past. They have been called up by something we have seen or heard during our daily conscious life, and are of the same material. Dreams may be very largely remembered and thus contribute some suggestion to the waking life, as we have seen by the illustrations.

What we remember of a dream on awakening is but a small part of what has passed before the mind in dreaming, and to hunt for the forgotten dream is

time lost. There is great difference between the dreams of health and disease. Doctor Regis, of Paris, has applied the term oneric delirium (from oneiros, a dream) to dreams following certain infections and toxic states. This delirium of dreams is seen by many in the day as well as night.

There is a great difference between the dreams of intoxicated and infected people and those that occur in healthy individuals. The healthy sleeper is like that of a simple spectator looking on quietly and undisturbed while there pass before him all kinds of scenes the same as are enacted in actual life, and they likewise may have their lesson and meaning.

The intoxicated subject, be he intoxicated by liquor, toxic drugs or toxic poisons in his own system, is in a state of dreamy delirium. He takes part in his dream in words, acts and deeds, sometimes very actively. He may be even pursued on awakening full of terror, and be greatly disturbed and impressed by his dream; in fact his dream may be to him of practical fact and he will be scared by the seeming truth and reality of what he has seen. This latter mixture of mental confusion and delirium accounts for many of the wonderful psychic stories we read of and the wonderful supposed truths used by many mystics to impress people. Every one knows the delirium of the alcoholic, his homicidal, suicidal and running-away tendencies. He is always abused and persecuted, no one cares for him, when the truth is he cares least for himself. These abnormal psychical dream states are noted frequently and most exaggerated in liver, digestive, and kidney troubles, also in rheumatism and diabetes. Those

interested in the dream state will note many different kinds of dreams—e. g., perpetually recurring dreams are a good sign of cerebral exhaustion and need of profound rest. Dreams of being in distress are generally due to palpitation of the heart, caused by indigestion, etc. Dreams of exposure, walking in snow or rain, etc., due to chilling the body during sleep. Recurrent dreams of recent or long-ago experiences are due to an overwrought nervous system. Sleeping in wrong position may cause palpitation and react by dreams of great excitement. The floating dream is due to intestinal and nervous conditions. Talking dreams are caused by the poisons in the body, drugs or dyspepsia. Dreams of delirium are caused by toxins or high fever.

I believe one can always place greater dependence on his dreams and their direction if his mind has been made positive by good strong thoughts on retiring; sleep will be less disturbed and his ego will learn more during sleep in his dreams.

CHAPTER IX.

THE NERVOUS SYSTEM.

This nervous system of ours is the most wonderful system of electric batteries and wires known, and no instrument concocted by man can do the wonderful and intricate work entrusted to its care with such perfection and exactitude, and at the same time keep the machine in perfect running order as it goes along. In order to understand it more perfectly and see its beauty and purpose this chapter was written.

The nervous apparatus of man is divided into two great systems: 1 — The *Cerebro-Spinal,* which consists of that part contained within the cranial cavity and the spinal canal; namely, the brain and the spinal cord, together with their branches which are distributed to all parts of the organism. This system presides over all the functions of animal life, e. g., volition and sensation, and is the organ of objective or sense life. 2 — The *Sympathetic Nervous System* lies along either side of the spinal column in the thoracic and abdominal cavities and is distributed to the internal organs. The *Cerebro-Spinal System* looks after sense life, as seeing, hearing, talking, smelling; it is the instrument of intelligence by which we communicate with the outer world. This system is divided into the cerebrum, or front brain proper, which occupies most of the skull cavity, and is located in front and above; the cerebellum or little brain, at the back of the head, fills the lower and posterior depression of the skull and regulates the coördinate movements of all the voluntary muscles

of the body. It is separated from the cerebrum by a tough membrane called the tentorium, a process of the dura mater, the outer covering of the brain and lining of the skull. It forms a bed to hold and support the back part of the cerebrum. As stated, the chief function of the cerebellum or small brain is to coördinate the movements of the muscles of the body. The accomplished dancer, through the little brain, can combine the movements of the body into one graceful movement, as the waltz. The nimbleness of the frisky kitten is controlled in the same way; the climbing of a tree so friskily and quickly by a squirrel; the running and jumping of children in games of play; the wonderful quick-sailing and turning movements of the bird, darting and flying here and there, as the swallow and lark. To this brain we owe this wonderful associated movement. But let us take the drunkard and we see the loss of this wonderful power; here the cerebellum has been partially paralyzed and the man is not able to coördinate his muscles, and consequently staggers about.

The medulla oblongata is the enlarged upper part of the spinal cord, and from it and the cerebrum are given off the cranial nerves which reach out to every part of the body; e. g., head, organs of special sense, as eye, ear, nose, throat, organs of respiration, heart and abdominal organs; it is the center for facial expression; it is also the center for respiration and circulation.

THE SPINAL CORD is directly continuous with the brain, and, like it, is composed of gray and white matter; the gray substance generates nerve energy and nerve activity, and acts as a center of motion and

perhaps sensation. This cord or spinal marrow fills the canal in the vertebral column or backbone; it is a long mass of nervous tissue and from it nerves are given off to all parts of the body; it is the pathway, so to speak, to and from the brain. The length of the cord is eighteen to twenty inches, and is divided into two lateral halves.

THE SYMPATHETIC NERVOUS SYSTEM consists of a chain of ganglia on either side of the spinal column. These ganglia contain masses of nerve cells, whose processes are distributed to the head, neck, chest and abdomen. These ganglia are joined to each other by small filaments or nerve fibers and also with the cerebro-spinal system by means of motor and sensory filaments. These ganglia send out fibers and branches to the blood vessels and organs of the body. At different points these nerves meet and form what are called plexuses. These plexuses are composed of white and gray matter, similar to that of the brain. This sympathetic nervous system controls all the involuntary organs and their processes throughout the body; e. g., circulation, digestion and assimilation, waste and supply, blood stasis or congestion, and controls body-building, all the involuntary muscles, sweat and sebaceous glands and entire alimentary canal from mouth to anus, including salivary glands and *ductus communus choledichus* or common bile duct; pancreatic duct and the glands found all over the body, bronchial tubes, sexual apparatus, and supplies the coats of all the blood vessels and lymphatics; in fact the entire nutrition and excretion of the body. Its action is so different from the cerebro-spinal system,

which acts at once to the muscles and sense organs; but this sympathetic system once excited, the action is regular and continuous; e. g., the peristaltic action of the bowels is slow and continuous. The building up and recuperation of the body after sickness, which is slow, is also made under control of this system, and it warns us many times by our feelings, if we are normal, to avoid certain things; e. g., chilling and exposure to heat and cold. Between these two nervous systems we should try to develop harmonious relations by not taxing either one at the expense of the other, for if one is worked too hard it robs the other and makes nutrition incomplete; e. g., using the brain actively, after a heavy meal. Here the digestion is robbed by the brain of the blood needed for digestion, most of which in this case goes to the brain, and as a consequence digestion is slowed or at a standstill. This same want of balance of the two systems causes nervous exhaustion and depression, both systems are taxed to the limit at the same time, while if working normally they check and help each other, and the results are perfect. These plexuses or small brains spoken of in this system are found in many places. The solar plexus is often spoken of as the abdominal brain; it is situated just back of the stomach on either side of the spinal column. Langley calls the sympathetic system the autonomic, to indicate that it possesses a certain independence of its own and independent of the central nervous system. This nervous system, unlike the other, is removed from control of the will; it is supposed by some to be the organ of the subjective mind. Its fibers control the unconscious coördinated

action of secretion and excretion or the vegetative processes of the body. It is a peculiar thing about this sympathetic system that it follows very closely the blood vessels of the body and it acts in its own peculiar way; it is not controlled by the will or hampered by the individual, and yet it controls the actions of all organs. It hastens, increases or diminishes the supply of blood to any organ or part of the body and in this way provides for excretion and secretion and keeping up the supply of heat, but takes a longer time to respond to action than the other system. To the defect of the great sympathetic nervous system must we look for the strange vagaries of so many people. It is through it that we can relieve the irritability and congestion of the pelvic organs, that make the life of so many women miserable and their lives of unknown quantity and restore them to normal. Through the sympathetic we can awaken the energies of the body so that organic activity will be again established and the physical organism rejuvenated.

NERVOUS FUNCTION.— The functions of the nervous system are the most remarkable of the human body. The nerves are the power used to convert internal action into external manifestation. It is the agent by which all motions are liberated and coördinated, and sensations taken note of. It conveys impressions and converts them into external manifestations. E. g., suppose you get out of bed hurriedly in the morning and tread on something sharp, there is an explosion of nerve force; it is at once telegraphed quickly to the brain by nerves of sensation and a message is sent back to lift the foot and

attend to it. It is a kind of telegraphic work, and the brain is head office, all messages must be received there. The termination of the nerves in any organ is curious indeed and very interesting. In the glands of the body they terminate in cells; in muscles they terminate at right angles. Nervous tissue, after it is divided or removed, grows slowly again and its function is restored; e. g., in the numbness following operations, the part in time loses this numbness and becomes active and sensitive again. A portion of the brain in pigeons has been destroyed and grown again.

NERVOUS ACTION AND ITS NECESSITIES — The perfection of nervous action depends not only on the quantity, but quality of the blood; neither must be lacking in the elements needed. If the blood is rich in the elements or constituents of nerve substance we are able to get a greater evolution of nerve force without waste. By experiment the prcportion of phosphorus present in the brain is greatest in health and in prime of life; less in infancy, old age, idiocy and feeble health.

We can add certain matters as stimulants: tea, coffee, alcohol, to our food and evoke nervous action, but these can not take the place of energy stored by the above kind of elements from rightly selected kinds of food. The use of stimulants, as enumerated above, exalt temporary nervous activity, but increase nervous waste and disintegration of nerve force faster than nature can build up, and if we are not careful there is a breakdown of the nervous system. A stimulant differs greatly from a food in that it adds nothing to the vitality of the body, but makes

use of the energy already stored up, which is often followed by depression. Fresh air, cold baths and exercise are more natural stimulants, that do not waste the nervous system, and are usually followed by restfulness. Oxygen helps to evoke this same nervous activity, but not in the same way, because here you have elimination hastened, and nutrition improved. Perfect oxidation makes for perfect nerve action. Of course we know every action and movement of our bodies consumes energy and breaks down tissue, and for this reason we must continually undergo repair, but we are so constituted that if we do not go at such a high-tension speed but relax, we can lessen this wearing-down process of our bodies, and keep it at a minimum and rest ourselves very considerably. When the nerves and muscles are relieved of this tension and relaxed we get rest and feel refreshed.

A continued nerve strain tires mind and body, and even the organs of the body partake of the same condition and consequently are not able for right action; e. g., the stomach will not digest easily or relax and let the food pass out, and so with the intestines, they will not take proper care of the contents and digest them. Even the mind is not clear and calm for consecutive thought.

One of the conditions of perfect nerve action is freedom from nerve pressure. If there is pressure, the action of the part is stunted and temporarily disabled. By pressure its equilibrium is upset; e. g., numbness of parts from so-called falling asleep. It is easily seen that a sensitive nervous system which is capable of the faculty of smoothly and quickly

passing from one state to another can readily be modified by pressure, even if small in amount, and is incapacitated for its molecular changes; e. g., corsets, stiff stays and bands around neck, stomach and intestines; any sensible thinking person will agree with this. Also there need be no difference of opinion as to the value and needs of a perfectly oxygenated blood for the perfect working of the nervous system. Man needs more pure air for the activity of his brain than animals, and his brain, according to his body, is much larger and of much superior quality, though the horse is such an active animal and so much larger than man one would think he would have a nervous system six or seven times as large; and yet it is not so, it is much lighter. A man's brain and spinal cord weighs three to five pounds; that of the horse weighs one pound seven ounces to two pounds. Some of the Great Dane dogs have a brain much smaller in proportion than a spaniel, so we see the nervous system does not increase in proportion with the size of body; e. g., the powerful gorilla contains a nervous system half the weight of man's. Brain efficiency is not measured by weight, but by the depth of its sulci or folds. Nervous energy ever since the time of Galvani's discovery has been likened to electricity, especially that form called the continuous or galvanic current. We see it exemplified in the human being, produced sufficiently so he can shock in frosty weather and light the gas by contact of his finger after generating it through friction; it is also generated in certain vegetable and animal tissues; e. g., as in the electric eel, and the sheathfish, which both give shocks. Alcohol at once

impairs this current and destroys its action in both man and the animals. The hygiene of the brain and nervous system demands that we do not burden ourselves with useless material. Did it ever occur to you that it requires brain power to hold bad thoughts as well as good? Then it is best for us to reserve the place for only the best and most useful. A brain trained will be of better quality and assist the evolution of the individual. Some men have inherited a wonderful tendency for certain qualities along lines of their ancestors; e. g., some have brains, like Daniel Webster, of wonderful retentiveness; others are logical but can not remember facts; others have not the power to express their ideas; still others can make a flowery speech and use beautiful language, but are not one bit practical, and so on. Training added to hereditary tendencies has much to do with this.

CONDITIONS LESSENING NERVOUS ENERGY.

First — (a) Loss of heat (Chapter II) by exposure to dampness and severe cold. (b) Intense heat.

Second — Pressure on the surface of skin and nerve centers.

Third — Depletion of blood; anemia, malnutrition, general deficiency of blood supply, as in debility.

Fourth — Feebleness of heart action caused by nervous conditions, overeating, overwork and exhaustion due to indulgences of all kinds, causing exhaustion of nerve centers and flagging heart.

Fifth — Paralysis, due to rupture of blood vessel, causing clot in the brain.

Sixth — Insufficient oxidation of the blood, for want of fresh air, causing the tissues to be loaded with the débris of waste materials.

Seventh — Overuse of stimulants, wasting nerve force faster than it can be manufactured. See chapter on " Stimulants."

Eighth — Depressing drugs as those used for sleep, pain, colds (see Chapter VII, " Insomnia ").

Ninth — Mental conditions; e. g., uncontrolled emotions, abnormal nervous excitement, anger, grief, jealousy.

To Increase Nervous Tone, remove any and all the foregoing causes, restore the tone of the heart and improve the blood by thorough oxidation; abandon late hours, intemperance in eating, drinking and sleeping; eat moderately of wholesome food, which will nourish the nervous system; e. g., good whole wheat flour used daily with the food, ripe fruits, good milk and cream, cheese and vegetables. Eight hours' sleep if possible and more of it if needed, as it is the great restorer of the nervous system. It should not be overdone, for it then leads to sluggishness. A cool sponge bath with plenty of friction for reaction and to equalize circulation. Remain outdoors all you can; avoid stimulants and narcotics; use plenty milk. Change of air, new scenes, sea bathing and cheerful companionship are invaluable. Keep a bright and optimistic outlook; there are many things we don't understand in the world, though we are trying to; don't be a pessimist; the world is run by law; by one who makes no mistakes.

CHAPTER X.

FOOD AND FEEDING.

Many dishes, many diseases,
Many medicines few cures.
A full belly makes a dull brain.
The muses starve in a cook's shop.— *Franklin.*

I saw few die of hunger; of eating, 100,000.
To lengthen thy life lessen thy meals.— *Franklin.*

The social pleasures of the dining table are among the greatest of our life, and as man is of necessity an eating animal, it has been here for centuries he has sought his greatest pleasures, and nearly every social function is accompanied by these pleasures; and after all, when we think of it, it has been at banquets and dinners that great events have been planned on which have often depended the fate of parties and nations. A man who has been well fed can be much easier approached than a hungry man. It has been the joke of the Englishman to touch his pocket through his stomach; but he is not the only nationality to be thus touched, and this only goes to show there is an optimistic side to eating. It has led many a man to make a good deal, and have more vim for work, and a more charitable attitude toward others; in fact when we sit down to eat we all should be in good humor and free from unpleasant thoughts and feelings, in order to get the best from our food and arise with good feelings. This can be easily done at the home meal, but our life in general is such a rush we do not take time to cultivate enough of this during business hours, but

swallow our food and run. This is all wrong, and I hope the day will soon come when it will never be considered loss of time to eat our lunch properly, but such a rushing spirit has developed that one demands it of the other, and so it continues. To show the value of the above, we have seen it to be a fact that many, on account of weak digestive power who have to be very careful of their diet to keep well, have eaten a rich, heavy meal, and have been surprised to find it has done them no harm. The reason is the social and pleasant features, jolly conversation and cheerful good time, have been a healthful stimulant to the mind, and digestion has been improved thereby. In European countries they carry more of this spirit into every meal than the Americans do who are always on the run. Of course there is too great danger of too great enjoyment of food or gluttony, especially when there is too great a variety of food, as an excess of food over and above the requirements of the body only adds to its difficulties, and this excess must be gotten rid of at the expense of the energy and vitality of the system, which interferes with assimilation and good nutrition. Franklin says a full belly makes a dull brain. There is an old Swedish adage that says "The cow knows when to come home from pasture, but a foolish man never knows his stomach's measure." Another old saying, "That part left after eating a fair meal does one more good than the meal that has been eaten." It is what we digest and assimilate, and not what we eat that nourishes. Overindulgence in rich, highly seasoned food creates a desire for stimulants to satisfy the perverted appetite; the

excessive uses of pepper, salt, salted and highly seasoned meats and dishes are largely responsible for the excessive use of intoxicating liquors, and indeed licentiousness and vicious habits. Two of the greatest causes of indigestion are rapid eating and overeating, especially too great variety; as Franklin says, many dishes, many diseases. In speaking of hunger and appetite, did it ever occur to you the great difference between the two? Well, they are as different as day from night. Hunger is nature's great sauce, it comes from a natural need; it makes the mouth water, the lips smack and gives a wonderful relish to food; without it most food is insipid, but with it the plainest tastes fine. Appetite is a development, an all-goneness, a gnawing, a desire for anything to satisfy or tickle the palate without regard to relish and is satisfied when a certain amount of fulness exists or craving overcome. Appetite may be satisfied with many things that will not satisfy hunger; e. g., as whisky, tobacco, cocaine, to whet the appetite.

It is said of Diogenes that on meeting a young friend of great appetite going to a feast, he took him up in the street and carried him home to his friends as one who was running into imminent danger. Joseph Addison says in reference to the above, "What would Diogenes have said had he been present at the gluttony of a modern meal? Would he not have thought the master of the family mad and have begged his servants to tie down his hands, had he seen him devour fowl, fish and flesh, swallow oil and vinegar, wines and spices, throw down salads and many different things, sauces of a

hundred ingredients, confections and fruits of numberless sweets and flavors. When I see a fashionable table set out in all its magnificence, I fancy that I see before me gouts, dropsies, fevers and lethargies, with innumerable distempers lying in ambuscade among the dishes." Here Addison as usual comes mighty near hitting the truth.

Diabetes, which is so rapidly increasing, especially among the well to do, is a disease due to overeating, especially of heavy meats. It is rarely or never seen in moderate eaters and especially in those who consume little or no meat. It is found in the big feeders who lack the digestion to their capacity. It is this overworking of the liver and pancreas to the limit of its capacity, on such dinners as Addison speaks of, that causes this disease. We generally find that people who are big feeders of this kind are the ones addicted to stimulants and condiments which only increase the difficulty and add fuel to the overfed flame.

Gladstone, the great English Liberal champion, was the first to realize the value of thorough mastication of food, to avoid overeating, who on account of his overwork contracted stomach trouble, to remedy which he started to chew his meat twenty-five times, vegetables and other foods fifteen to twenty, and also lessen his amount. His favorite exercise was to chop logs of wood at his wood pile. In this way he cured himself to live to an old age, a rugged champion of the simple life. Since his time Horace Fletcher has taken it up. There is no doubt that thorough mastication of food causes it to be more quickly assimilated, and the appetite to be

more easily satisfied than when eaten hurriedly. It also allows the mind to take time to be composed, which is of great importance to the act, as the mental condition has a great deal to do with the perfecting of digestion and assimilation.

FOOD.—As to the quality or nature of food, that food is best which most nearly supplies the waste of tissues, and those articles which contain the largest amount of nutriment necessary to build up the tissues of the body rank higher than those which are poor in this respect. The grains head the list of all nutritive substances; e. g., whole wheat contains, according to Boussingault, eighty-five per cent of solid matter, meat only 36 per cent, turnips and carrots 11 per cent; and while the grains rank so high in nutritive value, they do not contain the poisonous extractives found in other foods, as meat, fish, etc. Good blood comes from the food we eat, and if we live on proper food, get plenty of sunlight, fresh air and exercise we would live as nature intended — healthy, happy lives. Many people aim at what they call high living; this defeats the very thing we are hoping for — long life and freedom from disease. This so-called high living means highly seasoned, refined foods and stimulants; these refined, starchy foods are devoid of the nourishing part of the grains, that builds nerve, brain, bone and muscle, and clog the body. This kind of food does not stimulate the flow of the juices of the body needed in health as the less refined foods do, and we have nervousness, headaches, billiousness, rheumatism and organic troubles following. In other words, we are neglecting the foods that make for health and

substitute those that make for disease. At the same time there is stunting of the stature as seen in the puny and ill-developed, while the superior foods make for better physique. We must look to the nations and peoples of the earth for facts along this line, and we find a great disparity as to their physical development. Some we find small of stature, illy developed; some very puny, others large, well proportioned and of superior physique, and when we compare their dietetic habits of life we find a striking correspondence between these and the size of their bodies and development. An interesting fact is, measurements made of thousands of native born Americans of all lines of ancestry show that their average height is between five feet seven and one-half inches and five feet seven and one-quarter inches; that is the mean height of the average adult American, north, south, east and west. Compare this with other nationalities and let us see if he is larger or smaller. This comparison shows only the Scotchman and the Canadian overtop him. The Greek, Turk, Swiss, Russian and Italian are two inches shorter; the Pole, three inches shorter; the Russian Jew, four inches shorter; the Spaniard and Hungarian, five inches shorter; the Swede, who is a broad, tall fellow, is about one-half inch shorter. So is the North German. So is the Siek, who is the tallest of all Orientals. The Welshman is an inch shorter. It is a noted fact among travelers in those countries in which people are remarkable for long life, strength of body, beauty, fine proportions and good complexions, that their dietetic habits have been simple and the food good, and as a usual thing

among the peasantry of Europe, where this is the case, they live on almost an exclusively vegetable, grain and fruit diet, with cheese, milk, and usually coarse bread, and very little or no meat, and among such peoples we see the most superb peach-and-cream complexions. The same is seen in Scotland, England, Canada and also the United States. This comely, cleanly beauty is rarely seen among the very rich who feed high and exercise little. Felix Oswald states some of the strongest races that stand the greatest exertion are non-meat eaters.

