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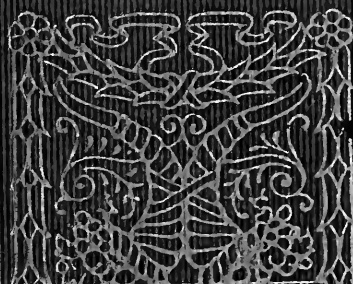
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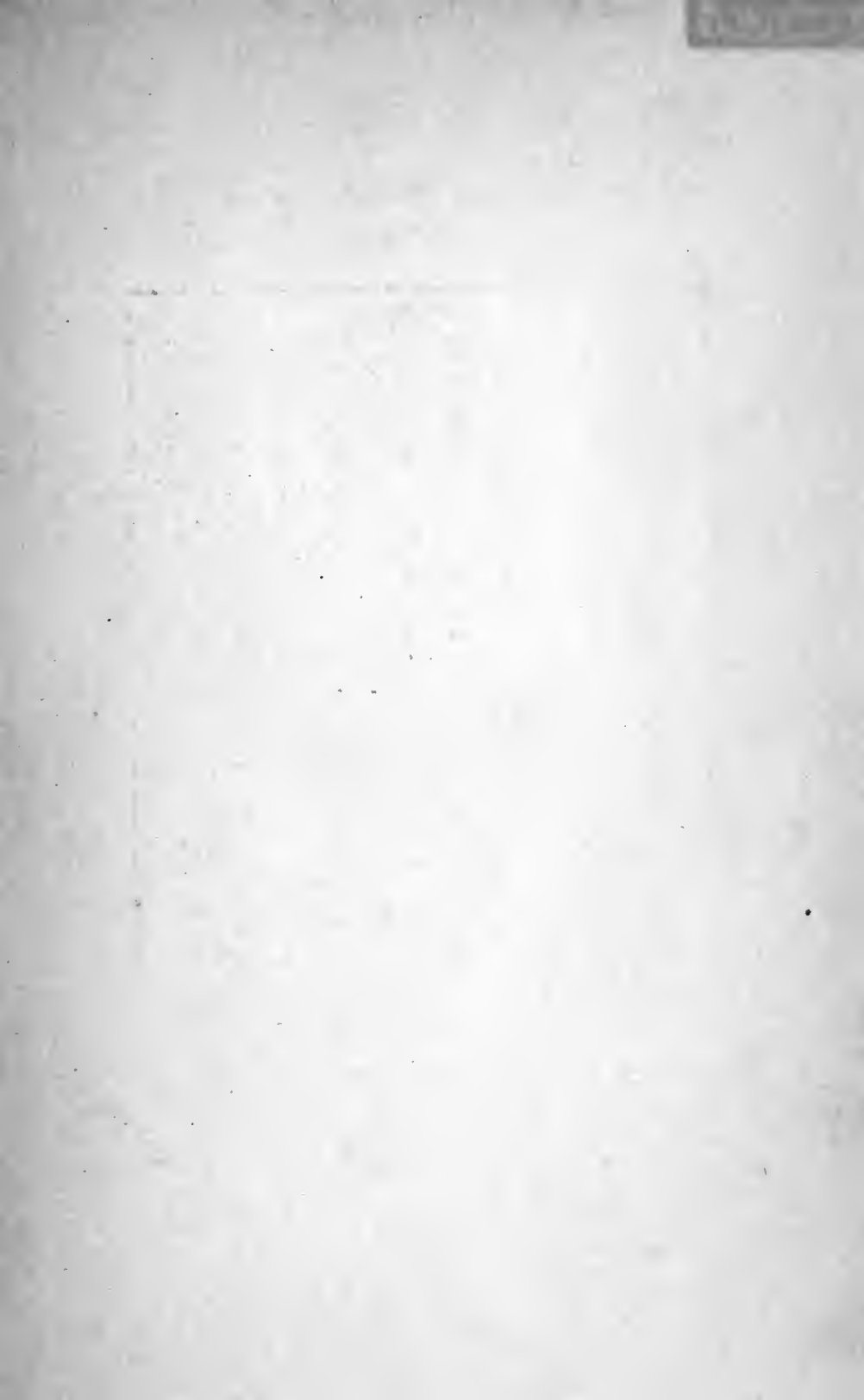
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BY
JOHN H. COOPER
VOLUME I
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KEEPING FIT

BY

ORISON SWETT MARDEN

AUTHOR OF "PUSHING TO THE FRONT,"
"THE JOYS OF LIVING," ETC.

Physical vigor is a tremendous success as well as
happiness asset

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THOMAS Y. CROWELL COMPANY
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KEEPING FIT

I

Health is the vital principle of life.—THOMSON.

Who well lives, long lives; for this age of ours
Should not be numbered by years, days, and hours,

—G. DE S. DU BARTAS.

Nor love nor honor, wealth nor power,
Can give the heart a cheerful hour
When health is lost. Be timely wise;
With health all taste of pleasure flies.

—JOHN GAY.

The thousand little hints which may save or lengthen life, may repel or abate disease, or the simple laws which regulate our bodily vigor, should be so familiar that we may be quick to apply them in an emergency. The preservation of health is easier than the cure of disease.—J. DORMAN STEELE.

Nature demands that man be ever at the top of his condition. He who violates her laws must pay the penalty though he sit on a throne.

Physical vigor is a tremendous success as well as happiness asset.

THE reserve of readiness is the secret of all achievement. The grandest work a human being can do is to keep himself fit for the greatest thing he is capable of doing, the highest service he is capable of rendering; always up to the level of his greatest efficiency.

To keep fit is to maintain perfect health; and perfect health depends upon a perfect balance of mind and body, unimpaired physical vigor and absolute inner harmony, and a calm, mental poise which nothing can disturb.

Every normal human being can, if he will, raise himself to this condition. He can live in such a simple yet scientific manner that he will not only have great disease-resisting power but will also be at the maximum of his creative ability.

When the body is in superb physical condition, it stimulates the mind and develops its maximum of the force that creates, that accomplishes. When the body is down the mind is down, all life's standards are down, and the whole nature is demoralized. No one can be healthy or harmonious with a morbid or pessimistic outlook on life, for this produces physical and mental depression, the forerunner of ill health.

Not only disease catches him whose vitality, physical resiliency and resisting power are low, but mediocrity marks him also, because all his mental standards are down, too.

I criticized a carpenter working for me re-

cently for using dull tools. He excused himself by saying that he had been too busy to sharpen them. He had been working for weeks with a dull saw, and with a plane which had notches in it, leaving ugly ridges on the boards he was planing. He had probably wasted more time in working with dull tools than would have been required to sharpen them several times, to say nothing of the inferior work he was turning out.

Many people go through life doing their work with dull tools just as this carpenter did. The edge is off their energy; their ambition is dull; their initiative lags; their enthusiasm is exhausted; their will-power is weak; their intelligence is blunted; all their powers are at the minimum instead of the maximum of their efficiency, because they have neglected their health or in some other way reduced their efficiency by failing to keep fit.

The most precious capital a man has are his deposits of life force, of vitality and of reserve power, in his physical bank; and there is nothing which will lead to bankruptcy of a man's life quicker than neglect or abuse of his health capital. A man too busy to take care of his

health is like the workman too busy to sharpen his tools. Anything that produces, should be kept in a condition to produce the largest possible output.

What should we think of a man who had an enormous gold-mine, but carelessly cut down its possible output seventy-five per cent? Yet, most of us cut down the possible output of our brains, our energies, even more than seventy-five per cent. by our carelessness, strangling or crippling our sources of power. We should think it pretty bad economy for an engineer, who had a power plant capable of producing a hundred thousand horse power, to utilize only ten per cent. of it. Yet that is precisely what most of us do with our physical powers.

Now, health squandered can never be compensated for by the mere acquisition of money. It is simply lack of intelligence that causes any one to barter health for wealth. A well-balanced man would find the way to have both with detriment to neither.