Food is the pabulum by which we sustain the life of the body. It is worked by the vital processes of the organs into the blood that feeds the life. Its two ultimate uses are to supply the body with the materials for growth and renewal, as well as energy and force for the work of life. The food is taken into the mouth and chewed, so as to be easily handled by the stomach. It is at the same time mixed with the saliva which converts the starch in the food into grape sugar, for the longer the time in the mouth the shorter the time in the stomach. When the food enters the stomach, it immediately stimulates the secretion of gastric juice, which is poured in from the cells of the stomach walls; it is composed of pepsin, rennin and hydrochloric acid. The gastric juice is a powerful antiseptic and itself withstands putrefaction for a long time. We find the same in the intestinal fluids and the active flow of one seems to increase the activity of the others. Care to increase the tone of all the organs of the abdominal cavity increases their functional activity, increasing secretion, excretion and elimination. This secre-

tion is more abundant if there is good appetite present. It is also stimulated by the pleasant aroma of food, and pleasant feelings, hence the old adage "Hunger is our best sauce" proves true. As this peptic or stomach digestion goes on a churning process takes place, which is effected by the different muscles of this organ. This mixes the gastric juice with the food, and helps further to break it up. After three or four hours of digesting and churning, the pylorus or valve of the stomach relaxes and lets the food pass out of the stomach into the intestines in quantity at a time to be easily handled by the duodenum or upper bowel. This fluid, after the churning process of the stomach, is acid, and is called chyme, which is a milklike fluid. When it passes on into the intestine it is acted upon by the intestinal juices, pancreatic fluid from the pancreas back of the stomach, and the bile from the liver. These juices are alkaline in reaction, and the further digestion of starches and sugar, begun in the mouth, is completed in the intestines, and the fats are emulsified by the bile and pancreatic juice. This is called chyle, which is alkaline in reaction. The pancreatic juice is the most powerful in the body, and digests all forms of food which the saliva and gastric do not. It contains trypsin, the active principle, and pancreatic diastase. The food really undergoes its most complete digestion in the intestines. The trypsin attacks proteid food in different medium from the pepsin of the stomach which acts only in acid medium. In the intestines the trypsin acts in acid and alkaline or neutral medium. It is said by physiologists that food first acted on by pepsin in

the stomach digests and dissolves more readily than if it had been acted on by pepsin alone. So we can see what a profound influence on digestion the pancreas exerts. It is failure of function of this organ that causes diabetes. Custom and artificial likings and dislikings, the result of habit, are allowed to have too much sway in the uses of our food, and there is some truth in the old saying that "We are what we eat." The body is composed of fourteen elements: oxygen, carbon, hydrogen, nitrogen, calcium, phosphorus, sulphur, sodium, chlorine, fluorine, iron, potassium, magnesium and silicon. These different elements are in different combinations as are needed and required by the body for its upbuilding, and we might classify foods by the parts supplied by them.

1. The nitrates, which abound in nitrogen, are used to supply the muscular system and develop strength; e. g., meat, eggs, cheese, fish, beans and peas.

2. The carbonates, which supply carbon and produce combustion, and supply energy, fat and heat to the body; e. g., fat, sugar, butter, rice, dates, white flour and starchy food.

3. The phosphates, in which phosphorus predominates, supplies brain, nerves, bones, and the vitality of the body; e. g., whole wheat, bread, cheese, eggs, milk.

4. Oxygen. Oxygen is the most important and active element in the body and comprises three-quarters of its weight. It is present in air, water and food.

5. Phosphorus is the source of vitality and sup-

plies the nerves, brain and bones. It is one of the most important elements and most essential to the body; without it there could be no activity of the brain or nerve tissue. It is the absence or deficiency of these essential elements that means so much to the organization of the body. All foods must be organized from these elements. The human organism acquires its phosphorus in organic combination from animal and vegetable foods, and in such proportion that the phosphorus is readily absorbed and supplies functional activity to the nerve cells, and as calcium phosphate supplies the bones. Foster's actual experimentation on dogs led him to conclude that deprivation of phosphorus proved fatal more rapidly than actual starvation. The animals were fed on food from which the phosphorus was removed artificially.

1. *Animal food,* produced secondhand from vegetation, as meats, fish, birds, etc.

2. *Vegetable food,* which includes all the great divisions of the vegetable kingdom, as grains, fruits, herbs, roots and grasses. Vegetable food is valuable to the human system in many ways. It decreases acidity and renders the urine and other secretions alkaline. It has been found to increase the elimination of carbon dioxide from the lungs, and increase activity of the bowels. It is valuable to supply the blood with potash salts.

Is There a Perfect Food? — Is there any food that we can call a perfect food, one which contains all the elements needed? It is true there are not many, but wheat is the king of all grains, and bread is called "the staff of life." What is meant here is

whole wheat bread, not the ordinary bread. Whole wheat contains the phosphates in the germ and outer shell, and carbonates in the starchy portion, and the nitrates near the outer shell in the form of gluten. In fine white flour we find little phosphates, nitrates, or gluten, as it is composed mostly of starchy matters. The best part of the flour has been parted with, as the grits, and the bran has been fed to animals. We can sustain life indefinitely on whole wheat bread alone, as it contains all the elements needed, but we would soon starve on white bread. It is taking these valuable elements out of bread that is accountable for the bad teeth, undeveloped bones, poor muscles, and defective nervous systems of many people who live on purely carbonaceous and starchy foods, as white bread and butter, potatoes, rice and corn starch. This is the one reason why many people who essay to live as vegetarians make their great mistake. Theirs is not a well-balanced diet. There should be more nitrates and phosphates; e. g., to take place of meat, as cheese, milk, peas, beans and nuts, and to get the potash needed, the juices of fresh fruits and vegetables, which are cleansing and cooling to the blood. In speaking of whole wheat bread, we do not mean Graham, or bran bread, which is a delusion and a snare. Most of it is nothing but white flour to which bran has been added, and for sensitive and irritable stomachs it increases the trouble; while the whole wheat flour can be gotten perfectly fine or medium, and the fine agrees in cases even of diarrhoea, and builds up the body. Strange to relate, experiments show

those fed on Graham bread do not gain in flesh like those fed on whole wheat.

OATMEAL is a fine and hearty food, but should be well cooked to be easy of digestion and assimilation; about two hours. This thorough cooking develops its flavor. If not well cooked it causes with many people flatulence and indigestion. It contains a great deal of muscle and brain food, and has been for years the great standby of the sturdy Scotch people. They consider it of great sustaining value; in great exertion they grind it into flour and pour it into water and drink it as one would water; or as porridge, oat cake, or Scotch cake it can be eaten by adults. *(For invalids, a drink described as gruel, cooked with water, milk, and also as sowens, or soured, cooked oatmeal.)*

BARLEY, though not so much used as it should be, contains a great amount of brain food and ranks close to wheat in nutrition for sedentary people; it makes the bowels more lax and soothes the mucous membranes. It is best eaten in form of porridge and gruel. It is said the famous old Roman gladiators fed on barley, as did the Greeks. In the United States it is used for beer and soups, and as drinks for invalids. It should be used much more than it is, especially with milk, cooked as mush or cereal.

BUCKWHEAT.— Buckwheat is not so valuable a grain as the above two. It is indigenous to temperate climates, but in Russia, Brittany and other places it is a staple. It is more of a heat-producer, but is laxative and of value in all forms of kidney trouble. It is also valuable in constipation as a mush or gruel; as bread it does not keep like rye or wheat.

It is used in this country mainly for wheat cakes and bread.

RICE.— Rice is a starchy food and contains carbonaceous material almost altogether; there are very little nitrates or muscle-formers or phosphates for brain food; it is a starch easy of digestion and a safe food not to overfeed on. It is the great food of the Asiatics and Chinese; all the nations who feed on it entirely are noted for their mental and physical inactivity. It needs to be eaten with nitrates, as peas, beans, eggs, cheese or meat.

CORN.— Maize or Indian corn is grown in temperate and warm climates. There are a great many varieties, it is said over three hundred. Corn, besides being used green, is used for bread, cakes and with other foods. Corn-meal is a wholesome meal, as it contains considerable proteid, or flesh-forming material, as well as starch and fat. It supplies the body with an abundance of heat and energy, and is very fattening to both man and animals. Eaten green it is difficult of digestion on account of insufficient chewing, not breaking the skin or husk, and hence it may cause heaviness, flatulence and diarrhœa. This can be obviated by slitting the corn on the cob through with a knife, or scratching with a fork through the kernel, leaving the skins on the cob, and then chewing thoroughly. It is then much easier of digestion. When made into mush or porridge it should be well cooked, which should be three to four hours; it is a good food and a laxative, is not pasty as most other mushes are, and is very nutritious and digestible. It is not such a vital food as wheat; it

is lacking in nitrates and phosphates and is best eaten with cheese and milk.

RYE is classed next to wheat as a bread-making flour, but contains less gluten and phosphates than whole wheat; it is not so easy of digestion as wheat for most people. In bread it keeps moist longer than wheat bread, is laxative, and reputed good in diabetes. It is not such a vital food as wheat; it is lacking in nitrates and phosphates, and is best eaten with cheese or milk. It is used in Europe much more than in America — France, Germany and Russia use great quantities.

PEAS as a food are very valuable; and more easily digested than beans. They are about equal in nutritive value. If meat is not used they are valuable eaten with potatoes, milk, cream or butter; in this way we get perfect nutrition and all the elements necessary for perfection of the body. Young green peas are easily digested and contain plenty of nutrition; dried peas split make good, nutritious soups. The Scotch people use pea-meal and whisk it up with boiling water like a porridge and call it pea-meal broose. It is a very rich food and contains perfect nutrition for brain and muscle. It is delicious and sustaining.

LENTILS, which are a very high grade of food, are known on the continent of Europe more than in this country as well as in the East. They belong to the legume family and resemble dried peas. Like peas and beans they contain a large amount of proteids and fats and are very highly nutritious and, like peas, make very fine nutritious soup. This is the food mentioned in the Bible on which Daniel

fed and became fairer and fatter than all the men that sat at the King's meat.

BEANS contain phosphates and nitrates in larger proportions than most other foods except cheese, whole wheat and meats; they take a good while for digestion, and for persons using both muscles and brain they have staying power. It is said one pound of beans will enable a man to do as much muscular work as two pounds of meat. They are difficult of digestion for most people. Eaten green they do not have so much nitrogen, but are easier of digestion. The dried bean has a leathery envelope which is difficult of digestion, and should be soaked in soda water to soften the skin before washing and cooking. Beans can be used as flour for soups and also for making biscuits of great nutrition.

SPINACH contains a large amount of iron, as given in former chapter, and if used freely is very laxative, causing large and copious movements of the bowels, and is thus fine for constipation, as also dandelions, beet tops, etc.

ASPARAGUS is laxative and useful as a diuretic for the kidneys and very digestible.

LETTUCE, so much used in salads, is a good vegetable, quieting to the nervous system and good for sleeplessness, and the same can be said for celery, which is valued for its flavor and soothing effect on the nerves.

CARROTS contain considerable iron, are nutritious and good for the complexion; it is a noted fact how they will slick up the skin and coat of a horse.

ONIONS are stimulant, pungent, and appetizing;

they are laxative and good to induce sleep, good in colds, also diuretic on the kidneys.

CABBAGE is a very nutritious vegetable, though to many difficult of digestion; not good for rheumatic people.

CAULIFLOWER is much easier of digestion than cabbage and esteemed for its flavor. Most of these vegetables if eaten with some olive oil will not cause as much belching as they do without to many people.

The TOMATO is a somewhat wholesome vegetable, but too acid for most people who have any trouble with indigestion, gout, rheumatism. They are valuable for the liver.

POTATOES.— The potato ranks as one of the most valuable foods of man for two reasons: First, it is so easy to cultivate. Second, it is so easy of digestion, and contains so much valuable salts, as sodium, calcium and potassium, which are of antiscorbutic value. They contain starchy and carbonaceous food very easy of digestion and very fattening. They furnish what is lacking in the stronger foods and should be eaten with them; e. g., with meat, fish, eggs, milk, beans, peas, cheese. Potatoes are better baked, as they are more nutritious; boiled with the skins on they are much better in flavor and nutrition than when peeled and boiled; for the same reason they should never be peeled and allowed to stand in water before cooking, for the valuable potash salts are diluted and washed out and much of the value as food is lost. This is the reason why baked and boiled potatoes with the skins on are more satisfying than when cooked without the skins; then we must not forget the amount lost and wasted when peeled.

It is when they are cooked too long or allowed to stand in water that they become soggy and indigestible. Much has been said about the fried potato being so indigestible and of no value. It all depends. If it is nicely browned in good olive oil or butter, and properly cooked, it is a good food and has real value and is very tasty to even a weak stomach; but as a food for an exclusive article the potato contains too much starch to be eaten alone as above. The potato, contrary to what most people believe, is an alkaline food on account of its salts and renders the blood less acid, and is a valuable food for big meat-eaters and those who suffer with acidity, which will be much diminished thereby.

ANIMAL FOOD.

MEAT AND FISH in the form of beef, lamb, veal, mutton, fowl and fish. These forms of fleshy foods contain mostly nitrogen or flesh-formers in too large proportion and should be eaten with the carbonaceous or starchy foods, as potatoes, rice, etc. It is claimed that only the flesh of animals fed on vegetable food should be eaten by man; also animals that have been well cared for and not worried or ill treated make much superior meat.

BEEF contains more heat and brain forming food than veal, and can be eaten more continuously than any other kind of meat without producing loathing, and is one of the best of meats; next come lamb, mutton, veal. VEAL is more indigestible than beef, and not so well relished in flavor, and contains more indigestible fibrin and gelatin. LAMB, when young and tender, is easy of digestion, but the fat can not

be eaten like beef fat, as it contains more stearic acid, which accounts for its peculiar taste and flavor, and disagreeable effects.

PORK is least in value of all meats and comes from the pig, the laziest and dirtiest of animals, who is a scavenger by nature. The Jews had some good reason for forbidding its flesh as food for hygienic measures; if according to the principle the flesh is the result of the food eaten, then pork according to the dirty nature of the animal must be a form of food to make poor blood and bad complexions. The pig is fed, as a rule, on the poorest form of sour fermentable foods. No meat should be used as food from any animal except the muscular or fleshy parts. None of the organs should be eaten except the heart, which is a fleshy organ and expresses out like other muscles what the organs retain; the liver and kidneys retain a good deal of the filth and poisons of the system that we labor hard to get rid of in our own bodies, and we take this back to reload up again if we eat it as food.

RABBIT is used for food, and is a clean meat and relished by many people, but not by the sick on account of the somewhat bitter taste and flavor due to the eating of buds of trees.

FOWL in general, if tender, is easy of digestion, with the exception of goose and duck, which contain much more fat of a gross nature, like the bird from which it comes. The turkey is a very clean and dainty bird in selecting its food, and consequently its flesh is more dainty than that of other birds; easier of digestion and not so disturbing to the liver.

FISH.— Fish contains less albumen than meat, and much less extractive substances that bother the system. It is less tasty to most people; as a general rule it is more easy of digestion than meat, but fish is tainted easier than meat and must be kept fresher and with greater care. Boiled and broiled fish is more digestible than in any other way, though carefully fried is not objectionable; pickled, smoked or dried fish, like meats, are of very little value as nutrition.

SALTED FISH AND MEATS contain very little nutrition compared with fresh meat, as the salt hardens the fiber of the meat and renders it more difficult of digestion, and in the liquid extract remains considerable of the nutrition of the meat — fully one-third of its value. It is a known fact that the complaints of our sailors and soldiers are largely due to the large amounts of canned corned beef and salted meats and fish that are fed to them, as they improve readily when they come ashore and get fresh meat, fruits and vegetables. In eating meat food we take into our own bodies food already loaded with the products of excretion and waste; e. g., urea, uric acid, sulphates, creatine and creatinine. All this waste matter must be removed from the body through the action of the kidneys and liver, and if these elements accumulate in large amounts in the system so as not to be handled easily, the liver and kidneys will be taxed so greatly that they are disturbed in their functions, or these ingredients may fail to be thrown out, and thus they may embarrass the system in general. This shows the importance of the liver and keeping it active in order

to destroy the hurtful toxic substances that pass through it.

MILK is one of the most valuable and nourishing of foods from infancy to old age. It is very easily digested and readily absorbed by the stomach, especially if taken warm; many people who can not take it cold on account of feeling heavy can digest it more readily warm if a few grains of salt are added to it, it comes nearer to blood than any other food, is quickly made into blood, and, when warm, acts as a stimulant and restorer to the aged and young. One pint of milk is equal in nourishment to one-half pound of meat. There are many people who take an antipathy to milk on account of the odor of the stable, and complain that it will not agree with them, causing heaviness and acidity. Probably they are not in good condition, and the secretions are too acid or they may be suffering already with constipation and retention of waste matter in the bowels. Persevere and you will find you can take it and it will agree with you when these conditions are overcome; as it is a vitalizing food, it is found that it does not agree well with those who eat heartily of meat. It should not be used as a drink for thirst. Be sure to leave the cream with it, then it will agree better and feed better. See to it if you can that you get it from cows that get plenty of fresh air and are kept clean. I am glad to say there is a great change in the care of cattle in this respect. Milk is the best food for old and young people, and when the stomach and nervous system is exhausted, it exacts very little work from the stomach, kidneys and liver, and is very nutritious. It will improve the

vitality of the organs as well as the system at large, as it contains so few harmful products and waste materials. It is also said fresh milk has an antiseptic action, when pure, upon the bacilli of the intestines. It is an excellent food for the kidneys and liver. A diet of milk, buttermilk, kefir, koumiss, etc., with farinaceous food and fruits, tends to limit the bacteria in the intestine. At the same time milk comes nearer to pure blood than any other food and will help to rapidly increase the blood supply. All around it is one of the very best foods we have. A milk diet in helping to destroy the toxic products in the intestine will hinder the development of gallstone disease. For children it is an invaluable food to help growth and increase vitality, and if they do not like it use every means to increase their desire for it. It quiets their nervous system as nothing else will do and causes sound sleep. It is said in countries where a great deal of milk is used and not much meat that we see more centenarians; e. g., the Bulgarians who drink acid milk (yoghoort) so much. The famous Metchnikoff, who has been experimenting with his lacto bacilline ferment, says intestinal bacilli can be checked by it, and life prolonged, by this and a fruit and vegetable diet with cheese and eggs. Animals and children never thrive so well on boiled milk as they do on raw, according to Professor Behring of Marburg's experiment. Even calves do poorly on boiled milk. It should not be overheated, that is, above 125 degrees, as its valuable ferments and properties are lost. If we are in doubt about it being good, better then to heat it gently. Milk is greatly improved in quality

if the cows are well fed and allowed out each day, the stables well ventilated and kept scrupulously clean. Persons using large quantities of milk look fresher and younger than those who don't. Bang says the thyroid gland secretion passes into milk, which assists the body in general and gives us iodine in a natural form. Milk, like other food, digests and passes out of the stomach more readily if used warm than cold. Hot milk, not above 125 degrees, is a very valuable natural stimulant and easily digested food. Beware of dirty milk; it kills hundreds of children every summer. Keep it in clean vessels in a well-aired, cool place, away from flies, dust, odor and contamination. In reference to milk, its greatest value to the economy lies in its ready and easy digestibility and absorbability, its valuable salts; it taxes the system less for what we get out of it, and there is less residue or waste after digestion than from any other food.

SOUPS are of great value to the human economy for either the sick or well, not so much as to their food value, although good, well made soup contains considerable of value; but as a gastric stimulant to increase the flow of gastric juice in a feeble stomach this can not be overestimated. Even is this so of the ordinary beef tea; beef teas and meat extractives are not a food but a gentle stimulant, containing as they do but the extractives and mineral matter of the flesh, creatine, creatinine, etc., which we are much better off without and only harms us. It is in this way that soups and broths have held their value in dietetics so long. The gastric value is really out of proportion to the amount of nutrition

they contain. In children who take an antipathy to raw milk, begin with all kinds of milk soups. In cooking soups and broths the water at first should be cold, so as not to quickly coagulate the albumen of the food, then slowly increase to the boiling point. All the while be careful to keep the vessel tight to keep in the valuable aroma of the soup.

CHEESE is a very concentrated and excellent nitrogenous food. It is a perfect substitute for meats, especially in countries where meat is scarce. It contains so much nutriment it should be eaten in small quantities with other food, as weight for weight it contains twice as much nutrition as meat. It is always best for the stomach taken fresh; as tart, sharp cheeses used by connoisseurs and gourmands are too strong and irritating for most stomachs. Cheese, like milk, should be kept in a well-aired place. If a small quantity of cheese is eaten with milk, it will coagulate less into hard lumps and digest easier and make a more perfect meal, if not much else is eaten but bread; eaten in small quantities it aids the digestion of other food. It is well considered a good heart food.