The lowering of physical vitality by unscientific living, by vicious practices, or by dissipation, correspondingly lowers our general efficiency, mentality, and will-power.

Some of the largest employers in the country tell me that many employees come to their work in the morning so completely used up, their faculties jaded, their spirits low, that they are incapable of accuracy or satisfactory efficiency. They have no enthusiasm for their work; their minds wander; they make all sorts of mistakes and blunders, and their vitality is so depleted that they are in no condition to focus their powers upon their work. The superintendent of one of the largest concerns in New York tells me that it is really pitiable to watch some of the employees when they come to work mornings, especially after holidays. He says they look as if they had already been through a hard, trying day's work, and were utterly exhausted and ready to quit work instead of just starting it for the day. He says that it often takes half a day or more for them to get into condition to do even passable work; that they are indifferent, without energy or enthusiasm all the forenoon; and that, in fact, often many of them do not get into the true swing of their work during the entire day.

These workers probably think they are having a good time in thus dissipating their energy

by turning night into day, robbing themselves of sleep, and going to all sorts of amusements and questionable places. They call this excitement, this dissipation, "enjoying life," but they little realize what they pay for it.

I know young men and women workers who tell me that it is a rare thing for them to retire before midnight, and often not till one, two, or three o'clock in the morning. Of course they must do very inferior work during the following day. Yet on every hand employees are complaining that they are not treated fairly, that they don't have a fair chance, and that they are discriminated against.

It is not the vitality we utilize that dwarfs our power and whittles away and shortens life; it is what we foolishly throw away. Millions of people have made failures in life by letting their health, their most precious asset, which might have made them successful, slip away from them in foolish living and silly dissipation.

Keeping ourselves fit, up to our highest physical and mental standards, so that we are always ready to do the most superb thing possible to us, is not an easy task. Few are will-

ing to pay the price for it in self-denial and sacrifice of what others call "having a good time." But it is the only price for masterfulness, and he who is not willing to pay it, who is not ambitious to make his life successful, to make it count, must be content to be catalogued with the mediocrities; he must be satisfied to be classed with the nobodies, those who would like to be somebodies and do something in the world but are not willing to plod the path of self-restraint which alone leads to excellence.

The desire is not enough; it must be backed by vigorous resolution—determination which knows no retreat.

He who would get the most out of life, who would reach the highest expression in his work, and yet would retain his freshness, vigor, and enthusiasm to the last, must lead a regular life. He must conform to the rules of health; he must become acquainted with his own body and give it all its needs, no more, no less, to keep it always at the top of its achievement-possibility.

The moment there is any letting down of standards, or decline in physical or mental

force, deterioration expresses itself at once in everything one does.

The quality of the work cannot be up to high-water mark when any faculty or function, any of your ability is prejudicially affected by inferior physical or mental condition. You may be sure that your weakness, whatever its cause, will appear in your day's work to dilute or cheapen its quality, whether it is making books or selling them, teaching school or studying, singing or painting, chiseling statues or digging trenches.

I know men with but one talent whose life habits are so healthful and regular; whose meal hours, time for recreation and sleep, exercise, and vacations are so well ordered; who take such superb care of themselves that they are constantly at the top of their physical and mental condition, and accomplish with ease much more than other men of five or ten talents who waste their energy and squander their power by abusing their human machines, so marvelously and wonderfully made.

I recall a slipshod, slovenly farmer who never seemed to have anything just right on his farm. His fences needed mending; his

barns were not painted; his harness was usually tied up with a string or piece of rope; there was always something out of gear in his carriages and carts. His farm buildings were dilapidated, windows broken, and old hats used in the place of glass. The yard was filled with worn-out sleds, broken pieces of machinery, and bits of junk of all sorts. Shiftlessness and lack of system was everywhere in evidence. The whole farm was covered over with the earmarks of his sloppy, slovenly methods. He himself was always "just getting along" with things until he could get time. He would say to his farm hands, "Just make it go now; do it anyhow so we can get along. When we have a rainy day we can fix it in good shape." But the things were never fixed "in good shape." Whenever I asked him how he was getting along, he would tell me about his "hard luck," how things were always going against him. But his neighbor, now—he always seemed to be "lucky." His harvests were always good, and he did not have half so much trouble with his help as the other had. This was true, but as a matter of fact the difference in luck was that the neighbor was naturally

orderly and systematic. He cultivated the same sort of soil, but with a difference. Everything about his place had a snug, neat appearance. Buildings were painted and in good repair; yards were clean; wagons, carts, and farm machinery were in good order. Work was always done in season, and in the right way.

It was just the difference in the methods of these farmers that made one "lucky" and well-to-do, the other "unlucky" and head over heels in debt, with a mortgage on his farm. They are good types of the people who keep fit and those who do not.

A great many people go through life just like the sloppy, slovenly farmer. They never have things up to the mark. There is always something the matter with their life machinery; it is out of order, and they go on from year to year sowing faulty seed and reaping scant harvests.

Distinctive achievement of any kind is costly. It is not half as easy as sliding along the line of least resistance and having a good time, not bothering one's head about system; but there is a wide difference in the results.

There is nothing like keeping fit, keeping things up to the standard; nothing like regularity in one's life habits, order and system, both in life and in work. It will make all the difference in the world, in results, whether you go to your work every day in prime condition, with all your faculties up to their standards; whether you go at the top notch of your efficiency; whether you go an entire man, so that you can fling your whole life into your task, or only part of one. He who wins in this day of sharp competition must bring the whole of himself to his task; he must keep himself fit in every respect.

Most people take only a small part of themselves to their tasks. They cripple much of their ability by irregular living, bad habits, lack of sleep, and eating injurious food. They do not go to their tasks every morning whole men; a part of themselves, often a large part, is somewhere else. They have been trying to have a good time. They carry weakness instead of power, indifference and dullness instead of enthusiasm and alertness, to the performance of the most important duties of their lives.

There are, on the other hand, many men and women who cut down their fitness and ultimate efficiency by continually overdoing and never allowing themselves a good time. They go to the other extreme.

I know self-made men who formed such iron habits of work when they started as poor boys, when their success depended upon working a great many hours every day, that they have become slaves to the habit. No matter whether they feel like it or not, they compel themselves to remain in their offices or factories just so many hours a day, when, perhaps, three-fourths of the time they are merely mechanically forcing their brains to do very ordinary work. They could accomplish more and better work in less than half the time with fresh, vigorous brains and minds elastic and spontaneous. They do not realize that a mind that is habitually held to its task by will-power for long hours after a time becomes permanently injured by losing its spring or resilience, just as a bow would lose its power to rebound if it were always strung.

These men know this principle very well, and they can see that their friends who are

doing the same thing are making a great mistake in straining so, in not going away now and then to get freshened up or renewed, with a new view of things and a fresh outlook on life and business. They plainly see their neighbors' mistake in not putting themselves in the way of that rejuvenation which comes from an entire change of environment.

Business men often give as an excuse for always grinding at their work and for too seldom taking vacations that they haven't time, but when they do have a little leisure they will surely take "a day or two off."

Is there any shorter-sighted policy than for one to overwork and strain, to plod away for months and years with dull mental tools, and to plead as an excuse that he can't afford to take time to sharpen them, thus putting himself in a state of physical and mental fitness?

What a strange thing that a long-headed, shrewd business man cannot see the deteriorated product of his exhausted mind; cannot see that the everlasting grinding of work out of tired brains and dull, jaded faculties is very poor business!

One of the greatest dangers in our strenu-

ous American life is the temptation to overstrain under high pressure. Men are continually overdrawing their physical bank accounts by using up their reserve capital, and before they realize it they become physically bankrupt.

As a very noted medical authority said recently: "While we do know a great deal more about hygiene and have been able to conquer many diseases, especially infectious diseases, which formerly, through our ignorance, carried away vast multitudes of human beings every year, yet the increased cost of living, the greater struggle for existence, our more exciting, more strenuous, nerve-racking life have increased our vitality tension, nerve tension, and brain tension. As a consequence, our worries, anxieties, and cares are greatly augmented. The wear and tear of life is greater than formerly because we are living a more complex life and are getting farther and farther away from the simple things of other days."