EGGS.— Pure fresh laid eggs are a valuable and nutritious food, and contain a large amount of nutrition in small compass. Eggs contain all the elements necessary to build up the tissues of the human body. They contain a large amount of phosphorus for the brain and nervous system — one egg being equal to one pound of meat in nourishment. The white of the egg builds up muscle and the yolk is rich in fats, phosphorus and other elements, but there are some persons with whom eggs act almost as a poison,

probably due to sluggish intestinal conditions caused by delayed absorption producing sulphureted hydrogen gas. Every one should be careful of stale eggs, as they are apt to produce very considerable gastro-intestinal trouble. There is a great difference in the way hens are housed and cared for as to the flavor of the egg. Many people can eat them in summer, after the hens get out in fresh air and get the fresh grass and green feed, who can not eat them in winter.

METHODS OF COOKING.— The best way to cook an egg is to put it into boiling hot water and let it stand about ten minutes; the egg is then cooked into a uniform gelatinous consistency and is very easy of digestion. *Another*: Put the egg into cold water; let it come to a boil; then it is done. *Still another*: Heat a bowl very hot and break an egg into it and then cover it up tight with a cloth; there will be sufficient heat developed to cook it. Eggs can be used in various ways; e. g., eggnog; in broth, soups; in coffee, jellies, puddings, custards, poached, fried, and in omelets.

FRUIT is composed largely of water, acids, sugar, cellulose, and pectin. The latter is the element that causes the fruit to jelly and get thick with sugar when cooked; the composition of pectin is not thoroughly understood. Fruits contain only a small amount of albumin or nitrates, starches and sugars. Acid and salts predominate, a composition which is good for the blood, but fruits are not an economic diet alone, as they do not contain all the elements for support of life, excepting the date, banana, etc. But they tax the vitality less than any other food

and tend to long life. They are exceedingly valuable for their flavor and stimulating effect on digestion. To get the best out of fruit it should be eaten in its season and ripe, for then it absorbs more oxygen, is less astringent and acid, sweeter, more luscious and more digestible. The combusion of the acid in fruits when they enter the body appears as carbonates, increasing the alkalinity of the blood and other fluids, and renders valuable assistance to the kidneys and liver and helps to cleanse the tissues and organs, for eating largely of meat the urine becomes very acid and heavy. Fruits and vegetables also tend to render the bowels active by the large amount of cellulose contained. All fruit should be carefully washed before being eaten.

THE APPLE is the king of all fruits and should be freely eaten, as it agrees, and those who are afraid to eat it should masticate it very slowly, then follow it by one or two teaspoonfuls of olive oil, to overcome any distress. In this way, on an empty stomach, it is nicely laxative. Oranges, grapefruit, tangerines might be used in the same way to overcome this acidity until used to them. Apples are valuable baked for the sick and well, with cream and sugar; also as apple sauce. Eaten raw, they are very valuable in constipation.

PINEAPPLE.— The pineapple is a wholesome and very appetizing fruit, and contains a digestive ferment. Raw it is capable of digesting proteid or albuminous food. For those who find it too acid, even when sugar is added, dilute with water and it will agree much better with the stomach.

GRAPE.— The grape is esteemed on account of

its delicious aroma, flavor and wholesomeness. It is a good appetizer for the invalid and well; the seeds and skins should be avoided, as they both only irritate the intestines and produce severe indigestion at times. Grape juice prepared without sugar seldom disagrees compared with the syrupy kind or that much sweetened.

RAISINS made from dried grapes are valuable food for a tasty addition to other foods. With most people they agree better uncooked; they can be added to cooked rice, etc., with cream; also cooked in cakes, bread, puddings and buns, to all of which food they add a greater relish and increased nutrition and give a better appetite. They contain an agreeable and easily digested form of sugar. Avoid the skins and seeds.

PRUNES.— The prune or dried plum has a distinctly laxative effect, eaten raw or stewed, and is valuable in constipation. They agree much better if soaked in water and cooked without any sugar; in this way they do not occasion fermentation.

OLIVES are eaten more each year, especially the ripe olive, as its value as a food has become known. They are a good appetizer for the sick as well as a healthy food; ten to twelve ripe olives before the meal has started many an appetite for a good meal, and a relish for meals where there was none previously.

BANANA.— The banana is one of the mysteries of the plant world. It has a seedless pulp, is a native of India, called *musa sapientium*, or muse of the wise, because at one time it was served for the wise men of India. It is seedless, can not be raised

by cuttings, and will not stand transplanting or transportation. No one can account for its being found on both sides of the Atlantic. There are a great many varieties, and they vary in kind as they do in flavor. It is wonderful the number of people that live off of this fruit and maintain a good physical development. It is one of the most highly nutritious foods, on account of containing such a high percentage of nitrogen. In many parts of Africa, West Indies and Islands of the Pacific it is one of the staple foods. Bananas are very indigestible if eaten too green, and should be perfectly ripened; a few drops of lemon juice will greatly increase their digestibility and relieve the distress caused by them, especially if a little olive oil is added to them when eaten. Also when baked they are easy of digestion for many people. Banana flour has been much used of late. It is made of carefully selected, well ripened bananas; it is easy of digestion and exceedingly nutritious. It is a very valuable food for invalids and delicate persons; in fact in all forms of gastric troubles where the ordinary foods sour and cause flatulence it agrees, and is better adapted to weak stomachs than starchy foods. Its great advantages are its high nutritive value, ready and easy digestibility, agreeable taste, high percentage of nitrogen, dextrin and glucose.

LEMONS AND LIMES are useful and refreshing on account of the potash and other salts they contain. Lemon juice added to bananas, fish and even to breakfast foods renders them palatable and more digestible. Half a lemon in a tumblerful of cold or hot water half an hour before breakfast is fine for

constipation, and is also valuable in hot weather for fevers and to quench thirst.

The orange and grapefruit belong to the same family, and are also useful appetizers and valuable for their effect on the liver and kidneys, in uric acid, diathesis and in gravel, avoiding meat at same time.

Strawberries, cherries, apples and grapes are valuable in the same conditions. It is well to remember great fruit-eaters never relish liquor and many intemperate persons have been cured by a fruit and grain diet.

OLIVE OIL obtained from the ripe olive is a valuable food and has great medicinal value. There is no other oil outside of cream and good butter which is so easily digested and assimilated, and no oil so valuable in controlling acidity and irritability of the stomach and intestines (excepting petroleum oil). The one great necessity is to get it pure and not rancid; so much that passes for olive oil is either cottonseed or mixed with it. The color and flavor and taste soon settle this. It is best taken, like most oils, two hours after eating, as it is not digested in the stomach, but in the intestines. In using it for gallstones, all other fats, even yolks of egg, should be prohibited for a while; it is the only oil containing no physterin, which is similar in plant food to cholesterin in the animal, and gallstones are formed mostly of cholesterin.

NUTS are also a very valuable food, especially as they contain much valuable oil and proteids. They should be thoroughly chewed to be easy of digestion, and with fruit and milk were the diet of our early ancestors.

COOKING OF FOOD.

I want to add a few important points on the cooking of foods, not always mentioned, which appertain to the chemistry of cooking. Soft water is much better than hard for cooking vegetables, especially if the water contains calcium or magnesium salts. Boiling will precipitate most of the lime, but if it contains magnesium or calcium sulphate, neither boiling nor soda bicarbonate will precipitate it. The color and flavor of the vegetables are also improved by soft water.

The cooking of food adds a great deal to its nutritive value and digestibility. Cooking in general is done at too high a temperature, which tends to waste both food and fuel. It is well at first to use a high temperature to seal the juices of meat in roasting, broiling and boiling, then at a lower temperature of longer duration; in this way there would not be such a loss of substance and the article would always be more tender and there would be a great gain in flavor.

There are many articles of food which in their raw condition seem unfit to eat and unpalatable, which when cooked develop flavor and become very palatable and are easy of digestion and the digestive juices can act on them more freely; e. g., potatoes, turnips, squash, pumpkin, spinach, beets. Cooking saves the energy of the stomach and at the same time gives greater digestibility and more food value to the food. Cooking at the same time destroys parasites and all germ life and dangerous organisms which, in the raw state, we could not get rid of. We

can easily see that this is an exceedingly important matter, applying as it does to meats, fruits, vegetables and grains.

When cooking vegetables it is important to always keep them at the boiling point and always cook every vegetable with the skins on, as the flavor and food value are much increased thereby.

Another important point is, in cooking with fats, the temperature should not be too high, as fats are composed of fatty acids with glycerine, and, if heated too high, are decomposed, and acroleine, an acrid, irritating compound, is formed and sets up indigestion and eructation of foods.

In frying bacon many persons digest it easily if fairly cooked, but if the heat is too great and it is crisped quickly we at once get this irritant body formed, and it disorders digestion at once, and so with all fats.

CHAPTER XI.

STIMULANTS.

A stimulant differs very considerably from a food in that it adds nothing to the vitality of the body, but makes use of the energy already stored up, which is often followed by depression and exhaustion if used too often.

Stimulants may be necessary in many cases, but to the body in general are simply the spur to the jaded horse; for which, in reality, rest is the one necessary thing. It is the habit and custom of the ages to tempt people to use them from youth to old age in the form of tea, coffee, cocoa, beer, wine and whisky. Many old people seem to get along well on a small amount of wine once in a while, or even daily, and live to a good old age, but total abstainers seem to have a much greater chance for a long life than even moderate drinkers. Alcohol stops the restraint which the nervous system has over irritable tissue, and this is really a paralyzing effect for the time being on the sensory nervous system, which is but a blunting of sense life, either in pain or fatigue. Alcohol taken in large quantities degenerates the heart muscles and produces arteriosclerosis. Much less exercise and hard work can be taken while using alcohol than without it. Its effects are seen greatly on the brain, producing changes in the mentality and clouding of thought. Crime and degeneration can be frequently attributed to its use. Persons committing crime when under the influence of alcohol, many times are not

responsible for their acts. It deadens and blunts the nerves temporarily, as tobacco does. It also deadens the vibrations of the body. The most important fact is that the ductless glands are greatly injured by alcohol and tobacco. In most persons the use of tea and coffee seems to produce a feeling of greater exhilaration and energy for the time being, increasing mental acumen and producing a flow of thought that otherwise would be of great effort to produce. To many persons in moderation these may be of value at times and in certain conditions; but, continuously repeated in large quantities, like most other stimulants, they tend to impair nervous energy as well as the tone of the organism, and increase nervous disturbances and exhaustion of the nerve forces. There are two kinds of tea: black and green, according to method of manufacture. The black tea has undergone a process of fermentation and then dried slowly over charcoal fires. Green tea gets its color from being dried in a fresh condition without fermentation over a wood fire, sometimes colored. The active principle of tea is theine (similar to caffeine in coffee) ; it also contains ethereal oils, tannin and extractives. The green tea is more adulterated and colored than any other tea, and contains more theine, oils and tannic acid than the black tea, as the latter by the process of ferment is rid of a good deal of these deleterious constituents. Sometimes when greatly fatigued a cup of nicely made tea is very refreshing. Tea to be well made should have the water freshly boiled and teapot made hot, then pour the boiling hot water over the tea and let stand not longer than five minutes, or use tea balls

and immerse these five minutes, when the grounds can be taken out and no tannic acid left, which process makes it much less harmful. Tea is much better for relaxed conditions than coffee, as in diarrhea, on account of the tannin it contains. Coffee relaxes and therefore increases diarrhea, consequently those of relaxed hemorrhagic habit of any kind should avoid coffee. Tea is more diuretic than coffee, on account of its action on the kidneys, although both are diuretic to a certain extent. The very bad effects of tea are seen in the man whose business is tea tasting; these show the exaggerated effects. Tea causes more acidity and irritability in many than coffee.

COFFEE, like tea, is a great cerebral stimulant and creator of temporary good cheer. It is a much greater heart stimulant than tea, and the effects remain longer in the system. The heart is stimulated to a greater degree; it is a greater dilator of the vaso-motor nervous system, and hence produces more congestion. It contains an alkaloid caffeine, one of our greatest heart stimulants. Coffee stimulates peristalsis. The laxative effect of coffee on the bowels is due to caffeol, which is the opposite of caffeine in that it lowers blood pressure while it also accelerates heart action; whereas caffeine raises it, and, as there is more caffeine, it more than outweighs the value of the caffeol. Coffee should not be taken in heart troubles, nervous conditions, or in gastric and intestinal disturbances when severe. On account of the empyreumatic oil coffee contains it disagrees with many people and causes belching and distress. The abuse of coffee, and there is too much of it, causes dizziness, head-

ache, confusion of ideas, dullness, tremors and palpitation, wakefulness and nervousness, also torpor of the liver. Coffee and tea, frequently used, bring on enervation, check elimination and hasten old age. For when the body is overstimulated daily and the nerve energy depressed, resistance to disease is lost.

In preparing coffee it should be freshly ground. Remember, prolonged boiling dissipates its good aroma and flavor and increases its injurious qualities.

COCOA AND CHOCOLATE are made from the cocoa bean, the latter composed of cocoa and sugar. The active principle is theobromine, and it is said to act more on the spinal than on the cerebral system; hence it is not so exciting as tea or coffee. It increases also stimulation of the muscular system like tea and coffee, but the effects are not so lasting. It contains more albumen, fats and sugar, and is much more fattening and nutritious as a foodstuff. Strange to say, if one has partaken of too strong a cup of tea or coffee and it has overstimulated them, a cup of cocoa will stop the effect. Haig says they all produce an increase of uric acid in the system. The eating of large amounts of chocolate candy by children and young people can not be too strongly condemned. It causes too much excitement and keeps them on high tension.

CHAPTER XII.

TOBACCO.

Tobacco is so much and so foolishly used to quiet the nerves, with the idea held by so many people that it is harmless and a soothing luxury that lulls an irritable organism. In the United States there were 7,699,038,000 cigars smoked during the year 1913, and 404,363,000 pounds of tobacco smoked and chewed during the same year. The fact that so many are able to stand it so long only shows how nature can become accustomed to so great a poison, for a small leaf of tobacco put on a puppy dog's tongue will kill it in five minutes. When a boy begins his first cigarette or cigar it is notable how deathly sick he gets. See the deadening effect of it on flies, bees and wasps. The goat seems to be the only animal that can eat the leaves with impunity, but even these animals can not stand the fumes. The active poisonous principle of tobacco, nicotine, is introduced into the system by smoking and chewing, and very serious consequences may ensue to sensitive people from it. It may affect the nerves of the eye, but the principal bad effect is on the heart and stomach. Physicians who examine for life insurance can almost immediately detect the inveterate smoker by the quality of the pulse. Like alcohol, it has a lot to do in the production of arteriosclerosis or hardening and thickening of the walls of the arteries. The action of nicotine on the heart is in slowing the pulse and giving a bad, irregular second beat, and an occasional feeling of oppression, as if the heart would stop; sometimes

a dull pain over the precordium or region of the heart not unlike seasickness. Tobacco also contains aldehydes, which are between an acid and an alcohol. It is a very volatile and poisonous substance, and is rapidly oxidized. When tobacco is smoked, one of the most poisonous elements, called furfural, is generated. It also contains some of the ammonias, carbonic acid and carbonic oxide. The aromatic, pleasant substance which gives to the smoker the fragrance of the cigar and soothes his nerves is unknown at present, but is said to be an acid. The Turk who smokes so much and whom it seems to hurt the least makes his smoke pass through a long tube into a large bowl of water, where it parts with much of its poison; but the American, who is supposed to know better, gets a short pipe — the shorter the better — and gets full benefit of its bad effects.

Tobacco-chewing, besides being a filthy and disgusting habit, robs the system of the precious fluid, by expectoration, which is used for digestion in the mouth by the saliva.

CIGARETTE SMOKING is one of the most destructive evils of the youth of this country, and its growth is something enormous. Just think of it, 14,276,771,000 cigarettes smoked during the year, according to the Government report, at a cost of $17,846,000. Cigarette smokers soon learn to inhale the smoke, which seems to fascinate them. It has a direct tendency to deteriorate the race because in the young the vital forces are injured beyond conception. In many cases it is pitiful in the extreme to see the numbers of pale-faced youths who go from bad to worse under its use; the clammy hands

and sweating feet and uncertain, tremulous gait show the effect on the nervous system. I can not do better than quote Dr. W. A. Hammond on the practice among boys of smoking cigarettes. If children and young people smoke cigarettes or cigars, they destroy their nervous systems before they are fully formed, and render themselves liable to neuralgia and various functional diseases of the brain, which is calculated to destroy their mental force. It also interferes with the development of the body in size and stunts the physical system. It often impairs hearing, eyesight and digestion. The excessive use of tobacco is very injurious to everybody, male and female, old and young. I have seen the ill effects of it in the production of facial neuralgia, insomnia, nervous dyspepsia, sciatica, and in indisposition to exertion.

In France the difference between those who smoked cigarettes in the polytechnic schools and those who did not was so great that the Government has prohibited absolutely the use of tobacco in the government schools. Parents will do well to look after their children, for before they are aware of it they will contract the baneful habit. I have seen children four years old smoking in the streets, others picking up butts of cigars in the gutter. I have many times taken away from children cigars that would kill them. Dr. C. W. Gleason states he knew "a clergyman in Pennsylvania the sheets of whose bed were as yellow as saffron every Saturday night, from the tobacco exhaled through his skin during the week, his room was like a smokehouse, and his

body yellow and smoked until it was as yellow as a smoked herring."

Doctor Lawson, Surgeon-General of the U. S. Army, who accompanied Doctor Scott to Mexico, says "that he often observed that when wolves and buzzards came upon the battlefield to devour the slain, they would not disturb the bodies of those who had chewed and smoked tobacco until they had consumed all the fresh ones among them." This same fact has been commented on by army observers in many European countries where there were countless dead. There are thousands of young chewers and smokers who expect that refined young ladies, or angels, as they would call them, would love and cherish all their lives what even buzzards reject as nauseating and unwholesome.

The late Doctor Twitchell, of New Hampshire, one of the most profoundly learned medical men of New England, told the author that for over forty years, engaged in very extensive medical practice, he had observed that in most of the cases of sudden death that came under his notice the person was a free user of tobacco, which caused palsy of the pneumogastric nerve and instant death.

Dr. R. D. Muzzey, of Cincinnati, an able surgeon, states as his observation that most of the sudden deaths are often due to tobacco paralysis, commonly called heart disease.

I want to make this matter as strong as possible in quoting the experiences of others as well as my own, for it has been a wonder to me the millions upon millions spent on such a habit and the number of valuable lives lost by it.

Tobacco diminishes the elimination of carbonic acid and interferes with respiratory power, on account of its sedative effects. It also checks the natural waste of the body.

In athletic training, tobacco impairs muscular and nervous energy, and for these reasons it is forbidden. Its effects are too well known.

According to Sajous, one of the best authorities in medicine, tobacco, used in considerable quantities, lowers blood pressure; in others it raises it, causes marked esthenia, passive congestion, and also inhibits or arrests the functions of the adrenal system. This system is comprised of the pituitary body in brain, and the adrenal and thyroid glands, and is the protector from poisons or immunizing mechanism of the body.

EFFECTS CONDENSED.— Tobacco produces debility and irregularity of the heart in most persons, arteriosclerosis, and sometimes angina pectoris and death. It increases irritation of the throat and lungs and causes smokers' sore throat, as well as cancer of the lip and throat. On the stomach it causes nausea and loss of appetite, and in extreme cases at times vomiting, with great depression. On the eye it causes dilation of the pupil, confusion of vision and specks before the eye; even blindness. On the ear it causes sounds like a whistle or bell; the brain is impaired and dulled in its activity. In the young and in sensitive people the effects are often very marked, especially on the nervous system, in disturbed action of the muscles and perversion of the functions of the secreting organs. It seems to act badly on both the sympathetic and

cerebro-spinal systems of nerves. It is said to be the nicotine that produces the tremor and palpitation of the smoker's heart. To show the saturation of the body, and how wonderfully long the stale tobacco smoke hangs to the breath of the smoker, and also to his clothing, even a month or so after he stops smoking he still exhales it from the skin or on his underwear. Test it for yourself. It is a fortunate thing for the smoker that there are times he loses his appetite for his smoke, for if he had no time for elimination the poisoning would be severe indeed. So we see the evils of this slow poisoning of the body by a silly, foolish habit and its results. The habit is better not acquired, and if acquired, it is better to abandon it; it is a doubtful pleasure, always followed by a penalty, sometimes very severe.

CHAPTER XIII.

OLD AGE POSTPONED.

Wouldst thou enjoy a long life and a healthy body and a vigorous mind and be acquainted also with the wonderful works of God, labor in the first place to bring thy appetite to reason.— *Benjamin Franklin.*

Scientists have studied for years as to the cause of bodily decay. It is a subject of greatest interest to us all. It is a process that shows less and less of resistance to disease, shown by greater condensation of tissues, the bones becoming more brittle, the cartilages harder and less elastic, and there is less tone to the muscular system. The organs of sense, as the eye, ear and nose, are not so active and prompt in noting things. There is a wrinkling of the skin, which loses its color, softness, elasticity and tactile sense. The arteries become clogged and thickened, and the heart and circulation is impeded; the blood is poor and thick and does not circulate freely. The last but not the least of these conditions is the nervous centers, which lessen in their activity. This is probably one of the main causes of failing vitality, for if in early life through many causes the nervous supply of the system declines, and the parts are imperfectly supplied with the needed food, there is less nervous force, and premature aging. We find the same condition continually helping to bring on premature age. Disturbances of nutrition rule the largest number of chronic diseases, as normal digestion plays a wonderful part in the restoration and keeping up of health; the wise physician will be guided thereby.