Anything which tends to lower our vitality or sap our energy cuts down, by so much, our efficiency and possibilities.

Perfect health is a great discoverer of abil-

ity. It brings out resourcefulness, inventiveness, and initiative; which would be covered up and buried by poor health. Physical and mental fitness means new hope, new life, new power. There is a vast amount of ability lost to the world through poor health, through not keeping in condition to give out the best that is enfolded in us.

There are many people of a high order of ability who do very ordinary work in life and whose careers are most disappointing, simply because they do not keep themselves in physical and mental condition to do their best.

I know men in middle life who are just where they were when they left school or college. They have not advanced a particle; some have even retrograded, and they cannot understand why they do not get on, why they are not more successful. But every one who knows them sees the great handicaps of indifference to their health, neglect of their physical needs, dissipation, irregular living, slipshod, slovenly habits, and other unfortunate things which are keeping them down—handicaps with which even intellectual giants could not drag along and make much progress.

In every walk of life we see people plodding along in mediocrity, capable of great things, but doing little things, because they have not vitality enough to push their way and overcome the obstacles in their path. They have not kept themselves fit.

Most of us are our own worst enemies. We expect a great deal of ourselves, yet we do not put ourselves in a condition to achieve. We are either too indulgent to our bodies, or we are not indulgent enough. We pamper them or we neglect them, and it would be hard to tell which mode of treatment produces the worst results.

How humiliating to feel ambition throbbing within us to do a great thing, to feel conscious of ability to accomplish it, yet to be prevented by lack of physical stamina, staying power, vitality! What a deplorable thing to come within sight of one's goal and suffer the pangs of thwarted ambition because of poor health!

There are tens of thousands of people who are almost successful, who have almost done the things they started out to do, but who cannot get any farther because their health has broken down; or, it may be, because of some

physical weakness or diseased organs, due often to eating wrong things through ignorance, when scientific food and scientific living would not only have carried them to the goal, but would also have brought them there in superb condition.

It is no less sad to see people reach their goals in an exhausted, played-out condition, with health ruined; so that, although they have achieved their ambition, the power of enjoyment is gone.

No one can amount to much in this world until he has had an understanding with himself that he is going to stand for something, that he is going to make a man of himself; until he resolves not to be satisfied with a half-life or a cheap success, for he is going to play the part of a man, going to make good, no matter what the cost in effort, no matter what the sacrifice of ease and pleasure. But he must never forget that the basis of all achievement is health; that, even if he reaches the goal of his ambition and leaves his health on the way, he is not a real success.

The first requisite of success and happiness for every human being is to be a first-class

animal. One can accomplish wonderful things with no other capital than robust health and determination to make something of oneself; but, no matter how much ambition one has, if he ruins his health by neglect, or by vicious habits; if he devitalizes himself by an abnormal or irregular life, he should know that his only chance of accomplishing anything very important will soon be gone. Unless one keeps himself at the top of his condition, the best that is in him will not respond to his efforts. He must be satisfied with even second or third best results if his physical condition is run down, if his vitality is lowered by violating the laws of existence or by irregularities of living.

A stream cannot rise higher than its fountain head. If one's physical condition is low, if he is devitalized, his ambition suffers, his ideals are lowered, his energies lag, and his work is poor. As a general rule, our physical condition is reflected in everything we do. If the mind is cloudy or suffering or affected by weakness or disease, the condition is reflected in the work. Everything in a man corresponds with his physical condition. All of his defects or weaknesses of this kind will reappear in

whatever he does, and his mental condition will always harmonize with his physical state.

Yet how often we see young people starting out in life with great ambitions to make places for themselves in the world and to do things worth while, but all the time really ruining their possibilities of great accomplishment by ignoring the laws of health, in all sorts of ways lowering their physical status, enfeebling themselves so that they do not have sufficient power to attain their ideals. The very thing that they are most dependent upon for attaining their object, strong and vigorous vitality, they sacrifice.