VASCULAR CONGESTION.—With the other conditions, as the loss of elasticity, spoken of, we find the same condition in the heart and blood vessels. The arteries which in youth and good health help to force along the current of blood, warm the body and feed the heart, lose their resiliency and become more rigid. In this condition the regulation of the blood supply through the organs and skin is impaired; we have partial rest, and hence congestion. There is often a fall of temperature, and it is therefore hard to keep up the heat of the body. We see this under the sudden influence of intense cold. The vascular structures are impaired by the cold, robbing the body directly of force, exerting an influence directly on the blood vessels through the nervous system, first causing undue contraction, afterward causing feebleness of tone and undue relaxation. This is seen very readily in the evening, but the same causes are shown in those who allow sluggish conditions of the whole system, as mentioned in the various chapters of this book. Feeble persons on going out in low temperature, and many times when the temperature is not very cold, feel chilled, depressed and miserable, and the circulation through their lungs seems embarrassed; they are not oxidating freely, and congestion of some part ensues; a mistake they often make is to rush to a fire or remain in a hot room, and go to bed to find a very severe cold, bronchitis or pneumonia following. What is the cause? It is this too sudden exposure to heat after being exposed to severe cold. In the condition spoken of this produces an engorgement or congestion of the capillaries of the lungs

and the circulation becomes static or congested. Common, ordinary colds or sore throats are caused in the same way. It is a grand mistake to restore warmth suddenly to the body after being exposed to a very low temperature. This is one of the best ways to cultivate a good, fine case of chilblains; in fact the sudden extremes is the only way they can be produced. Better wait a few minutes or so in the vestibule before going into a very warm room, and move around and use friction in preference to standing before a fire or over a register. It is a scientific fact, well understood, that when a part has been long exposed to cold one runs a great risk in trying to induce warmth suddenly, as the blood vessels become rapidly dilated, the fibers of the muscles become relaxed, and congestion follows. If this is true of the skin, blood vessels and fibers of the muscles, it is more so of the lungs and kidneys. Lumbermen and those much in exposed businesses soon learn this, and they prefer to swing their arms and stamp their feet, knowing that when circulation returns it brings more comfort and they get a better glow and remain warm longer.

Proper muscular activity and health means much in keeping up and balancing the circulation of the body, removing waste and rejuvenating it. It is the flabby, fatty muscles, which have lost their tone, that show low vital capacity.

The filling up of the avenues of the bodily organs by accumulation of effete matters is another of the great sources of decay of the human organism. There are millions of cells dying daily, and new ones coming into life, and if the dying cells are not

removed as rapidly as need be, and new ones formed, cell life decays. This causes overproduction of germ life and accumulation of effete matter that clogs the organism and produces disease. The enzymes or secretions and glandular ferments have lost their power and are not doing their work normally, leaving the body open to attacks of all kinds of bacteria. This is the first step. It manifests itself in different people in disease of the different organs; e. g., in the skin it produces eruptions; overburdening the kidneys, it clogs their function and produces Bright's disease; in the lungs it leads to consumption; in the liver leading to biliousness and enlargement; in the heart and blood vessels it leads to impaired functions through thickening of the vessels by deposits. Disease is the fruit of such conditions as we have been mentioning. It is noticeable in many ways — in the liver odor, the lung odor, the skin odor, a breath so different from that of healthy life.

Feeble abdominal muscles, concealed by a large deposit of fat, may be the beginning of a low vital condition, and the weaker the muscular elements, we frequently find, the more trouble in getting rid of the gas and accumulation in the bowels. This deposit of fat or obesity is due to muscular inactivity, as the tendency to fatty condition is shown more on the abdomen than any other part of the body, as it seems to increase where, owing to stagnation of abdominal veins (man unfortunately has no valves in the veins of the abdomen, where he seems to need them most), there is least activity; hence muscular activity of these parts is the surest and

best way of getting rid of it, probably because nature intended the abdominal muscles to be strong enough to keep the blood squeezed out and prevent congestion. In the majority of these cases the food intake is excessive and the cells are overburdened with the detritus or broken-down matter, and can not convert it into eliminable products. The blood is loaded with products that poison the organs, permit swarms of bacteria and irritate the vaso-motor nerve centers. The lesson here is obvious: to restrict the amount of food to the needs of the body. Assist the organs by adding the needed ferments, and lighten the diet for a while. Let the diet consist of cereals, fruits, whole-wheat bread, milk and butter. Interdict even eggs, which in such conditions act as a poison to some people. Also interdict fats, fried foods and pastries, which render the blood heavier. Also whatever tends to raise blood pressure, as stimulants, alcohol, tea and coffee, and stimulating drugs. Drink freely of distilled water, one hour before meals, as it has a powerful solvent effect on the deposits of calcium salts and cholesterin from the bile, which cause the thickening of the arteries and veins. Pure water cleanses the stomach and is rapidly absorbed into the blood, facilitates the removal of these deposits, and is a good means of preventing their accumulation and carries them off through the skin and kidneys. Keep the bowels free and flush them at least once a week with a salt solution. A teaspoonful of table salt to a quart of hot water. This will tend to keep down tension and eliminate waste more freely. Living a few days on fresh fruits, together with milk and grains, juicy

vegetables and fruit juices is fine to cleanse the body. Food of this kind provides all the salts needed by the body to neutralize and free the tissues and carry off impurities and toxins.

We can not live forever, but by following nature closely and noting her secrets we can renew the decaying organs and overcome the earthy deposits that clog them, which are mostly of lime salts, carbonates, phosphates and chlosterin. These salts interfere with organic or cell activity. We see this so much exemplified in the old and prematurely aged persons. Hard water increases this condition very materially. The water should be boiled long and reoxygenated, or, better, distilled.

These deposits render the heart more inactive and circulation more imperfect, clog the arteries and interfere with the circulation. A constant struggle is going on between this accumulation of waste and its elimination, and if it increases much beyond what it should be we feel, as we say, growing old. The porosity of the bones becomes blocked and they become more calcified. The muscles and tendons are less flexible and become stiff because of this condition. One is apt to give way to this, and inactivity increases. Exercise is necessary to eliminate and keep the bones full of blood to nutrify and supple them. All pains and stiffness of the joints are due to the same condition; even the organs of sense, as hearing and seeing, are affected by the above conditions. The brain and its tissues are affected by these deposits, as we find them in the blood vessels and other tissues of the body. They are a hindrance to its work. These accumulations

of matter are the cause of one really growing old and aging before his time. It has often been said that we are as old as our arteries, which means we age in accordance with the obstructed or clogged and thickened arteries and veins that we possess. If the blood and channels are free and unobstructed, and the arteries and veins elastic, we are able to supply nutrient assistance in the way of blood freely, and also help to remove the waste material, for if in harmony with a good arterial system, the sewers of the system, the bowels and kidneys, are kept free, the body keeps on removing the waste readily, and renewing its cells in an unobstructed manner, which means good health.

GLANDULAR SYSTEM.— Typical symptoms of old age in young animals have been produced by extirpation of the ductless glands, as the thyroid, ovaries and testicles; even the process of oxidation of the blood is somewhat diminished. After extirpation there is an increase of fat and aging. Eunuchs get very fat and soon look much older and lose the vivacity of ordinary manhood, and clearness of color and complexion; in womankind removal of the ovaries has the same effect, and yet many think removal has no effect on woman's life. She at once takes on fat, has less brilliancy and activity of manner and mental acumen, and less magnetism. So in the production of old age we see how important it is to safeguard the condition of these glands and organs and prevent degenerative changes, due to sexual excesses, many pregnancies in woman, and whatever exhausts the internal secretions. Abortions have the same effect. Those who lead an immoral life, even if

they are of great vitality, whether man or woman, naturally soon show these degenerative changes which are striking to behold. It does not take long, especially in young women, to lose their beauty, brilliancy, vivacity, color and firmness; for old age can be caused with more certainty by degeneration through changes in the sexual organs than even by intoxicants long continued. During the menstrual period woman should care for herself to get the best results out of her life, especially to keep young as nature intended. This is the time to rest and avoid excitement and worry. Avoid harmful drugs to relieve the pain incidental thereto, which only depress and lower her vitality.

The health of the glands spoken of has a great effect on character, mental acumen and will power, for in degenerates and criminals who have taken no care in this way the will power is weak and they have little or no control over themselves, either one way or another, and have no sound judgment of right from wrong.

From time immemorial it has been known that a sound and healthy sexual system imparts vitality and the greatest chances for long life. If man or woman has been deprived of the organs, as in castration in men or deprivation of the ovaries in women, the chances of long life are much lessened. A degenerated condition of this system, as mentioned before, has the same effect as seen in degenerate and debauched men and women, even to diminishing vitality and inducing premature decline. Eunuchs live but a short life, and so do sexual degenerates, either men or women, especially women.

Facts prove married persons leading a good life live to the greatest age.

Degeneration of the glandular system above mentioned is said by Sajous and Pineless to be among the main causes of premature aging and also of arteriosclerosis, for the toxic products and deposits causing this latter trouble would be quickly removed by an active glandular system, which helps to increase oxidation and removal of these products from the system. Diabetes, obesity, gout, rheumatism, tuberculosis and all diseases of metabolism are due to inactivity of the above system. Then, to keep the system in good order we must avoid what injures these glands, especially the thyroid; e. g., too much meat, alcohol, tobacco, sexual excitement, loss of rest, frequent pregnancies, great grief and sorrow, intoxication from foods and drink, strong tea, strong coffee.

The thyroid gland in the neck, more than is usually supposed, assists the liver in destroying the toxic products of the organism. The thyroid seems a part of the adrenal system, mentioned before, to take the lead in destroying poisons. This has been shown by Dr. Chalmers Watson of Edinburgh. It has also been shown that the liver and kidneys are affected by the inactivity of the thyroid and other glands mentioned, so it will be seen these glands and organs mentioned act as protectors to the organism against the bacteria and poisonous material whether generated within our own bodies or introduced from without. These matters are neutralized or destroyed by the antitoxic properties of these glands, assisted by the oxygen of the air, as

shown in the chapter on "Oxidation." We must, therefore, do what is needed to render these glands healthy and active, as noted before under "Personal Hygienic Care."

We must look to the condition of the glandular system and increase its activity to prevent deposits in old age, as in advancing age we often see obesity, bad circulation, cold extremities, and frequently find a degeneration of the thyroid glands, glands of the groin, as well as elsewhere. Professor Chittenden has shown by experiments conducted at Yale University that the average man eats far too much, and wears out his digestive organs and energies digesting and eliminating the surplus over and above his needs. He put different classes and groups of men on different diets, and an examination was made of each at the end of a week. Those fed on an excess of proteids, e. g., meat, eggs, cheese, beans and lentils, gained in weight but lost in strength, and this added weight was no doubt waste matter over and above the needs of the system, and accumulated in the organs and tissues and interfered with a free action of the nerve force. Strange to relate, these groups suffered from heavily coated tongues, bad breath and headache, biliousness, insomnia and lack of energy. Those who lived on fruits, grains and milk lost in weight but gained in strength, according to actual tests of the dynamometer. The body became clearer and there were less impurities to be gotten rid of. When one eats heartily of vegetables, fruits and grains the surplus is stored up in the liver cells and supplies the body as needed, and is easily gotten

rid of; but when one eats an excess of albuminous foods, as meats and fish, the excess contains poisonous extractives called xanthin and hypo-xanthin, which taxes the kidneys, lungs and bowels to get rid of, and accumulates and sets up ptomaine poisoning.

Strong emotions of all kinds, as grief, worry, anxiety, shock, etc., act on the organs of the body, e. g., heart, thyroid and pituitary glands, sexual glands, pancreas, liver, kidneys and spleen, as a poison would do, through the sympathetic nervous system, by depression, producing an altered condition. Diabetes, or sugar in the urine, frequently attacks those much worried or careworn; also disease of the pancreas, checking the pancreatic juice and also the gastric juice of the stomach. Mental emotions act suddenly on the sexual system in men and women, relaxing the ducts, disorganizing the secretions, and many times bringing on impotency in men; in women bringing on sudden menstruation or severe flow, or checking it altogether. These emotions produce changes in the liver, causing jaundice; in the kidneys and bladder causing Bright's disease and dribbling urine. Care, worry, grief or shock bleach the hair suddenly and wreck the nervous system, same as large doses of quinine. These emotions are most contributory to old age, and we must carefully watch them.

It has been proven by actual experiment that continuous activity has an exceedingly bad effect on all the glandular system as well as the organs. Sexual excesses not only injure the sexual system, but the body generally. Overactivity of the salivary

glands in chewing gum renders them less effective in helping digest the food, as they secrete less afterward; overactivity of the stomach in eating too often and too much weakens the organ; overeating of sweets and fats and too much food enlarges and renders sluggish the liver and burdens the pancreas and spleen, which are closely concerned with it in digestion.

THE INTESTINAL CANAL AND ITS POISONS, IN CAUSING OLD AGE.— There can be no doubt, as Professor Metchnikoff, the great Russian biologist and scientist, says, the colon, or large intestine, is the breeding-place for the germs which are the real menace to health and the cause of old age. He also states that the poisons generated by these intestinal bacteria are one of the great causes of degeneration of the organs of the human body, and one of the chief causes of premature old age; for when we are born we have perfectly sterile tracts, with no germs growing in them, and he says in his opinion we could preserve this freedom from intestinal bacteria and prevent the diseases that can be traced to the action of these germs, as chronic heart disease, arteriosclerosis, with its high tension and headaches, and not only this, but we could prolong our lives by this and other care. Fortunately for us, with our present-day knowledge there is no trouble, physical or mental, without a remedy; and autointoxication caused by this absorption and our method of living, as spoken of before, is what is shortening our lives. The retention of effete or waste matter spoken of, and unoxidized in the system, makes the colon, so to speak, a hotbed for the

breeding of noxious germs, and cathartics do not fill the bill or get rid of the condition; they sometimes liquefy the contents and promote more ready absorption. The absorption of this poisonous matter enfeebles the brain, kidneys, arteries and other organs, causing a diminution of resisting power. This auto-intoxication by absorption from the canal causes poor appetite, catarrh, bad taste in the mouth, impaired nutrition and bad digestion. The poison-laden blood, of course, is responsible for the inefficiency or enfeeblement of the organs; it robs a man of his energy and he does not care how long he lives. In this lies the cause of a multiplicity of human ailments. In postmortem work it has been a revelation to those who have seen them as I have, as one of the pathological assistants at Montreal General Hospital, under Doctor Osler. I have seen all along the tract, which has been loaded with hardened matter growing to the walls of the intestine, all the way from the ileocecal valve, on the right side near the appendix, up the right and across the abdomen and down the left side of the rectum. In many cases the bowel has been seen packed; and with the ulcerations was found incrusted matter which had been there a long time, some even calcified. This old waste matter was so foul that it became the breeding-place of worms, maggots and their eggs. Many of these cases could have recovered and been well if these conditions had been rightly and naturally treated, instead of being purged and drugged until they were beyond hope, to get rid of this condition. Why should we find the colon with such accumulations and in such an un-

natural condition? As I have said in a former chapter, it is our unnatural so-called civilized life of hurry and worry, putting off nature's calls until a more convenient time, eating too fast and too much. As these things go on we get into a condition of inactivity of the bowel, or constipation, and this goes on from bad to worse until the above conditions are manifest. The longer this fecal matter is retained in the colon the harder, dryer and darker it becomes. Is it any wonder that in such conditions we find also dyspepsia, liver and kidney troubles? All encouraged and probably caused by this filthy and unhealthy condition of the colon, it even causes and increases female troubles. It is simply like carrying a sewer around with us. If we keep the colon clean we will also run very little risk of typhoid and many other infectious diseases. Many of the terrible cases, and in fact all of the cases of bromidriasis, or smelling, sweaty feet, which is a terrible affliction for any one, is due to an accumulation of soil in the intestine, as one may prove to himself; for if the bowel is kept clean it will soon disappear; powders and antiseptics to the part will not get at the cause of this trouble. We frequently hear it said that flushing the bowel is an unnatural method, but, as we have stated so often before, our lives are lived so that most things are unnatural; but we can find even these methods in nature, and it is here we got our first knowledge. It is said the natives of India many centuries ago noticed certain birds of the Ibis family, a long-billed bird, would come back, after a long journey, in a wretched condition, either due to their eating some berry which

was very constipating or else where there was no water to drink, possibly both. This bird would come back to the rivers so exhausted as to be hardly able to fly from sheer weakness. The bird would fill its mouth with water from the river and insert its bill into the rectum and inject the water into the bowel, when it would get relief; in a few moments it would repeat the process until completely emptied, then sit down and rest a while until restored, then drink freely of water, and fly away as strong and active as ever. The chiefs and priests, noticing this effect on the birds, began to reason on the matter of trying it on some of the old men who, by such conditions, had become useless. So they constructed a primitive tube from reeds, with a blow-pipe attachment, and would inject warm water out of the rivers into the bowels of the old men, who, after a thorough washing, took on a new lease of life and began again to enter into the active life and work of the tribe. Men of other tribes, hearing of it, began to come on the shoulders of the young men and go away well and unaided. This may not be pleasant to some people, but it is necessary to make it plain in order to be effective. We do not advocate the continuous use of the syringe, but a thorough cleansing of the colon every three weeks or month.

METHOD.— Get an ordinary fountain syringe, one holding two quarts; boil the water and use it as warm as can be borne with comfort, say 105 to 110 degrees. Try it with the finger first, then inject the water into the bowel from the syringe when in the recumbent position, never any other way; a

pint at first until able to hold two pints to three or four pints; retain a few minutes and let it pass out slowly. Repeat again in two nights and then skip two nights and repeat again. You will get used to retaining it and it will not bother you as at first. Knead the abdomen both before and after; this will promote absorption and give more activity to the bowel. After this flushing process don't worry if the bowels don't move much for a day or so; there is little need; they will return to good movements in a day or two. During this time you will not need to drink so much water, but can return to drinking plenty water to flush the stomach before each meal. You will soon notice the effect of this treatment on the whole system — liver, bowels, stomach, kidneys, brain and skin.

The hot enema, say 105 to 120 degrees, increases blood pressure and, while relieving the bowel of its contents, acts as a most effective diuretic on the kidneys, as will be seen by the large amount of clear urine passed shortly after the injection. Some can not use it warmer than 105 degrees. Flushing the bowel with a saline solution or plain water increases the auto-protective process of the body. It is valuable in biliousness, insomnia, auto-intoxication and all fetid conditions of the bowel. After cleansing the bowel by the hot injections, for those who have a distended and weakened colon it is well to use a cool injection at, say, sixty to seventy degrees, of one pint of water, to tone up the muscular structure of the bowel and increase its activity.

A FEW RULES.

1. Be out in God's sunshine and fresh air as much as possible; breathe fully and freely each day, as in chapter on "Breathing." This will help to cultivate normal power of resistance to disease.

2. Sponge daily every morning with sponge or cold hand rub, to prevent leakage of nervous force from the body and act as a tonic and vitalizer. Take hot bath once weekly; any oftener is debilitating. The feet should be washed thoroughly with soap and water at least three times weekly, as all other parts that perspire freely.

3. Cleanse the mouth and teeth thoroughly twice daily, so that bacteria formed by fermentable food will not pass down into the stomach and intestines and infect them. This food, remaining on the teeth a long time, causes tartar, and this tartar, by irritation of the gums sets up a pus condition called pyorrhea, and this pyorrhea has been known to cause infection of the joints, many times called rheumatism, when the tone of the organism is low and the person predisposed to it.

4. Have the bowels move daily, and for this purpose use one glass of water one-half hour before each meal and at bedtime. Flush bowels thoroughly once weekly or biweekly, to remove acid secretions.

5. Let diet consist of meat no oftener than once daily. Eggs not too often, especially if meat is used; fresh cheese, cereals, green vegetables, fruit and good fresh milk from healthy cows daily with each meal as it agrees; it will agree better if no meat is taken with the same meal. Never boil milk, as the ferments are killed; warm it and add a little

hot water. Milk is a very valuable food in weak conditions and in old age, as it contains important nutritive substances, as casein, fat, milk-sugar, lecithin and valuable salts. As I have explained in other chapters, food and drink taken in excess of the requirements of the system clog up the system, causing fermentation, impure blood and toxins. Some may not mind it for a while, causing no great inconvenience, but the harm is in the accumulation, weakening the reserve vitality of the body. (See article on milk in chapter on "Foods.")

6. Masticate all food thoroughly and let the mental aspect be one of good cheer. (See chapter on "Diet.")

7. Sleep in a cool, well aired, quiet room, rather dark. Get relaxed if possible before going to sleep. Let the hours of sleep be never less than six and one-half to eight hours, but not more than eight hours, unless exhausted. Women seem to need more sleep than men.

8. Wear porous, light, warm underwear, and change often, at least once weekly, and for stockings at least twice weekly.

9. Have one day's complete rest in seven, avoiding all mental excitement, even reading and writing. Don't sit up till the early hours of morning playing cards and dancing, to waste time; you are wasting your valuable self. You can do yourself and the world more good by plenty seasonable rest for your work.

10. Be very temperate in the use of stimulants, e. g., beer, wine, whisky, coffee, tea, cocoa, tobacco (see article on "Stimulants"); better none. Don't

use these stimulants freely because they taste good and it's a habit with you, or to be a "sport" or a "good fellow" at the expense of your vitality. You are running this thing. Do what is best for you. It is a bank account; you will not regret it, and the gain is on the safe side.

11. Avoid overheated and badly ventilated rooms, which sap the vitality of the body and destroy the red blood corpuscles. (See chapter on "Vitality.")

12. Right mental control. He who has started out on this line has really got on the track for the solution of the right use of energy. (See chapter on "Our Energies and Their Proper Control.") Keep young, feel young, enjoy youth and the things of youth, think of yourself as filled with the Creator's youth and perfection.

Though a man's body attains its full growth before his twenty-fourth year, and probably a little earlier than that, the growth and tendency of his mind depends upon himself. He can develop and strengthen and preserve his mental alertness to good old age; but his mental aspect, if kept young, will tend to keep the body so also. The man that is interested in boyhood pleasures and curiosities, and loves nature and sees pleasure in the hundred and one things around him, will certainly keep his mind younger, and body, too, than the one who is bored by all around him and who limits and narrows himself to certain confines out of which he will not pass; he will read only a certain paper, sit in only one chair, eat at the same table, vote only for one party, same as his father, no matter how things

have changed. Such a man is like a homeless cat, if things go wrong, and just rusts away and grows old, because his body can not readjust any better than his mind. It is to be hoped Metchnikoff's noble dream will be realized and that old age, which at present seems a useless burden to the community, will be turned into a period of work valuable to the community on account of his stored wisdom and greater experience in life, still able to enjoy all his experiences as when young.

The comparative facts of physiology seem to point to a far greater longevity for man than he now enjoys. Scientists make the statement that man, like the animals, if he lives in normal condition, as they do, should live five times as long as it has taken him to come to physical maturity. The word normal above has much to do with it; and yet why should man be an exception to the rule in the animal kingdom? We have become accustomed to think it is part of nature's methods that he should grow old, decrepit and stiff as years go on. In ancient biblical times age was associated in popular thought with wisdom and maturity of judgment. Moses, the great champion lawgiver, was 120 years of age when he gave his last address to the multitude before his disappearance, and we are told his eyes were not dim or his natural force abated. It would be well if we could live as he did and as nature intended.

Grow old along with me! The best is yet to be,
The last of life for which the first was made;
Our times are in his hand who said "A whole I planned."
Youth shows but half; trust God:
See all nor be afraid.— *Browning.*

CHAPTER XIV.

CONSTIPATION—CAUSE AND TREATMENT.

Constipation is a condition in which there is undue delay in emptying the contents of the bowel or irregular and incomplete expulsion. The daily evacuations of the bowels are determined by what we call peristaltic or wave-like contractions of the muscular coat of the bowel excited by their contents. Besides being stimulated by the residue from food, the intestines, from the small to the large bowel, are rendered active by the intestinal and pancreatic juices, and especially so by the bile, which, when free, lessens fermentation and gas and renders the movements easy. It may generally be stated, when constipation is not due to intestinal obstruction of some kind or other, it is due to want of proper peristaltic action, just as diarrhea is due to excessive peristaltic action.

Causes of Constipation.—1. Lack of peristaltic action due to the greatly enfeebled intestinal muscles and imperfect stimulation of the nerves in sluggish condition. This is what we call an atonic condition, from want of tone.

2. Insufficiency of the different digestive juices, and especially of the bile.

3. Overeating, in old or young, may cause constipation from large accumulations of waste matter the bowels have not power to expel.

4. Insufficient food is a common cause, and also prolonged fasts. There are those people who eat very sparingly on account of tender conditions of

the intestines, in whom there is not bulk enough of food to excite peristaltic action.

5. Eating of too highly concentrated foods, as milk, meat extracts, peptonized foods, which leave little or no residue for the bowel to act upon.

6. Insufficiency of fluids, such as water, for digestion, for the intestines, for the blood generally.

7. Ulcerative conditions of the upper intestine and colon.

8. Irregularity in diet, in time of eating, eating too fast; all tend to disturb digestion and tend to constipation. Irregularity in time of going to stool. This putting off of nature's call weakens the bowel and makes it sluggish.

9. Lack of exercise, failing to act on the muscles and stimulate the circulation, as in people of sedentary habits.

10. Overexhaustion of the nervous system from late hours, too much stimulants, as tea, coffee, alcohol, etc., as before spoken of.

Constipation causes, in aggravated cases, debility and lassitude, and delays nutrition. Sacral neuralgia and hemorrhoids may occur. Impacted feces or stool are often found in the colon or large bowel and taken for tumors. They have been even known to be calcified in the colon. Long-continued constipation by irritation of hardened matter in the bowel has given rise to diarrhea. Sometimes localized pains and fever, in the chronic cases, simulate appendicitis and peritonitis.

Treatment.—1. Flush bowels, as directed on that point (page 153), in cases of great irritation,

colitis, and in diarrhea following constipation, and where there is impacted feces.

2. Increase activity of the intestines by kneading the bowels from side to side with the half-closed hand.

3. Rub gently and yet deeply the large bowel from right around to left hip, following its course. This helps to move along the intestinal contents and stimulates peristalsis.

4. Percussion, or short, sharp blows, not hard at first, to the liver on the right side, with the closed fist, over the ribs directly across from the stomach.

The above methods, if used continuously for at least two months, will do wonders and have proved greatly serviceable at the same time in reducing obesity. All of these exercises, except the percussion to the liver, are best accomplished by doing it lying down in bed, night and morning. These methods are natural and much better than the continuous taking of laxatives and cathartics, which can not be too strongly condemned. Many cases of hemorrhoids and other abdominal troubles have been promptly corrected by the above treatment. Many adults, as well as children, have been helped by a dessertspoonful of glycerine and good olive oil, mixed half and half. Olive oil can also be taken with the food, as salads, for the same purpose, as also to increase flesh. One or two tablespoonfuls of Russian petroleum oil at bedtime is also very valuable, as it is not absorbed and passes through the bowel more quickly and lubricates it, and is not nauseating.

Diet for Constipation.—Cooked and raw fruit

used at breakfast are valuable, and both will cause less acidity and distress if a teaspoonful of olive oil is used at the same meal. The best vegetables are onions (boiled), spinach, lettuce, asparagus, endive, salsify and celery; coarse cereals and bread for those who have not a very sensitive mucous membrane (as it sometimes increases the trouble in the latter); for these people the finer whole wheat is best. Prunes, figs and apples, eaten raw, preceded by a drink of cold water on an empty stomach, in many people act as a valuable laxative.

To drink a tumblerful of cold water half an hour before meals and at bedtime is valuable, as it dilutes the remainder of the food in the stomach and helps to empty it and lessens acidity.

In cases of constipation, where there is irritability and ulceration of the intestine, valuable results will follow the use of one or two tablespoonfuls of liquid petroleum at bedtime, as spoken of above.

Cold Feet.— Cold feet are caused by an unbalanced circulation and are the bane of many people, and are due to insufficient exercise of the lower limbs and insufficient breathing caused by too hot rooms, damp feet, tight shoes, tight garters, overexercise of the brain by too much mental activity, robbing the limbs of their supply; emotional excitement. It is best to use thick soles on shoes or inner soles or overrubbers in winter to prevent chilling and drawing away of the heat from the limbs.

It is a good plan, on retiring and arising, to rub and manipulate and rotate the feet, rubbing well between the toes. Rotate one foot and then the other, first one way and then the other, several times

a day. This will generate heat and strengthen the foot. When the feet are very cold and one has a cold, a twenty-minute mustard foot-bath is very valuable to balance circulation. Keeping the feet dry and warm lessens congestion of the internal organs and brain, and gives a sense of general well-being which can not be had without it. Many authorities think cold feet shorten the span of our life; and yet it is not necessary if we attend to a few methods of exercise and care for the circulation as above.

STERILIZATION OF STOMACH AND INTESTINAL CANAL.

In certain conditions an aseptic dietary is necessary to the above; therefore meat of all sorts, oysters, fowl, game, meat juices or broths, and all animal preparations must be excluded on account of the waste of tissue and poisons, such as uric acid, urea creatin, creatinin and xanthin contained in such substances, and which are liable to produce putrefaction in the stomach and intestines. When rapid sterilization is required, fasting is good, but an exclusive fruit diet is at times better. The fruit should be ripe and thoroughly chewed, so as not to be swallowed in mass, as this makes it difficult of digestion and causes it to remain a long time in the stomach to ferment. Fruit skins and seeds in such cases should always be discarded. Koumiss, kazol or buttermilk can be used in the same day. An exclusive diet of this kind should not be used too long so as to weaken the person; say two to four days. This aseptic dietary is good for the sick and those who are well. It is valuable and needed in many

diseases, namely, rheumatism, diabetes, obesity, catarrh of the stomach and bowels, auto-intoxication, apoplexy, disease of the kidneys, hysteria, insanity and epilepsy.

The value of the fruit diet is due to the valuable refreshing and germ-destroying acids with which they abound. A modified diet to which grains have been added to the fruits in many cases answers a good purpose for a short while. This is a very valuable way to do with children at times, as it keeps them in good condition and makes them more restful and less fretful.

We have learned, after close observation, that the above diet used every now and then, and dropping of meat, will prevent many cases of appendicitis. For the appendix, like all other organs, must and does have its rightful use, and it is abuse of the stomach and intestines that brings on an attack of appendicitis. It was said for a long time that it was a retrograde organ and of no value, and yet it is found in all mammalia. Doctor Robinson of Paris likens it to an intestinal tonsil which secretes a distinctly acid fluid, which acts by stimulating the intestines and causing them to contract and propel the fecal matter onward.

Constipation is one of the first signs when the appendix is affected, and frequently persists for quite a while after operation, until the organism makes up for its loss.

THE ABDOMINAL BANDAGE.

The dry abdominal bandage worn around the abdomen is of great value in many conditions of

the stomach and intestines. It consists of a large band of flannel or woven band surrounding the whole abdomen. It reaches from the lower end of the sternum, or breast-bone in front, to the pubes, covering the whole abdominal cavity, and should fit the skin snugly. It differs greatly from the abdominal supporter, which is used to support the stomach, as, indeed, all the organs of the pelvis, when they fall, and keeps them in position, as in viceroptosis, or falling of the abdomen.

The dry bandage is of great value in gastric and intestinal catarrh, kidney troubles, rapid loss of heat in damp weather, in neurasthenics, and in those of weak vitality, in colitis, and in many old persons. There are many people who at the first approach of winter get chilled and don't seem able to react without help. These people should put on the bandage, beginning the last of October and wear it until May. It should be worn in all the conditions mentioned above, when it will be found to greatly increase the health and comfort of the individual and make him feel much more comfortable all winter in every way.

CHAPTER XV.

INSECTS AND DISEASE.

That insects are carriers of contagious diseases is proven by well-authenticated facts. The house fly, at one time thought to be a harmless and useful little scavenger, has now come to be looked upon as an unclean pest, reeking with filth and unhealthy germs gathered in his journeys from place to place. This same fly that is tickling baby's nose and keeping papa from his rest may be spreading thousands of germs he has brought from far off, no one knows where. After he has done his duty in this way he must be fed, so he sips from our coffee, soup, sugar bowl, bread and butter, what he needs; but while he is so doing he leaves his trail of germs and filth behind him on these very articles. If he has come from a hospital and been near a typhoid or tubercular case, we see how virulent the germs may be. Intestinal diseases such as typhoid, diarrhea, enteritis, erysipelas, and also tuberculosis have been spread in this way. It is said the fly killed more American soldiers than did bullets in the Spanish-American war.

Mosquitoes are pests of greater nuisance than the fly, and are blamed for malaria, no matter how little or much the poison conveyed. It is greatly aggravated by the condition of weakness or blood impurities of the person affected. Some are affected more by a small bite than others by a large wound. People of nervous temperament are much more susceptible and more gravely affected by the poison.

The habits of the insect will afford a clue to the virulence from the bite. The sting or proboscis may have been buried but a short while before in some putrid wound or excreta, and can not penetrate the body without leaving some of the poison in it somewhere. Bedbugs, independently of the nuisance of the pest, often produce great irritation and fever by septic poisoning. I saw two children of nervous temperament thrown into a feverish condition that could not be accounted for except by the bites of these insects, which had greatly inflamed the upper and lower limbs. Have seen the same repeated in adults; three severe cases of septicemia in adults from mosquitoes, one whose life had been despaired of, he having taken no precautions against them. His face and neck were so swollen as to make him almost unrecognizable, with a high degree of fever.

Doctor Bremond of Paris, in his study of bedbugs, states they are a great menace to health, not only by the loss of sleep caused by them, but also as direct transmitters of septic poison, such as the microbes of tuberculosis. He cites a case in which such transmission actually occurred; e. g., a young man died of tuberculosis, and shortly afterward his brother occupied the same room and bed, when he became infected with general tuberculosis. He noticed the young man bore marks of many bites, and being led to suspect this source of infection, examined and found a large number of them carried tubercular matter in their alimentary canal. Rabbits bitten by these same bugs contracted the disease and quickly died of it. An infusion made by crush-

ing these bugs when injected into other small animals quickly gave rise to the disease.

Fleas may act in the same way. In China the terrible onslaughts of the bubonic plague, or black death, and pneumonic plague are still at work, devastating at times whole towns. This same disease was the terror of Europe in times past, and even to-day it is spread by infected rats. These rats are bitten by fleas, which in turn bite human beings, and so the terrible disease is spread.

The problem of fighting the fly and mosquito is a hard one, but, like everything else, we must get at the cause and the effects will cease; in other words, destroy their breeding places and larva and there will be few or none.

The fly breeds in warm horse manure and fermentable material. Cow manure is almost free from them on account of its liquid consistency and the crust that forms on it. If we would clean up our dooryards and barnyards much would be done to extinguish the fly. Cover manure up tightly; put kerosene on the garbage and burn it; also use chloride of lime.

The mosquito deposits its eggs in and around wet pools and damp places and on stagnant water; here is where we find its greatest breeding ground. Some breed rapidly and have several generations in a season; others but one. The rain-barrel mosquito is most abundant. This variety is the most severe biter and greatest breeder; the female will lay her eggs in a mass, on the surface of standing water, containing from two to four hundred eggs. These eggs in warm weather hatch in from sixteen

to twenty-four hours, and they reach full growth in seven days. Strange to relate, it is only the female that bites.

There are a great many varieties which we can not find time to describe. Suffice it to say, besides the common variety mentioned there are the malaria mosquito, the yellow fever mosquito and one which causes filariasis, a tropical disease caused by a worm which lives in the skin and lymphatic vessels. The disease is transmitted from one person to another by these mosquitoes. The last three varieties we rarely see or hear, excepting the malarial variety. Dengue or break-bone fever is caused in the same way.

To protect one from them the best mixture is oil of citronella, oil of cedar, spirits of camphor, of each two ounces. Spread on the hands or a towel over the head. To abolish them, as with the fly, treat their breeding places with kerosene oil, sprinkled around as emulsion, or in water.

Now after considering this matter from a scientific standpoint can we dismiss it as all nonsense because we have not been able to point to direct results in our own case, not knowing how soon it may be so? Physicians at large as well as people in general should give consideration to these things, which seem small but mean so much.

CHAPTER XVI.

CARE OF THE SKIN AND HAIR.

The skin is one of the great eliminators and largest excretory organs of the body. It is a breathing organ as well as an eliminating organ. It must be kept clean and active in order to properly perform its functions, which mean so much to the health of the individual. It is also a protective covering to the body. The subcutaneous fat forms a soft pad which protects delicate parts from pressure, also undue reduction of heat. It is divided into the cutis vera, or true or deeper portion of the skin, and the outer cuticle, or scarf skin. It is a wonderful structure; the deep portion is composed of firm and elastic connective tissue fibers, which interlace so as to resemble a structure like a felt, extremely tough and yet so elastic that it will yield in every way to regain its former condition when injured. The outer scarf skin or cuticle is composed of round and flat cells piled on layers on each other, connected by intercellular cement; it is thicker on the parts where protection is needed most, as the soles of the feet and the palms of the hands. The skin is an organ that has many duties to perform. It has sudorific or sweat glands to help it keep the normal temperature of the body and wash away poisons within the system; sebaceous glands to lubricate it with an oily secretion or sebum, to keep it flexible and soft and able to better withstand the many irritating things it comes in contact with; and by its constant repair from within it is able to

resist the many agencies which tend to destroy its integrity from without. The color of the skin depends on the outer scarf skin, or epidermis, for if it were removed entirely it would be almost of a blood-red color, owing to the large amount of blood vessels found in the true skin or corium. On the soles of the feet and palms of the hands, where the scarf skin is thickest, it loses its red color almost entirely and has a yellow tinge; where this skin is thin, as in the face, we have the well-known pinky, flesh color; we see this exaggerated in blushing and in inflammation. In the negro the black or dark brown color of the skin is due to a pigment or coloring matter found in the rete mucosum, or lower layers of the cells of the scarf skin or epidermis. This is not found in the true skin. When we have colored marks on our faces, as moth patches, freckles, the coloring matter is also in the deep layers of the epidermis or scarf skin. By different stimulants and applications we can induce an absorption of this pigment and remove it. The supply of blood to the skin is very abundant and is carried there by exceedingly fine arteries called capillaries—from capillus — a hair, because they are so fine and small. The outer or epidermal layer of skin contains no blood vessels, and its cells are nourished by fluid from beneath. It is only when we reach the deeper skin we draw blood. The nerves of the skin are certainly very important and abundantly distributed over its surface for the purpose of protection; so much so that we can instantly feel the prick of a pin or sting of an insect or burn. These nerves give us sensations of heat and cold and sensations of

pain. After getting some idea of the skin we will be better able to understand its importance as an excretory organ, when we consider its vast surface, its duties and also its necessities. The action of its sudoriparous, or sweat glands, spoken of, is not intermittent, but continuous, for sweat, or perspiration, is exhaled by it, either in the form of sensible or insensible perspiration, and we see it only when overheated by exercise or high temperature. It is computed that the average active person in health loses about two pounds or pints of moisture every twenty-four hours, as above, in quantity almost equal to that daily excreted by the kidneys; the lungs about half of that. As said before, this perspiration regulates the temperature of the body through the vaso-motor nervous system. We can now readily see how this vast excretory surface of the skin, when active, if carelessly exposed to rapid changes of temperature, is soon chilled and congestion of some internal organ is produced. Experiments have been tried with animals, covering them over with a varnish, when death has invariably taken place. We all remember the incident connected with the coronation ceremonies of Pope Leo X., that a child representing an angel was covered over with gold leaf and died a few hours after the coating was applied. In extensive burns of the skin surface death often ensues. These things show the importance of proper care of the skin in its breathing and cooling and eliminating capacity, and that a perfectly active skin is necessary to a perfectly active system in general. Checking of this breathing or eliminating power of the skin by the

use of too abundant clothing, also goods impermeable to air, as rubber and closely lined furs, are responsible for a partial intoxication of the system and the unpleasant feelings experienced when wearing them. If anything interferes with the eliminating powers of the skin a toxic condition of the system is at once produced. This matter must pass through one of these avenues: the skin, kidneys, lungs or intestines, and if the action of one is interfered with it reacts on the others. The value of good free perspiration can not be overestimated when we consider how toxic it is. Experiments have been made injecting it into dogs, when it immediately caused fever, vomiting and diarrhea. So we can easily see what a safety valve the sweat glands are to get rid of this poison. The sebaceous glands that secrete an oily substance, mentioned above, may become diseased and the oily substance become a thick white sebum, as in acne of the face, seen in young people commencing puberty, which is caused by hyperactivity of the sexual glands. We see it in some women during menstruation. We must not lose sight of the truth that the accumulation of dead waste material on the surface of the body is the cause of many such eruptions on the skin. In these conditions salted meats and fish, pickles, rich salads, vinegar, hot sauces, peppers and all rich foods should be avoided and the skin be made active by frequent bathing and the bowels kept free. Squeeze out the pulp if necessary, but don't bruise the skin. A simple wash for it is made of sulphur, precipitated, one dram; tincture camphor, one dram; resorcin, one dram; glycerine, one dram; rose water,

four drams. Be careful of strong cosmetics, for a form of acne has been caused by them.

Perspiration is of great value in these conditions to eliminate from the skin the toxic products; it also helps the kidneys wonderfully; in summer many people get rid of rashes they have in the winter on this account. There is a prevailing notion with many people that because a skin disease is caused by bad blood the eruption should not be healed up, or it will break out elsewhere on account of a danger of driving in the disease. This fear does not rest on scientific grounds; for if the patient is properly cared for local means can and should be used with perfect safety, together with constitutional treatment, which would deal with and cause its entire eradication. In cold weather, when the skin perspires less, the kidneys are more active, and their secretion, like that of the lungs, is more profuse; when the weather is warm the skin is more active, and the kidney secretion will be less. So we can see the wonderful play of nature in its harmonious workings, and the intimate relation the various organs of the body bear to each other in health and disease, so that when one organ suffers all do to a certain extent. The perspiration of the body is one of self-defense against microbes and toxic material, cleansing and getting rid of such effete matter; when the skin is dry and inactive we can not get rid of it, and we feel its effects in the way of fever, heaviness and langour, showing the skin and body is overloaded. A free and active perspiration, followed by active cleansing by baths, soon changes this condition, which is followed by a

lighter, fresher and more tonic condition. These changed conditions show that the metabolism of the system is altered, elimination improved, the kidneys made more active, and even the oxidation of the system goes on better. Massage is of value in increasing the supply of blood to the parts. Thin persons can increase their tissue by massage with oil, and there is none better or quicker of absorption than cocoanut oil rubbed in well and dried off with a soft towel. The complexions of great meat-eaters are not so fresh and clear as those feeding on a lighter diet of grains, eggs, milk, fruits and vegetables. Fruit juices have a good effect in this way. (See "Food and Feeding.") The English and Canadian people, who walk much more in the open air than we do, are noted for their fine complexions and clear skin. Exercise in the open air (see chapters on "Exercise and Oxidation"), on account of increasing oxidation and elimination, burns up the refuse material which clogs the skin and gives it its muddy appearance. Attention must also be given to the bowels and liver, as stated before. In order to keep the skin fresh and smooth it is not necessary to use soap daily; in fact it is wrong, for it washes away the natural oil that gives pliability to the skin and which is useful to keep us warm in cold weather. Consequently if we do we are more liable to chilling and colds for want of it. Once weekly is sufficient for the hot soap bath for cleansing purposes. Daily sponging with cold water alone is very different, for it acts as a tonic and prevents leakage of nerve force from the body. (See "Cold Bath.") There is nothing

like hard water and harsh soaps to make the skin grow wrinkled and old and dried up. Soft rain water is the ideal water for the skin; if a little oatmeal is soaked in it we have a soothing, refreshing bath for the face; but a mild soap can be used with it when needed for cleaning purposes. If glycerine is used it should be only the best, which is purified of its rancid fatty acids. The simpler the methods used for the face the better, as alcohol, benzoin and other such things are detrimental to natural smoothness and health of the skin and are drying.