Keeping fit for our work is the most superb thing that we can do, because upon it depends our efficiency, happiness, and usefulness. Few people fully realize this. They do not appreciate the tremendous influence of health upon ambition. When you are strong and vigorous, and have a robust appetite, you feel equal to almost any undertaking. Obstacles do not seem very forbidding; your courage is as vigorous as your health. But when your vitality drops, your courage drops with it. Things which did not worry you a little while

ago, when you were strong and vigorous, now look formidable. They loom up like mountains of difficulty.

There is a vast difference between going to your work in the morning in superb condition, so that you are full of enthusiasm, buoyancy of spirit, eagerness, and zest, approaching it with a great love for your work, with your heart in it, ambitious to excel in it and to make every minute count, and going to it with low vitality, with the brain weary, jaded from bad habits and lack of sleep, with the brain badly nourished with improper food, or with the digestion entirely upset by overeating or eating rich and indigestible foods.

The great thing in life is efficiency. If you would be efficient you must keep fit by cutting away all of your health-sappers, getting rid of everything which hampers you and holds you back, everything which wastes your vitality and cuts down your working capital.

Most people do not realize how many little leaks are constantly draining off their life forces and cutting down by so much their power to keep fit.

Thousands use up more of their brain power

and nervous energy in impatience, in hurrying and in worrying, than they expend in actual work.

Victims of the hurry habit, of the hurry thought, are ineffective, never fit, never at their best, because they cannot concentrate their minds on the present: they are always "living in the next minute." Their thoughts and acts are always rushing and pushing ahead. The result is, their work is very superficial because they do not concentrate upon the thing in hand. They are always in a hurry and yet they accomplish very little, because they never give the whole of themselves to their tasks.

Indecision is also a great waster of power. People who are always weighing, balancing, and reconsidering little dream that they are thus squandering a lot of precious health capital. How many, too, burn up in fierce gusts of passion, or dribble away in nagging, bickering, or needless faultfinding, a large amount of brain power and physical vitality that might be used not only to great advantage in bettering their condition but also the condition of those whose lives they touch.

A morbid idea, such as hatred, envy, or jealousy long harbored in the mind acts like a poison-leaven and works its way through the entire system, injuring the whole life. The majority of people have very little conception of the fearful destructiveness of thoughts of hatred or revenge. They are like great festering sore centers, distributing their poisons to every part of the body, while their evil influence on the mind cannot be estimated. We should always be on the watch to stamp out such thoughts; also other morbid, gloomy ideas which so frequently attack us. We all know how religious morbidities unbalance the mind. It doesn't matter how sacred the subject which possesses us; if we allow ourselves to become morbid over it, it unbalances us just the same; the tendency of morbidity is always to unsettle the mind.

It is now well known that extreme selfishness, envy, and jealousy will produce neuralgic headaches and other mental and physical disturbances. But perhaps the most destructive of all these vitality leaks, in its effects on the physical and mental system, is a violent, uncontrolled temper. If people only knew what

tremendous havoc a fit of anger works in the delicate nervous system, and the really dangerous results of an unchecked storm of passion, they never again could be tempted to yield to it.

In an instant the nerves surrounding the blood vessels are paralyzed by the mental shock of a sudden burst of anger and the blood rushes into the brain with such terrific force that sometimes a blood vessel is ruptured and death is almost instantaneous. Dr. John Hunter, one of the greatest surgeons that ever lived, died in the board-room of St. George's Hospital, London, in a fit of anger. One of his colleagues intimated that something he, Dr. Hunter, had said was untrue. The insinuation aroused a temper storm that precipitated an acute attack of angina pectoris, from which he was suffering, and almost in an instant he fell dead.

A noted Paris physician reports a case of a young man who, in a violent quarrel with his relatives, worked himself up into such a fearful passion that he became suddenly deaf. It is not an unusual thing for a severe attack of jaundice to follow a violent fit of anger. Peo-

ple little realize how their very lives are endangered, how their health is often seriously impaired, and how many habitually suffer from semi-invalidism, because they are constantly giving way to these anger fits.