The dashing of cold water on the face with the hands to bring the natural color and prevent relaxed skin is far superior to using coloring, which in time always causes wrinkling and does not look natural. If we give Nature a chance it is hard to improve on her methods. We may assist, but must not force her into methods foreign to her own. The changing of garments frequently, in order that the skin may not reabsorb the old waste material thrown off, is a valuable help in keeping the skin active and making us feel fresher. This is gone into fully under "Clothing"; also airing the pores of the skin daily by air-baths (see next chapter). While dealing with this subject we must not neglect to mention the wonderful effect which the passions and emotions have in leaving their traces of lines and wrinkles on the face; on the contrary, a cheerful disposition favorably influences the expression of the face and brightens it up and tends to lengthen life.

Diet in Diseases of the Skin.— Diet is of great importance in all diseases of the skin, as in all other

abnormal conditions, for all diseases indicate debility. Eczema and salt rheum may begin in early childhood from the faulty diet of the mother; e. g., indulgence in beers, porter and wine, and a craving for sweet and rich foods. Later on in life these same children are allowed to overload their stomachs at all hours with sweets, cakes, pies, candy, etc. It has been found that severe indigestion in the mother has frequently caused eczema in the child. In such conditions there is nothing better for both mother and child than olive oil used daily, as it will decrease the acidity in the mother and the irritability in the child. Most eczema patients dislike fats, which they need more than sweets. Cod liver oil was at one time greatly used by some authorities in Europe, but better results will follow the use of clive oil, as it is more digestible and palatable, and is not belched up like cod liver oil. Under its use, with a common-sense diet, eczema quickly improves. Urticaria, or nettle rash or hives, is another condition due to a high degree of acidity, in which diet will do a great deal. It is often started by such articles as stale fish, mushrooms, shellfish, the irritating seeds of fruits. Here the oil is of value internally, together with freeing the bowels by laxatives, or better, flushing them.

In skin diseases generally, salted meats and fish, sausage meat, and all highly seasoned dishes should be sedulously avoided. Too much fluid at the meal, especially such beverages as tea or coffee, should be avoided; for meals eaten slowly and thoroughly masticated and enjoyed should not be spoiled by large quantities of liquids to wash them down.

If a small amount of drink is needed, let it be at the end of the meal. As to water, it is better taken one-half hour before meals, for two purposes: to cleanse the stomach and act as a tonic to it. This will not cause chilling of the stomach and arresting of digestion, as it often does if taken with the meal. Too sedentary habits, with overeating, no doubt are among the causes of many skin diseases, and must be changed before a rapid cure is effected. The hygiene of the skin embraces many of the things spoken of in many of these chapters, the application of which will tend to alleviate what is present and prevent a recurrence of the trouble in the future.

Hair and Nails.— The hair and nails are simply portions of the epidermis, or outer layer of the skin, designed in shape and structure according to the functions performed by them. Almost the whole body is provided with hairs of some sort, excepting the palms of the hands and soles of the feet, etc. Each hair is divided into root or bulb, and shaft. The root is pear-shaped, and is softer and more succulent than the shaft. This hair, with its bulb, rests inside of a hair papilla or follicle, where it grows. We can pluck the hair out by its root, but it grows again if the follicle is not destroyed. This explains why the removal of superfluous hairs from the face of most people is almost useless, as the life of the hair papilla has not been destroyed, and if badly done by electrolysis it leaves unsightly scars, which are not necessary. Hair is very elastic and can be stretched to almost one-third of its own length and regain its elasticity, same as we said of the skin.

The Different Sexes Compared.—One of the main reasons why the hair of woman grows longer than that of man is because from early youth more care has been devoted to its training in brushing, washing, combing and looking after it; while man from his early boyhood days pays little or no attention to his hair, and does not consider it the ornament woman does; also women are less engaged with business cares and worries than men are. Another good reason for a woman's good head of hair is that it is not covered so tightly with hats as is man's, and gets more air. Stiff, tightly worn hats have a great deal to do with baldness, no doubt. Of course, the growth of the hair depends to a large extent on the general physical condition. Hair, like everything else, will grow better with good care than without it. It grows faster in summer than in winter, as all will note, and in warm climates than in cold. Other causes for loss of hair may be constitutional defects and local diseases from uncleanliness or neglect, as we have seen in the skin in general and in nervous diseases. The scalp should be kept clean and active, like any other part of the skin, and washed regularly, as this eliminates refuse and effete matter in the same way; and if it is not it will become clogged with these impurities and the hair will crack and fall out. Be careful to use the mildest and best soaps procurable, as strong alkalies in soap take too much natural oil out of the scalp and is disastrous to the growth of the hair. In cleansing the scalp the water should be used as hot as possible with comfort, for the heat brings the blood to the surface, aiding the elimination of the

matter we want to get rid of. After briskly rubbing with the soap and hot water, after it is cleansed, dash on real cold water, which closes the pores suddenly and forces the blood in; this (like the instructions under bathing for the skin) stimulates its activity and the growth of the hair. Hot and cold applications with a cloth have been used on bald spots alternately a number of times at one sitting with good effect.

Brushing the Scalp.— Brushing for stimulation of the scalp is of great value, as it increases its circulation and the greater nourishment of its hair; at the same time it rids the scalp of the loose scales and matter which accumulates on it. The brushes should be of even consistency and not too hard. If the scalp is brushed once or twice daily for cleansing purposes we will get rid of these scales. Avoid using the brush harshly. In using the comb let it be one that will not scratch and irritate the scalp.

Massage of the Scalp.— Thorough massage of the scalp daily is of value to increase the circulation and bring the blood to the part as in brushing, but massage affects more thoroughly the deep tissues. This will also loosen dead scarf skin. Massage thoroughly for about five minutes. This can be done also when the hair is washed, which should be every three days. The effect will soon be perceptible. Use the brushing daily as above, and let as much air as possible to the hair, as the tight, hard hats that men wear do not give it much chance. It is a good plan for men or women to dry their hair in the sun and air it as much as possible. It is a good plan, if the hair is dry, to rub in some olive oil daily, as it keeps

the hair soft and pliable and nourishes it, but massage as above increases the natural oil.

The Nails.— The nails consist of hard, horny matter, composed of cells, and are only altered portions of the epidermal layer of the skin. They have root and body; the root embedded in the flesh. The matrix is the bed on which the nail rests. The nails seldom fail to give indication of sickness, especially if it has been severe, as an arrest has taken place at the root. The nails of the feet grow very much slower than those of the hands, as every one can see, which seems strange; and during sickness the new nails produced are much thinner. Nails are characteristic of many physical conditions. A transverse groove on the nails, unless due to injury, indicates a recent sickness. Hard, brittle nails, striated lengthwise, are found in gouty individuals. The condition of the heart and pulse can be told by the nail, using slight pressure. After nerve injuries, neuritus, pulmonary and nutritive disturbances we get dryness, cracking and fragility of the nails. Ulcers of the nails are often found in victims of the chloral habit. Also unhealthy ulceration around the nail may be due to injury or to syphilis, or in the scrofulous diatheses. These indications are valuable, as they give the physician a clue to the physical condition of the individual.

CHAPTER XVII.

BATHS AND BATHING.

Baths have been used from time immemorial for different purposes and in order to increase the health and activity of the body. They were first used in hot climates on account of their sanitary value. The great aim is to promote active reaction in the skin. The cold sponge bath is best used on arising in the morning, for its tonic effect on the system in general. The body should be sponged a part at a time, so that there will be no chilling. The cold sponge or rub bath prevents leakage of nervous force from the body. These baths are useful in nervous conditions, as neurasthenia and hysteria, followed by plenty of surface friction to bring a glow to the surface of the skin. This tonic effect through the nerves is communicated to the digestive system, improving digestion and nutrition. A cold salt sponge bath can be used in the same way, adding salt to the cold water. A full cool or cold bath is a source of pleasure, and is well for those who can stand it, but as a general rule it robs the body of too much heat. It is all right and valuable in warm weather, when it acts as a general tonic to the system; but in cold weather it makes people of nervous temperament more nervous, as it is too much of a shock and involves too great a loss of bodily heat. It is best to acquire the power to endure it by commencing with the cold sponge or rubbing bath. Cold baths with friction are very beneficial in headaches and insomnia and in relaxed condi-

tions; especially is this so in hot weather; in summer one is always greatly refreshed by them. In greatly heated conditions in summer a cool bath without drying is of value, as it cools the body greatly by evaporation and acts as a tonic and refrigerant. If the kidneys are not in good condition one must be careful of cold baths. Cold baths increase the flow of blood to the skin and increase its activity, balancing the circulation and producing a great glow of warmth; and if reaction is good it increases our ability to stand the cold and prevent the tendency to chilling in cold and damp weather. The cold bath is a stimulant, and, like any other stimulant, can be abused. The *Hot Bath* is most valuable once a week as a cleanser, with soap to remove the large amount of waste material brought to the surface of the body by perspiration. This assists greatly the work of the kidneys and other organs. The hot bath is a good balancer of the circulation in colds and congestion, as congestive headaches, congestive chills. One should not stay in too long, and be sure to cool off with cool water and plenty of friction. Once weekly is sufficient for a hot bath for most persons, as too often is weakening and injures the magnetism of the body.

Hot soap and water should be used daily on all parts of the body which perspire freely, as the armpits and feet and privates, as the perspiration through these glands throws out an immense amount of waste material, which, if retained, only adds to the poisons already in the system. It is well to sponge these parts after with cold water, so there will be no chilling in cold weather. Hot baths have

been taken of long duration, twenty to thirty minutes, for the kidneys; but one should be careful of the condition of the heart and nervous system, when tired, for this long stay. In fact when a person is very tired it is not wise to take a hot bath; many accidents have occurred in this way.

THE HOT FOOT-BATH for five to thirty minutes is very valuable in colds, in congestion of the brain and stomach, in insomnia and headache. The temperature required is about 104 to 120 degrees. We should commence at about 100 degrees and increase gradually until we reach the maximum indicated. It is very valuable in uterine and ovarian congestion, and is a useful measure for restoring menstrual flow. The hot foot-bath is valuable in ankle-joint sprain, and also neuralgia of the nerves of the feet. To the hot foot-bath may be added one tablespoonful of mustard to increase its effect; also keep adding hot water as it cools. Keep the water up to the knees. It is well to cool off the feet and legs and then use a great amount of friction after this bath, when relaxation will take place, followed by sound sleep, if one goes at once to bed.

COLD FOOT-BATHS have been used to increase the circulation in the feet and increase the volume of blood in the part with good effect. It should not be used longer than one to five minutes, and has a reflex effect on other parts. In this way it may be of value in congestive brain conditions, properly watched. Friction should be used continuously during the bath, either by the person or an attendant. Singular to state, the effects of the cold foot-bath, after good reaction, last longer than the hot, and

are valuable in uterine hemorrhage and cerebral congestion. For these conditions thirty to sixty seconds is sufficient. Be careful to get a good reaction. The cold foot-bath should be avoided in inflammatory conditions; in such cases the hot foot-bath is indicated in preference.

THE SEA BATH.—The sea bath is a valuable stimulating and exhilarating bath, much more bracing in salt than in fresh water. The length of the bath should not be longer than three to five minutes, if cold, and increased to twenty to thirty minutes if warm and used to it.

1. The bath should not be taken within an hour before or two hours after a meal.

2. It should never at any time be taken if the system is in an exhausted state from any cause, or when very tired.

3. On entering the water, if chilled, be active and see to it that reaction is established; and if not and still chilly come out at once, or langour, lassitude, stiffness and depression may follow, showing that too much heat has been abstracted from the body.

4. Dry quickly and rub vigorously, and, if necessary, exercise in the sun till circulation is established. If well established take a good rest, one-half to one hour, which is most beneficial to the nervous system. If the bath is followed by cold feet, cold hands, headache and depression, the above rules have not been carried out and the bath has been harmful rather than beneficial.

THE SALT GLOW.— The salt glow is much in use in sanitariums for its good effect in increasing activity to the skin in circulatory disturbances. In sani-

tariums the rub is given the patient lying down, covered with a sheet, and being rubbed with wet salt, a part at a time, to prevent chilling, in a warm room. After the application of the salt rub the patient gets a warm spray, followed by a cooler one, and is then dried off. It makes the skin smooth and firm. This can be taken by persons themselves in the same way with great value even without the spray. This is a good means of stimulating the skin to circulatory reaction in cases of poor circulation, with easy chilling and inability to stand cold weather.

It is a tonic measure of great value, superior to medicinal tonics, for feeble patients in whom we want to cultivate better reaction and in whom the heat-making powers are low and whose skin is very inactive. It is a valuable tonic procedure in all diseases excepting those of the skin.

THE SHOWER BATH.— The shower bath, or rain douche, and other douches, either hot or cold, is a very valuable revulsive measure on account of the powerful impression made on the skin as well as the organs of the body. All cold douches are among the most exciting of hydriatic treatment, and should be very carefully and judiciously used, as the heart is so powerfully excited and blood pressure quickly raised. The same principles must guide one as given under hot and cold bathing. In inflammatory conditions be very careful not to use a cold douche.

The cold douche was greatly discredited for a long time on account of its abuse. It is valuable, if very carefully used, in anemia, in obesity where the heart is fairly good, in neurasthenics, and for sedentary

persons it is valuable, if not used too cold and of very short duration, so that reaction may be good and no tiring effects follow its use, for if used too long or too cold to organs like the stomach and bowels, congestion may follow. Like all cold baths, it increases the heat of the body and decreases sensibility to cold.

The hot shower or hot douche, as in all hot baths, is useful in congestive conditions, at first stimulating, and if increased, depressing. The face, head and neck should be carefully protected to avoid congestion. The hot douche is used usually as a preparation for the cold for its revulsive effect. This is called the Scotch douche. The hot douche or spray is valuable in relieving neuralgia, neuritis, rheumatism, superficial pain, hyperesthesia or great sensitiveness of the skin and congestion of organs.

Overstimulation and depression by overuse of hot and cold baths can be seen by other things; e. g., plunging into a cold bath daily when the nervous system and its reaction are below par. The daily use of the hot bath causes depression and lowered nerve tone in many people. It causes leakage of magnetic force from the body too rapidly. If used often it should always be followed by cool water for its tonic effect and to close the pores of the skin.

The cold bath, although a great tonic, can also be overdone and react to the detriment of the body; e. g., plunging into a cold bath where the nervous system and the reaction of the body is below par. The heat of the body in this case is too rapidly lowered and carried away, and the bath is followed by tiring and somewhat of depression.

I knew of three cases, a physician in the Canadian survey and two bankers, all of whom would take a cold plunge in the ocean after ice had formed. They thought they were doing a heroic thing for themselves. The physician died from pneumonia, failing to react from a severe chill after a plunge. The bankers both became afflicted with rheumatism.

The friction mitten may be used to the body, same as a sponge, with cold water. In this the friction reaction is greater. It is valuable to increase circulation where it is bad and help increase vital resistance and warmth. It is valuable in tubercular and all weakened conditions. It may be used in all chronic conditions with value. If the patient is not able to do it, by all means have it done for him or her by an attendant. The hot or cold sponge bath with vinegar and water is very valuable in all feverish conditions in rapidly cooling the surface of the body and relieving the hot and dry condition of the skin and quieting the person.

THE AIR-BATH.— The exposure of the body to an air-bath daily, morning and evening, is valuable as a tonic to the body generally. Use friction and manipulation over each part of the body with the hands, say for fifteen minutes. There will be little or no fear of chilling after trying it once or twice. When we become accustomed to it we can stand more cold and not be so susceptible to the chilling effect of the atmosphere, when the skin will become more active and healthy in tone. This exposing of the body to cold air increases the heat production of the body and increases also the tone of the organs.

THE OIL-RUB.— The oil-bath was one of the favorites of the old Romans, who took their oil-rubs and then laid in the sun on their roofs to rest, which is a valuable plan. Oil-baths have been used by the natives of savage countries to protect them from the sun, where they noticed the general good effects following it. The natives of the South Sea Islands, who are great swimmers and spend a great deal of time in the water diving for sponges, etc., smear themselves with oil before entering the water, as it does not affect them so badly and they claim they can stand it longer without becoming exhausted. The oil-bath once in a while is valuable, say twice weekly, especially in cold weather. Where the skin is dry and deficient in activity it renders it more supple, nourishes it and increases the vital heat, and for those of low vitality is very valuable. The oil-rub has a favorable effect on nutrition, as in cases of emaciation with malnutrition and dry skin. And persons as above gain rapidly in weight. In fevers rubbing with olive oil and oil of eucalyptus (two drams eucalyptus to olive oil one dram) is a favorable way of lowering temperature and disinfecting the skin in most infectious diseases, as scarlet fever, etc.— it prevents the scales flying around. For infants who are teething, irritable and feverish a spinal rub with oil soon quiets the child and induces sleep. Olive and cocoanut oil are both good, but the cocoanut oil is more quickly absorbed. After the oiling and rubbing, dry off with a soft cloth, as if too much moisture is left it may be chilling.

SITZ-BATH.—The cold sitz-bath at about fifty-five

to sixty or seventy degrees, for one to ten or fifteen minutes, is valuable in many conditions, such as hepatic and splenic congestion, nocturnal incontinence in children and nocturnal emissions in young men; in uterine relaxation with congestion, in prostatic conditions, and conditions of weakness in both sexes. Remember, it must never be used in inflammatory conditions. The hot foot-bath should be used at the same time. The *hot sitz-bath* at 102 degrees, gradually raised to 115 degrees, for three to ten minutes, taken in conjunction with the hot foot-bath, is of great value in restoring the menstrual function, when it has been stopped by chilling or otherwise. It is also valuable in relieving hemorrhoids, uterine colic, neuralgia of the testicles, ovaries and bladder. In kidney colic it is a powerful measure for the relief of pain and congestion of the pelvic organs in general. The water of the bath should be cooled off gradually and the parts rubbed vigorously to avoid chilling.

The Compress.— The moist compress is very valuable, and consists of the application of water to the body, at any temperature, by means of a cloth or other substance. The flannel cloth holds its heat longest. In hot applications always cover over with a heavy dry cloth or rubber sheet, to retain heat and moisture. *Cold compresses*, fifty-five to seventy degrees, to the thighs and lumbar region, are useful in uterine hemorrhage and hemorrhages from the bladder. The cold compress is invaluable sometimes in hemorrhoids. A cold compress to the upper spine, between the shoulders, and to the face will control nose bleed. Hemorrhage from the kidney is arrested

by a cold compress to the thighs and perineum, together with a hot fomentation ten minutes over the lumbar region. In anorexia, or loss of appetite, the ice-bag or cold compress over the stomach for twenty minutes before meals is very useful to increase appetite in those not too feeble to stand it. A cold compress around the neck is a fine means of relieving cerebral congestion, also to relieve chronic sore throat. In acute laryngitis the bandage should be wrung out of water at sixty to seventy degrees, and covered with flannel only, and should be changed before it becomes dry. In chronic laryngitis wring it out of colder water and cover with rubber, and when taken off rub the part with cold water or alcohol; protect by a dry bandage for a day or two after. In both above cases the inhalation of hot water to which has been added menthol, five grs.; camphor, five grs.; comp. tr. benzoin, fifteen minims, to pint of hot water, inhaled carefully from a pot with a spout, or an inhaler, is very valuable. Flush the bowels in both cases. The tendency to general chilliness must be watched, and if it comes on, at once take a hot foot-bath. Cool compresses may be employed to influence the circulation in the different organs of the body, to produce cooling and for a tonic effect on the organ itself.

It is well to note that the very young as well as the very old can not stand well extremes of temperature, either in the atmosphere or in bathing. Neither can those who suffer from heart disease or who have a tendency to apoplexy.

CHAPTER XVIII.

EXERCISE AND ITS VALUE.

The sedentary stretch their lazy length
When custom bids, but no real refreshment find
For none they need; the languid eye, the cheek
Deserted of its bloom, the face is shrunk
And withered muscle and the rapid Soul
Reproach their owner with that love of ease
To which he forfeits e'en the rest he loves.— *Cowper.*

Exercise is most conducive to health and bodily improvement if used judiciously, and deference is paid to the condition of the body at the time and its need. It is a known fact that all parts of the body waste if not exercised, and it is also true that over-exercise will exhaust and destroy the vital force. And yet all muscles and organs grow in strength and power if properly exercised, and keep their tone. The thing to do is to get the happy medium and avoid violent exercise, unless in the condition to stand it and accustomed to it. It is a known fact that most of the greatest athletes of the day have broken down and become a prey to heart disease and tuberculosis; and why? Because the muscular system was exercised at the expense of the general vitality. If they had cultivated the power of the vital organs and muscles at the same time this would not have happened. Doctor Winship developed such wonderful muscular power that he could lift 2,700 pounds, and then died of prostration; he lost the balance between the vital and general muscles. But this need not deter any one from using exercise

judiciously, for so used it is the great balancer of the blood supply and nutrition, and also of the circulation of the body. Active exercise should never be taken directly after meals, as the blood is drawn from the stomach to the muscles and digestion robbed of its supply and action delayed. Judicious exercise shows its great value by balancing the circulation and restoring equilibrium of blood supply; e. g., when an organ like the brain is at work, as in people doing a good deal of brainwork, the blood flows to it, and if continuous it is flushed with blood daily, so there may be danger of not getting rid of this surplus blood, or congestion. In exercise we have the safety valve; it draws the blood to the muscles and the brain is thereby relieved. We see the same in the overworked digestive organs filled with fluid and blood, and, as in the intestines, there are no valves in the veins to help the blood along. Here again exercise is of value after the meal is digested, to move along these fluids and get rid of the excess, and then bring it to where it is needed, relieving the congestion, keeping it moving to purify the stream. But we find if these two organs are used freely at the same time, the individual suffers considerably; one should rest while the other works. Another good effect of exercise is that oxidation goes on more freely and combustion is increased, and consequently there is less clogging of the system; at the same time the muscles are themselves benefited by the exercise and vitalized, and the food which has been digested is distributed. Violent exercise of too severe a character usually proves exhausting to most people; it proves an

exhaustion of nervous energy, which robs the brain; but if the exercise is graduated to the requirements of the system it is a great aid in restoring and keeping in good health. We find that our food may be ever so well digested and nutritious, but, as we have said before, exercise and fresh air are needed to facilitate its passage to the parts of the body where it is needed; if not it is retained in the organs and deposited as fat, and thus may clog some organ or part, and ill health ensue. This is one of the great causes of obesity. These fat people always claim they eat so little and exercise so much and yet keep fat, which is contrary to nature. Nature's plan of unceasing activity, but not drudgery in work, as in exercise, is according to a wise law. It balances and stimulates our muscular growth and keeps the circulation equalized. The benefits resulting from active work, as in exercise, are that it strengthens and develops the muscular system, quiets the nervous system; more food is taken into the body, which is nourished better by it, followed by more vigor, increased digestion, better assimilation of food and sounder sleep.

There are those people in the world who are always complaining of work, in contradistinction to those who can afford to be idle, never realizing that work, if not too severe for the body and mind, is most healthful and beneficial, and tends to mental happiness and physical strength; while idleness tends more quickly to degeneracy and disease. General Gordon, of England, so wisely remarked when laid aside that no one knows what a blessing work or occupation is until taken away from us. And who

of us has not experienced vividly just such feelings? If we work alone for the dollar without any love for our work, it will be drudgery indeed; so earning our bread by the sweat of our brow has turned out many times to be a blessing in disguise; it gives a certain zest to life and helps us appreciate more what we work for. It is only the drudgery that palls. As we have said above, it is not work that kills and wastes tissue and enfeebles the nerves and brings about discontent. The word labor in preference to work is an unfortunate one; it sounds exactly like drudgery. There is no one in life more miserable than the man who has lost interest in everything and has no real object in living. The busy man and woman has less time for worry, cares, anxieties or gossip than the unoccupied, disinterested ones have, and is much happier. Ignorance, anxiety and laziness kill more people than useful work.

This machine of ours was made to endure considerable, and much more, without injury to it, if our work is done with little or no friction or tension and with an amount of enjoyableness and pleasure; for work is noble, and no labor is low if done in this spirit. Moderate and regular physical exercise favors mental work, but a combination of mental and physical fatigue at the same time is what exhausts. There are many who die from overwork, but it is more often overwork at the dinner table than in normal work of any kind.

It is violent muscular fatigue or laborious exercise that the man who does mental work must avoid, for he is burning the candle too rapidly at both ends. Professor Parkes made the statement

some time ago that we can form an approximate idea of the daily exercise a healthy adult should take without incurring the risk of fatigue, and this he assumes would be equivalent to a walk of nine miles. But no doubt allowance must be made here for other exertion incurred, as in the activities of ordinary business life, for in some cases it is very considerable. I know of cases of men who have used speedometers to test the amount they have traveled, and find it averaged over fifteen miles daily. So one can see if nine miles were added to this it would be exhaustive exercise indeed. To show the difference in exercise when walking alone and when loaded, it is calculated that walking one mile on the level unloaded is equal to lifting 17.67 tons one foot, but if carrying a load of fifty to sixty pounds it is equivalent to lifting 24.75 tons one foot.

Exercise persistently and judiciously conducted, as stated, has a marked and beneficial effect on the digestive system; the appetite is increased and the food taken is better digested and supplied to the system and makes better blood; but when followed by exhaustion and fatigue the appetite and digestive powers are decreased and heart action lowered. We frequently see numbers of young men confined, as bank clerks, cashiers, etc., unprepared and not used to exercise, start off for a trip to the country and undergo great exertion, and when they come back make the statement that their vacation has hurt them and they are exhausted and tired out and used up. This same trip, with its exercise, would have done them all the good in the world if they had gone at it easier till accustomed to the change; for we

have seen the effect of violent exercise on the circulation and respiration — evidenced by the shallow, gasping respiration and irregular pulse that follow violent and injudicious exercise before the person is used to it — is enormous. Exhaustion from overwork can occur to the muscles as well as to the body in general, when there will be loss of power, irregular, painful contraction, trembling and cramps. The force generated in the body is from the food we digest, and those doing much physical work, as stated in chapter on "Food," must use foods containing considerable nitrates, or flesh formers, as well as combustible foods that produce energy quickly, as fats, starches and sugars. The high force value by combustion of fat is nearly double the amount furnished by similar weight of either albumen in the form of meat, or starch. The varieties of exercise may be graded according to those using certain sets of muscles; e. g., in walking and running most of the exercise is confined to the muscles of the lower limbs, though vigorous walking exercises most of all the muscles of the body, and especially if in walking we use the military gait, chest out and stomach in. Rowing gives exercise to the upper limbs and trunks, also to the legs. Swimming and climbing and dancing exercise nearly all muscles equally vigorously, and increases breathing capacity. Cricket, baseball, tennis and football exercise muscles of the upper and lower extremities mostly. Most of the exercises spoken of increase the action of the respiratory and circulatory systems, and, like all exercise, causes more oxygen to be introduced into the system to burn up the waste of food and

make the carbon dioxide pass out of the system readily, and so better purify the blood. To show the value of exercise in increasing the inspired air, Dr. E. Smith made a table which showed that, taking the lying position to represent 1, in standing it rose to 1.33; walking moderately at one mile an hour, to 1.9, and at four miles an hour, to 5; riding and trotting raised it to 4.05, and swimming to 4.33. In the increased action of the breathing apparatus we find the number of respirations, or contractions and expansions, increased. In the healthy adult these respirations are sixteen to eighteen to every pulse beat, or one to four.

In active exercise like the preceding the respirations are often increased very much, even to thirty and forty, especially so if one is not accustomed to exercise; and one then does not get the value out of exercise as when one has become used to it, or exercises regularly each day. Then the arteries of the body become accustomed to the strong action of the heart and it does not act as so much of a strain on them; and so with the breathing power (see chapter on "Breath and Breathing"). One should be careful to go at exercise easy at first, until the heart and lungs are used to the change, for if the heart is not strong this might cause dilation of its walls and blocking of the heart. This is seen every year as we hear of sudden deaths on ascending the Alps, or some such height, when not used to exercise. This shows us all the more the value of keeping up deep breathing and being accustomed to some exercise daily.

Even our gymnasiums have ruined many a boy

put to too vigorous work for his heart to stand. I have seen many such cases. Only last year two fine-looking boys, doing gymnasium work, came to me to look them over, and I found a brachial aneurism in one and a femoral in the other. We must remember a chain is no stronger than its weakest link, and had these boys known what they needed no such results would have happened.

Swimming, rowing, lawn tennis and basket ball, as well as housework, have proved valuable exercises for girls and women, and is tending to add to their health and strength. There was a time when walking and dancing seemed to be the only exercises to which they could aspire. The great aim that we should seek, and seems to be lost sight of in most exercises, or sets of exercises, is that we must keep an equilibrium or balance between the two muscular systems, the visceral, or vital, and those to the extremities, and little attention has been devoted to the preserving of this balance between the muscle energy that supplies and the energy that wastes; e. g., there are muscles that quicken the supply of the blood and develop more life, and it is this we want — nourishment and blood. What manufactures the blood? The vital organs and their muscles are used to quicken these organs. If we aim to strengthen these organs through these muscles we will increase their activity, while we are developing the other sets of muscles and balance and strengthen the system in general, thus preserving the balance between the energy that supplies and that which wastes. It is not necessary to have all kinds of paraphernalia for exercise, as clubs, dumb-bells,

rings, bars, etc., to evolve a Hercules or a Winship; but let us develop — as the Greeks did into the best-formed and most graceful people of olden times — and get the best of all results without embarrassing the heart's action or disturbing the harmony of the system.

The true object to be attained, then, is not to see how much exercise we can take and develop monstrous muscles, but to take sufficient daily and of a kind to secure for us true physiological benefit; and to this end any system of easy, graceful movements that develop symmetrically all parts of the system, including the organic muscles, is what we need. In this way we will strengthen the centers while doing the same to the surface muscles and balance the two. At the same time we will balance the equilibrium between the different nervous systems, as the spinal cord, the center for influencing the muscles of motion, and the sympathetic and pneumogastric nerves, the centers for influencing the organs of the body. In many systems of exercise the aim is to develop the muscles at the expense of the vitality, paying no attention to freeing the surfaces and strengthening the organic muscles. If the above idea is carried out there will be no embarrassment of the system, no friction and less waste, and greater freedom and ease of movement and no exhaustion, but an upbuilding in every way.

An hour of judicious exercise daily, divided up so as not to tire one, of walking and special exercises, with plenty of deep breathing (see chapter on "Breathing"), for the man who has almost become an invalid through his indoor, sedentary life,

is invaluable. While he is now sallow, tired, sleepless and weak, he would grow happy in finding his physical change had changed his aspect of the whole world to him. Especially would he find this so if he would open up his soul to the wonderful influences of nature surrounding him everywhere, get out into the open, away from the city, once in a while, and listen to the murmurs and whisperings of the woods, the friendly voices of the birds, and breathe in the wonderful vibrations of nature all around. This is one grand way to banish our discouragements and grow with nature's strength, for here we see nature's grandeur, her beauty, her peace and calm, for the time we become part of it and long to be like her, and make up our minds to enjoy life more as we go along.

EXERCISES.—I append a few exercises, both general and vital, of great value. The value will be seen in their continuous use, and when dropped a few days one can readily see what has been accomplished. These are sufficient for all purposes. Begin at first three to five times each until used to them, so as not to overtire; they can be increased gradually to twenty times, morning and on retiring, so as to increase the vital effect:

1. (a), Arms stretched out from sides of body at right angles. (b), Then up till they approach together over head. Firm and relax all the muscles concerned.

2. Raise hands from sides till they approach each other over head; then perform a circle over the head with both hands, first one way and then round the other way. This exercise raises and

strengthens the organs of the pelvis as well as the chest.

3. Push arms and hands out from the front of the body, pushing down and out, and at the same time press head and neck back firmly. This exercise strengthens and lifts the organs of the pelvis.

4. Standing in the erect position, raise on the toes gently and then on the heels; rock forward and backward as far as one can go without losing the equilibrium. This exercise has a fine effect on the central nervous system and is valuable in nervousness.

5. Raise hands up and extend, bending the body till the arms approach the floor.

6. Backward bend, hands lightly on chest; carry head backward and down on back easily.

7. Reaching-out exercises. Reach out on left foot, left hand extended, and reaching out with right foot, opposite movement with other arm and leg.

8. Bend the body from side to side, first to left, then to right, to act on stomach, liver and intestines.

9. In recumbent position, raise head and trunk upward and forward several times from the bed. This will strengthen muscles of head, neck and stomach. Gently percuss the muscles of the stomach when tense to increase the circulation of the digestive organs.

10. In same position, draw up feet and legs a ways in bed, and raise stomach and hips well up, resting on shoulders, very slowly up and down. Valuable for digestive organs, increase activity.

11. Hands on hips, twist the body around to the left, then around to the right. This exercise

affects the loin muscles, lifts and strengthens liver, stomach and intestines. The loin and twisting and lifting exercises spur an inactive liver and stomach to better perform their functions and secrete more freely both bile and gastric juice.

CHAPTER XIX.

RELAXATION AND ITS BENEFITS.

The previous chapter dealt with exercise and activity, the catabolic or breaking-down process, and yet this activity is the source of growth both mental and physical. This chapter will deal with the anabolic or building-up process, in the form of relaxation. This part of our life has not received the attention it deserves, as it is one of great importance and does wonders for us. We all know if the muscles of the body were continually under tension or contraction the human machine would soon wear out. At times when we are at high tension, how rapidly the muscles tire and exhaust, so that we are impelled to rest in order to fill up again and restore the tone of nerve and muscle. It is a known fact that a great percentage of nervous troubles are due to this very exhaustion.

It is this ceaseless activity of brain and body, without any true relaxation of either, that causes such exhaustion. Most of such people are excitable, irritable and emotional, under a strain all the time, and seem to keep up such conditions until exhaustion ensues and they of necessity must lay up a while for repairs. They have been using energy far beyond what they should and no recuperation; quite a contrast to the one who has cultivated a calm and controlled mind, and who does not allow the mental condition to run away with him; who represses mind and body and keeps down tension. Some get

it by nature, others have to acquire it. The former person can not sit in a chair without rocking vigorously, or tapping on a table, moving the feet or chewing gum; it is evident there must be a tense condition of the muscles. In the latter they can sit still and keep still, and seem in repose and get a great deal of relaxation, while the others get none.

It is not the energy rightly used that exhausts us, but what we waste in our tense condition over and above what we should for actual work; in other words, foolish waste that exhausts. A test made with a number of persons in picking up a pin revealed that they used as much energy as to lift a crowbar. This is why so many of our business men who have very responsible and trying positions die so early; they become so fagged by working at this high tension, and then resort to stimulants or tobacco, with the idea of supplying the waste that rest and relaxation only can give.

In the home life of woman this is kept up. She works at high-tension speed, worried over her work and trifles of no value or that do not belong to her, the unessentials of life. Look at the time and care given to talk over other people's affairs, gossip, and the exhaustion and tension in shopping. Some feel it as exhaustive as two or three days' work at home, all because done at high-tension speed; it is in the air; it seems catching. This condition of tension that we meet so much in our business life, that has been spoken of before, needs to be opposed and the opposite condition of relaxation cultivated.

It is said the United States has brought the art of work to perfection; in this respect there is no

country like the United States, the factories are more efficient than those of any other country.

On this very account and the hurried way in which we do our work, we are the most overstrained and tired nation on earth, the most restless and most active.

Now since we have mastered the art of work so well, we must learn to have our seasons of relaxation and rest and play or we will become a nation of physical wrecks. A gentleman who came to this country in the steel interests from Australia, bringing a letter of introduction, said he had visited a number of cities on his way here and was struck with the mad way every one rushed around, and when he inquired the reason was told it was Chicago push. He replied, " That may be so, but look at the energy wasted, and what is accomplished by the mad rush and nerve-racking way of doing business? "

Even in our attempts at pleasure we show the same spirit. Look at the excitement and intenseness of baseball, the tango craze, the card craze, the automobile craze for speed, the golf craze to cover a large course in a given time. In all these pleasurable affairs how little real relaxation and leisure, which we need so much!

We return again to nature and see the perfect relaxation exemplified in young children and in animals. The cat is certainly typical in repose, graceful and easy; no contraction of muscles until needed, and then they are shown to perfection; e. g., if in repose the cat should see a mouse, 'tis then we would see the magnificent play of muscular activity.

The animal, unlike us poor humans, does not waste energy till needed. If left to themselves and not teased they do not fidget and fume and fret; this of course they do if made angry. Many persons get as much or more rest out of perfect relaxation than out of sleep, especially the nervous, who can not relax, and who are described in the article on "Sleep." In mastering this subject we will plainly see the effect on mind and body, restraining and quieting them both. You have often heard the expression, "Says I to myself, says I"; so here we can do the same and use the words "let go" to the body while commencing to relax; in other words, try and put your ideas into execution.

Method.— Lie down in the recumbent position and relax and let go all the muscles; then when you feel you are pretty well relaxed, let the mind go all over the body and find out the muscles that are still tense, and let go of them one after another. You may find it hard at first to get them under control; but persevere, and you will find when under perfect control the brain and nerves will seem to get profound rest and a sense of quietness and good feeling steal over the body at large. You will notice your breathing is quieter and deeper. Take a few deep breaths, remaining relaxed; you will seem to enjoy the deep breathing. Try this same relaxation when sitting or even standing at times; you will grow used to it and enjoy it. It is better than keeping the body so tense and tight. Under such conditions you can do much more with greater ease and freedom and with far greater enjoyment. Like everything

else, time and patience are required to develop this faculty to perfection. It is this relaxation that causes profound sleep. You can relax different parts of the body at different times, as I have seen people doing without thinking, while talking, swinging one leg limp while standing on the other. This can be done with value to every dependent part. It is this relaxed condition that makes a child so seldom hurt in many falls, and the drunkard also, for his muscular system has lost its tone or is semi-paralyzed, and he falls without being hurt. Many of the nomadic or wandering tribes seem to have learned this to perfection, and consequently are able to travel journeys that surprise us. We civilized peoples who keep ourselves at such tension seem to have lost this, like a good many things nature gave us, and we have to learn it over again.

Mental Relaxation.— After relaxing the body in an easy position close the eyes and try and withdraw the mind from objective things and cease any active effort to think of anything. These blank moments are wonderfully resting and recuperating.

Nervous Tension.— Those who are too nervous to lie down, and can not at times, let them sit down in an easy chair in a relaxed position and cross the right foot over the left and interlock the hands over the abdomen. When nervous this position will prevent the leakage of nervous force from the body and quiet the person trying it. Assuming the above attitude after the last two meals of the day is a valuable aid to digestion, balancing the blood in the brain, removing congestion and resting the body generally.

EVENSONG.

Oh, weary hands and head, that all the day
Have labored hard and long,
How softly falls the shadows grey
Of evening's quiet song.

A short while ago the golden sun
Sank in its beauty in the West;
And now, tired hands, your toil is done,
In peace to rest, sweet rest.— *W. D. H. B.*

CHAPTER XX.

THE CONTROL OF OUR ENERGIES.

In the control of our energies we must understand that this body is simply an instrument for our own use, and not we to be used by it. It is to be refined, used and trained so as to be fit for our highest purpose, and all means tending to its better upbuilding should be encouraged. The body is for right use and not abuse. If trained rightly it will get into good habits. If we compel it to obey us as we should, it will grow quickly into better habits, and then will continue in the new method automatically and improve.

If we are careless and exercise no supervision over our structure, and the particles with which it is built, taking anything and everything, we would be like a careless builder who would use any and all kinds of rubbish to build his house, instead of the purest and best of good sand and lime, which makes good mortar, or, better still, good cement, to make walls solid. Then instead of waiting seven years for the body to be rebuilt, it will be done quicker and of better material. We have in our bodies two kinds of microbes — the malign, or those tending to destroy the body, and the benign, or those that promote health by destroying effete matter. If we would increase the power of these benign defenders of our organism and shield the body from the inroads of disease, we would not take into our bodies articles that decrease its power, as poisons,

liquors and tobacco. The wiser we are in this care the better.

It has been said the body in its desires would be our master until we make it recognize we are, when it will begin to obey our orders and go the right way; so habits as they are good or bad can be a help or a hindrance to us. Our desire nature must be kept in control.

Human efficiency means for us to make the best use of our powers, and as we have considered this along the physical line we will now turn to the mental to get the right control of our energies, for, as I have stated previously, mind and body must move along together as a unit to get the best out of life; and how can we expect to make any sort of headway if we do not do so? It resolves itself into the question, how? The better we know the laws of our organism the wiser will we be in the use of our energy and its waste, and the more will we follow Nature and not force her into methods foreign to her own. The normal individual, with a surplus stock of energy, can labor hard perhaps for a long time without feeling it; but if he is living under abnormal conditions he does not keep normal long, unless he uses great prudence in dealing with the stock on hand and gives it a chance to accumulate. The normal man can draw effectively on his resources because he has them to draw on. There are some people who have considerable resources, others who have little by nature, and still others none. What is the reason? It is because they have drawn upon them extravagantly in one way or another without limit for

years; when they needed sleep and rest they kept on till exhausted and sleepless, and then took something to make them sleep. When exhausted, took stimulants to keep them up. A little forethought would have shown them the unwisdom of this step; but it was not until they paid the penalty that they began to think. Nature is a safe guide to follow, and gives us warnings which, if we heed, we will understand.

While we are making a readjustment between the body and mind in overcoming conditions, we need to keep a firm and bright mental attitude, knowing that the tendency of health is always upward if we let it be. We must learn sooner or later that there is nothing so ruinous to body and mind as giving full play to unchecked emotions, as fear, worry, jealousy, anger, hatred, anxiety and nervous excitement. Emotional excitement, continued for any length of time, produces a temporary congestion or dilation of the small arterioles of the brain; when the excitement subsides they contract, but rest is required for the recuperation of the wasted nerve force; but if the dilation of these blood vessels is continued and stimulants used at the same time, so much the worse; it may cause rupture of the coats of these vessels in the brain, which we call apoplexy. Before such conditions come on there is considerable warning. The shock of a fire or of a death has produced paralysis; but so has the same condition been produced by the opposite; e. g., exciting news of good fortune, as a raise in salary or in position, or an unexpected fortune being left.

Hope and courage increase the action of the

heart, while fear slows and depresses it. The play of the emotions mentioned above has more to do with exhausting the system than hard work, either mental or physical. These emotional states act on the nerve centers as a series of shocks, provoking intense discharge of nervous force, partially paralyzing nerve action for the time being. Solomon says: "Hope deferred maketh the heart sick, but a merry heart doeth good like a medicine."

We must realize that to control our passions and emotions means to strengthen both mind and body. It is a secret we must learn sooner or later, for these emotions and states are all amenable to the control of our will, and not only can the emotions be controlled by the mind, directed by the will, but the mind as a whole can be improved greatly by this training and many desirable qualities acquired and undesirable ones eliminated. We must go deeper and penetrate beyond the disturbed centers to the cause, and then we will get the knowledge to overcome and learn these emotions by putting them to better use; in other words, if we take more time for reflection we would have more knowledge to control, and consequently spare ourselves many things we now try to escape. The persistence in overcoming will lead to a time when things will come easier as the will grows stronger, and the calmer we can keep the more power we will possess over our emotions. If these emotions are used in the wrong way, as in anger, it is only power in the wrong channel going to waste, to injure in return. Our desires are our most enslaving emotions, and consequently the Buddhist says, "Kill out all

desire"; but desire is the effort by which we grow. Therefore the only way for us to do is to face these desires, know them, restrain them and press on; but to restrain them means to deal as if prepared to fight to win, for our greatest efficiency means to us to master and govern the activities of mind and body, and, controlled, this means a bad habit turned into a good one. The struggle in our desires is like that of the drunkard with the curse of drink enslaving him. It seems at first as if it would destroy him, mind and body. But once having seen its evil, his hatred for the habit becomes strong, he asserts himself with all his mind and rises up like a giant, a changed man, passing it by in defiance, happy in the great change. So it is with all our desires that hold us so strong; we awaken into self-consciousness with a new will to govern and not be governed by them.

It is said that man is a bundle of habits, and once ingrained they become as second nature, and we think them part of our existence. Unless uprooted they are like the parasite that covers the tree. We see these habits in communities as well as in the individuals, and it takes the strong mind and free thinking ones to free themselves and see what is best for them; e. g., some people, like the German and English people, think they must eat four and five times daily. Americans think they must have three meals, followed by supper. Other people require but two meals. Some sleep a moderate amount, others a great deal. Some people get into the habit of wearing a large amount of clothing, others very little. Some dress for looks, others for

comfort and health. There are those who stay up till the small hours of morning, going to bed only when tired out. Some are satisfied only when under excitement, seeking pleasure outside of themselves, where in reality true pleasure is not found. Others have the habit of seeking pleasure under stimulants and sexual excitement, and learn their lesson only through some sad experience. We must get away from the sensual to the higher ideals of life to grow. We may inherit tendencies; this is seen very marked in children, who frequently grow more by imitation than by precept; as we would say, "A chip off the old block"; e. g., we often hear it remarked that the child inherits a nervous temperament, bad temper, depressed chest, round shoulders, and when we watch carefully we see this chip imitating the old block until he has grown like the father or mother in all their characteristics, and imitates even their tendencies. So this hereditary tendency can be outgrown if the parents are watchful as they should be; it is far easier at this time than when it becomes ingrained in them. Mental pictures and impressions made on such young minds sink deep and become an agency in forming the character. The human mind is a very sensitive receptive film, and especially so in children, even more so than the photographic plate, and can be worked on in all sorts of ways until the time a strong will has been developed to overcome such things.

We did not start our lives with a will as we have it now; it has gradually grown with its strivings, conflicts and impulses. In some it has grown

much stronger, because environment and conflicts have called it to action much stronger than in others; in various business relations many things call it into greater activity and show its greater necessity than in others. It is said our imagination runs riot with us, and yet it is this so-called riotous imagination that has pictured out to us in the mental what we could not see in the physical until it is harmonized in both.

To a great extent our imaginations take their clue from the tone or prevailing tendency of our lives. If our lives are sensuous, the imagination is responsive to the sensuous pictures on which it feeds and is lowered. Otherwise the imagination is highly creative when it helps us to attain high ideals, as in art, literature, architecture, music, the professions, etc., and helps us arise. Like the emotions, they need checking and governing. This will give us power over both our emotions and desires and help us to keep them well in hand, all of which means development in our greater efficiency in life.

One great writer made the statement that a man's purpose in life gives him a standard by which to measure the opportunities open to him. This is so to a certain extent; nevertheless his training has a good deal to do with it, as well as the opportunities presented. Some have greater power after studying the situation to adapt themselves to it, while the man who lacks power of adaptability may be greater in other ways. We must not overlook hereditary tendency along these lines, as it has a wonderful effect on us. But steady and persistent application counts for much in our mental growth and develop-

ment. What we are contending for in this chapter is that there is an easier, surer way to become efficient in life by acquiring mental and moral control of the habits discussed, which tends to broaden our life through the training received and leave us more receptive to the good that comes our way.

The more we look into the mental concept of life the more we find the destructive or low ideal, with its downward tendency exemplified in such life-destroying emotions as grief, despair, hatred, worry, anger, jealousy, fear, lust, etc., and the constructive or building-up tendency typified in high ideals, as joy, hope, love, peace, good will, cheerfulness, courage and faith. And these are, after all, unselfish traits, looking for the good that can be found in nature and mankind alike.

Herbert Spencer in his "Data of Ethics" states that there exists a primordial connection between pleasure-giving acts and continuance of life, and by implication between pain-giving, low acts or decrease and loss of life. Out of the above list of life-destroying emotions mentioned comes pessimism, unhappiness, depression, despondency, jealousy and selfishness. Out of these we must grow to a larger life, as the effect is marked upon both mind and body alike. The effects of the above emotions on the body are interesting to note. They are round shoulders, depressed chest, sagging movements of the body and uncertainty in gait. The thief crouches. The weak person allows the body to sway from side to side, while the treacherous person wiggles like a snake. The upright man is a man that walketh uprightly and carries the body with dignity.

CHAPTER XXI.

THE PREVENTION OF DEGENERATION AND INSANITY.

The prevention of degeneration and insanity is a subject of the greatest import to mankind, as it means so much to the happiness and well-being of present as well as of future generations. When we examine into the cause of wrong-doing and inquire into the nature of moral degeneracy we find room for interesting scientific research both by the physician and metaphysician. This subject might come under "eugenics," or the science which deals with all the influences that are for the development and improvement of the race.

Among the many causes may be enumerated hereditary predisposition, intemperance of all kinds, mental anxieties, uncontrolled passions, worry and fear in their protean and ever-changing aspect, in conjunction with an extremely weakened will and unhealthy body. Environmental and psychic influences, consanguinous or blood marriages, and great disparity in the ages of parents all unfavorably influence the children, as do morphine, cocaine and similar drugs. *Hereditary influences,* or tendencies in causing insanity, seem to prove a powerful factor. The tendency may be strong or weak and not so as to be noticeable until something seems to call it out, and the will, becoming weakened, gives way. Reckless marriages of people, without duly considering their mental and bodily defects and the tendencies of both in this direction, with no sense of responsibility for the children brought into the world;

the miseries and deformities entailed would lead one to think that man in this respect does not reason or care about these matters as carefully as he does in breeding a high class of animals on his farm. He takes advantage of desired qualities to produce high types of these animals, but it does not trouble him how the human race can be improved, either his own or others. Present gratification outweighs these higher motives in his selection and warps the judgment and knowledge that should teach him different on reflection.

While it would be useless to lay down rules for marriage, according to more sober reasons, nevertheless there is definite knowledge we must make use of, for we know that if care is not exercised along these lines deterioration will take place in the coming generations, if there is not training of the will and evil tendencies go unchecked. If space permitted we might tabulate the results from generation to generation.

There is a well-defined relationship between alcoholism, insanity, venery and crime, as alcohol obtunds the moral sense and favors a careless disregard of consequences.

Intemperance.— If mankind in general were to give up alcohol and other excesses and live temperately there would soon be a vast diminution of insanity and crime in the world. While in some, or even many, cases alcoholic beverages medicinally may be of value, its indulgence occasions much misery, crime and disease, and the evils in higher and lower social life that can be brought back to its door can hardly be computed. A taste for alcoholic

drinks in the beginning is to be acquired, but once acquired it takes hold of the young and old in the most insidious way and gets a grip that is hard to shake off, weakening the will, makes the person so vacillating as not to be able to say no, so he gives way each time to its effects, and as the thirst increases the will still weakens and the moral degeneration becomes greater as time goes on. The percentage of causes of insanity tabulated are: Alcohol, 28.9; syphilis, 15; dope, 15; nervous conditions, 5.

It is no wonder the effects are so great when we consider how alcohol is carried into our business and social life to such an extent they seem inseparable.

It is on those of a sensitive temperament that the harm is greatest, as they are most susceptible to its influence and fly to it when jaded and tired and when in need of rest and nutrition, thinking it will give them more nerve to meet some strain or trial in their life. It proves a habit, poor indeed to meet the emergencies of life and hard to escape from when the habit is acquired. Probably more young men and women are ruined and changed in life by dance halls where there is access to liquor than by any other form of amusement. The emotional effect of the music coupled with the stimulant leads to wild extremes, and soon the beginning of a downward life is seen.

Consanguinous Marriages.—Consanguinous marriages, or marriage of near relatives, on account of the accentuation of family weakness or defect, is the same on both sides of the parents. This risk

increases as the deviation from normal does, and the weaker rather than the stronger tendencies are apt to be transmitted to the children. Many marriages of near relatives have not proven bad; when both parents are in good health mentally and physically the offspring has grown up the same. On the other hand, persons of no kinship, but both inheriting weak bodies or strong morbid tendencies alike, should not marry, or, if they do, should strive to change these tendencies so that they will not be accentuated in the offspring. Heredity means the tendencies developed in us up to the time of birth; after that it is environment that acts upon us? The striking fact of the law of inheritance is that like tends to produce like, the tendency to all sorts of characters, bodily and mental, normal and abnormal, and any constitutional or inborn tendency may be transmitted.

Fortunately for mankind, in the selection of mates opposites or nearly so seem to be drawn together, in many cases maintaining an equilibrium. The question of consanguinity is by all means secondary to the intermarriage of disease by the union of two persons tainted by serious maladies. We must take a wider view of the subject than mere consanguinity, for danger is seen much more seriously in the cases spoken of above.

In the modern study of the natural history of disease the physician is getting so he will be able to predict the results of combinations of disease from marriage. A Michigan law of 1899 declares that no person afflicted with certain venereal diseases shall be deemed capable of contracting marriage. Viola-

tion of this law entails a fine of not more than $1,000 or imprisonment for not more than five years, or both. Whether such knowledge will be effectual in the control of results is a question difficult to answer, as it affects the personal liberty question. There are many cases on record of men marrying weak, delicate girls because of a pity which has been allowed to ripen into love, and the offspring suffers.

In the marriage contract of to-day the health contract is the last valuable addition and a great step forward in the salvation of our race and the evolution of the individual. It is a great thing to prohibit the marriage of those unfit, the feeble-minded, alcoholics and those diseased. The outcome will be a better race.

In the marriage of to-day it is usually wealth or standing in the community, religion, race or good looks that seem of prime importance. Health, fitness and compatibility seem to be of minor import, and consequently divorce is on the increase.

Great disparity in the age of the parents frequently brings out strange characteristics and unfavorably influences the children. This may be due to the difference of the thought life of the individual — one at the passionate age, while the other has gotten beyond it and living on a different plane of life. Too often the end and aim of our marriages is to make a brilliant match rather than to blend two lives for individual and racial good.

Divorce.—The new record for 1912 on the divorce question is a sad blot on the good name of Chicago, a city which has set the pace for greater improvement in every way. According to reports

just published five thousand divorces were granted in 1912, out of a population of 2,185,283, while London, England, with a population of 7,251,358, had only 920. The London papers discussed the matter as showing the moral breakdown of its people. If this is so, what in heaven's name would they think of the moral breakdown of the American people? In Chicago most of the divorces were brought by women; in London by men. In this country liberty has developed into license, and has begotten not only a disregard for law, but morals as well. The dress of the ultra fashionable women of to-day has lured men on and has often been the downfall of both; here is one of the potent factors for divorce. If woman would increase her womanly ideals of years ago, when our mothers were young, the change would soon be perceptible in its effect on mankind and in their respect for them, and divorce would decrease. It is to her that we must look.

Morphine and cocaine, so frequently and carelessly given for the relief of pain by physicians, leads to terrible consequences to those who get into the so-called drug habit. The deadly coils so easily drawn around the victim are hard to throw off. There is the much to be deplored idea of people using deadly drugs without really knowing the consequences. Many evil-minded persons give these drugs for the purpose of weakening the will power of young persons and bringing them under their control. Chicago has had several samples of druggists and others dealing out these deadly commodities to any who ask for them, unmindful of the

consequences, and these are by no means the only poisonous drugs that can be gotten in the same way. Our laws can not be too severe in these matters, and, I am glad to see, in this matter are being strictly enforced.

Environmental and Psychic Influenccs.—Environment means the aggregate of everything influencing us after birth, as climate, home, food, clothes, education, amusements, etc.

Among environmental and psychic influences may be mentioned the places in which young children are reared and the vicious influences by which they are surrounded. These influences are seen at their worst in the slums of the city, the saloon, dance hall, and other places of amusement. Places of vice are certainly not calculated to bring out the best in life, especially when we consider the low characters that frequent such places. The modern evolutionist believes the surroundings are the cause of the peculiarities of any organism acquired in the many vicissitudes and struggles for existence.

Crime and sensuality often occur, perhaps oftener than otherwise, from a diseased brain or body and bad external conditions. We do not fully realize how these bad conditions or environment influence the development in character as well as health of these people. If the diseased and irritable condition of the pelvic organs of these people had been properly looked to they might have been saved, both old and young, from a career they have been drawn into through susceptibility they seemed unable to overcome, and parents do not realize these matters as they should. It is a sort of neuroses, grown up,

as such people are, into an almost complete absence of moral sense without guidance, and evoluted by the environment, with nothing to check it. Many criminals are begotten and live in scenes and environment that encourage the growth of vice from their youth up, so that the mind is molded in this way. Any one who has looked into the faces of such people can see their low mental and physical characteristics. But these unfortunate creatures are not so from sheer choice; hereditary influences, sensitiveness to surroundings, special natural affinity and the inclination of their natures and environment have drawn them into it, and so the growth goes on, if unchecked. Strange to relate, among women of seeming refinement in Paris, Chicago, New York and other cities crime is said to be on the increase, and poison seems to be the weapon. "Cesare Lombroso speaks of the crimes of women as having something in them peculiarly odious and perfidious, as she brings into her crime all of the refinement of cruelty and spiteful passion." It is a malady, no doubt, and the neurosis, as before stated, an outlet for uncontrolled feelings and emotions. Life in this, our hustling, bustling age, is not conducive to the best growth of our mental, moral and physical natures, if not watchful. The young especially, as well as those of more mature age, are greatly affected by the companionship, unrest, impure atmosphere, continuous noises day and night, and insufficient nutrition, and the severe demands made on them. These are accountable for many of the conditions discussed. If the intense noises of Chicago alone could be mitigated,

as they might, there would be a great lessening of tension and nervous diseases, and prolongation of life, for these conditions cause great fatigue to sensitive people and depression of vital force, and often lead to alcoholic and other excesses.

Training.— In training for the cultivation of the degenerate and those of weak mind, shall we take the optimistic or the pessimistic view? We think decidedly the former. The pessimistic philosopher, who looks at things from a limited, one-sided point of view, says he is conscious of a fate in life and that fate is man's inheritance. It is the destiny of man's ancestors. Even such an authority as Maudsley says: "No one can elude it were he able to attempt it. It is the tyranny of his organization." He also states that "in criminals the instincts acquire such a power that no subsequent efforts to produce reformation will ever counteract it." Solomon declared the sins of the parents should be visited on their children to the fourth and fifth generations.

The optimist, who sees things in their right relations, believes in the greater power of good. Herbert Spencer said, before his death, that the balance was decidedly in favor of a qualified optimism. We must look to education (from *educo*, to lead out) to unfold, to train mentally, morally and physically, the evolution of a higher individual in all the planes of his being, developing a growth fitted to resist the old, morbid inherited tendencies and overcome the same.

Education as at present deals too much in external routine, running in old beaten tracks, and

too little in developing the power of the individual and his understanding; it has been too much of a cramming process, with too little time for assimilation.

Disraeli says in "Endymion," "There is no education like adversity." While we do not all agree with him entirely, he no doubt realized it brought out hidden virtues and strengthened manhood. We must improve and strengthen the moral faculties by encouragement and moral training and strengthening of the will. In desperate cases we may have to give up the attempt for a time and think we are not succeeding, yet the seeming ineffectual struggles are not time entirely lost. Seed has been sown; we must try again; remember the will takes hold, and the way to new growth and power is by trial and failure. We must have a clear idea before us of what is to be done. A prompt suppression of the wrong will ultimately lead to the right. We must also remember there are volitional and emotional forces prior to cultivation, and also through this cultivation new forces arise. In all degenerate cases begin with the motives and emotions. The controlling of emotions — such as anger, hatred, cruelty and vice, when they have grown long unchecked — by every method within our reach, shows how anger suppressed may be made a power for good and turned into other channels. Continual watchfulness should be exercised in the environment, as this will help out. Cheerful and good physical surroundings, airy buildings, good food, organization, method and personal influence are all needed. But one important fact we must not overlook: See in these cases to

the condition of the pelvic organs and overcome irritation and congestion. Probably there is no better way for growth and control of the mind than by music of a high order. Here we find a source of training and control that is powerful for good, and in uncontrollable cases a grand beginning to focus attention.

To develop and bring out the good in the individual, fear and punishment alone will not work; but by suitable educational training, dispositions that lead to crime and disorder can be checked in early life, and many ways can be found to spur on the growth in preference to corporeal punishment. Let them be filled with new ideas of a stronger life and better principles which will take root and bring forth a new individual.

In this way we will succeed in getting rid of vicious propensities and dispositions of cruelty, stealing and anger. For the evil tendency or craving in the brain we must watchfully interest them in the opposite kind of thoughts and feelings and keep them active each day until they awaken new memories and build new structures and cells in place of the old ones. By degrees the evil motives can be eliminated and new ones grown in their place; opposite memories will engage their attention and more easily control their will.

The real man must be appealed to and awakened into activity; enlightenment must take the place of ignorance; better conditions will be seen when the interior man is put right.

The law of inheritance, important as it is, does not cover or account for all the vagaries of each indi-

vidual. Evil conditions are temporary and may serve their purpose as educational until we are ready for new and higher conditions. As Emerson has stated, "Cause follows effect, means the end, flower the seed, and this can not be changed, as it is law." The effect is seen in the cause, the end pre-exists in the means, the fruit in the seed. We must believe in the evolution of the individual bodily and mentally.

Men show more difference in powers and development than the pupils in the different grades of schools, but the difference is not as great as between two men, one a savage and the other a philosopher. Wrong simply shows a lack of experience along its own line to the perpetrator, and brings the lesson that he needs more education on these matters. Some learn these lessons more slowly than others, until some sad experience may make him ready for a better; in the future he will choose more wisely. When we become more highly developed we will understand this lesson and it will not have to be repeated.

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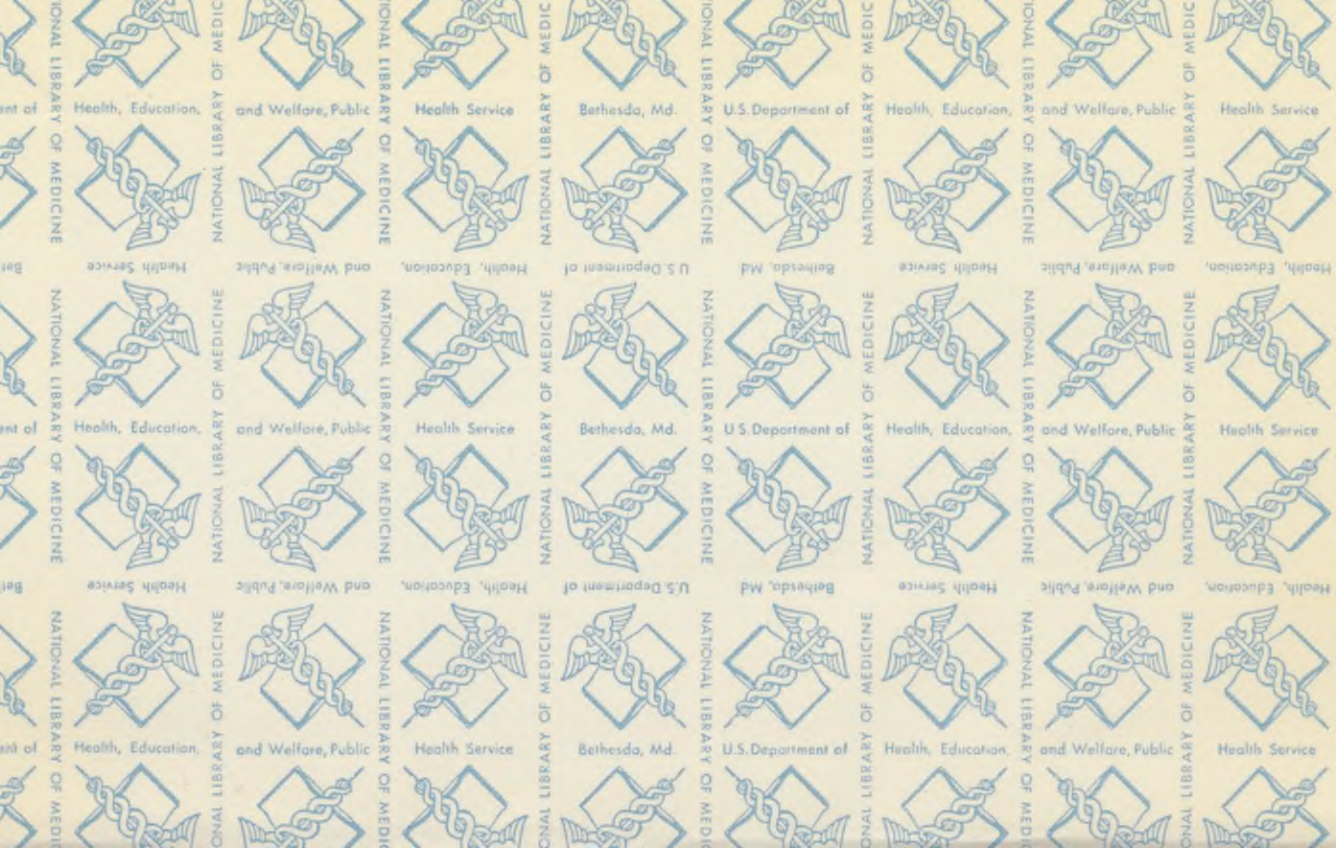
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