We are just beginning to find that what we always regarded as minor things, such as our fits of temper, our frettings, our anxieties, our fears, our petty jealousies, or our revengeful thoughts, are in reality very formidable foes,—enemies of our mental poise and balance, enemies of our fitness, which is power. These are the things which keep us unfit.

The worry leaks, the fear leaks, the anxiety leaks, the hot-temper leaks, the dissipation leaks, the leaks from sleeplessness and lack of system, the jealousy leaks are all draining away precious power and reducing our mental and physical fitness for the important tasks of life. They are all the time cutting down our vitality and our initiative, weakening our confidence and courage. Under their influence every faculty deteriorates in power, in forcefulness.

How many of us go through life wondering why we do not get on faster, wondering what

it is that holds us down when we try so hard to get on! We are always looking over and blaming some fundamental thing that is blocking our progress, handicapping our career, when in reality it is often a multitude of these little enemies of which we take no note, and think of very seldom, which are neutralizing our advantages. In the first place, all those things seriously affect our health. Whatever disturbs us, or destroys mental harmony, does corresponding harm in the body. Whatever exercises a malign influence on the health, will do the same thing to the mind, and vice versa. It is now well known that thought is not confined to the brain, for we think all over the entire nervous system; in fact, every cell in the body participates in our thinking.

All these enemies must be eradicated, routed out of the nature before we can be at the top of our condition, be perfectly fit, healthy, harmonious, and effective. We must cut out all disease-bearing morbidities; rout out of life's garden all disease weeds or other rank growths, physical or mental, which are poisoning everything that is beautiful and fruitful.

Perfect health, which is perfect fitness,

means also perfect morals. A person cannot be perfectly healthy and yet be morally bad. If we practice dishonesty, if we are envious or revengeful, we cannot be perfectly healthy, because perfect health means physical and mental harmony.

The physical functions are very largely dependent upon both the mental and the moral condition. A person, for example, who is suffering the pangs of remorse for some wicked deed, cannot be thoroughly healthy. Sometimes, it is true, we see vicious characters who are physically strong, robust; but that is not enough for the man God made. The spiritual nature must match the physical. Perfect health means perfect wholeness, and no one is whole, complete, who is not happy; and no one is happy whose conscience is all the time torturing him. A very wicked person may have good digestion and appear physically to be well, but he is not whole and such a person does not, as a rule, attain a ripe old age. Moreover, he does not attain the purpose of life. Instead of being of use to society, which is the duty of every human being, he is a curse to himself and to the world.

Keeping fit is the result of healthful habits,—right habits of living, right habits of thinking. It is the product of regularity of life, regular sleep, in full sufficiency, regular recreation, and plenty of it, regular exercise in the open air, habits of neatness and cleanliness and orderliness, habits which contribute to self-respect and make us think more of ourselves; and, above all else, these should be combined with a habit of wise and systematic eating and drinking and an intelligent choice of food which shall contain all the elements, in proper proportion, requisite to build up and maintain the different organs and tissues of the body,—food which will produce vigor, food which has stored up in it the forces of nature which produce energy, brain power, vigor of thought, grasp of intellect.

In the work of keeping fit our thought-food is, next to our physical food, the great mind and body builder.

If you would keep fit, never picture yourself as anything different from what you would actually be, the man or woman you long to become. Whenever you think of yourself, form a mental image of a perfect, healthy, beautiful,

noble being, not lacking in anything, but possessing every desirable quality. Insist upon seeing only the truth of your being, the man or woman God had in mind when He made you.

There is every evidence in the human plan that He intended man to express completeness, wholeness,—not a half or other fraction of himself; a hundred, not twenty-five or fifty per cent. of his possibilities; to express excellence, not mediocrity, and that the half lives and quarter lives which we see everywhere are abnormal.

One of the hardest lessons we have to learn in keeping fit is that we build our bodies by our thoughts as much as by our material food. It is a literal fact that man does not live by bread alone; our bodies are discordant or harmonious, diseased or healthy, in accordance with our habitual thought. There are those who, having learned this lesson, have had their countenances so altered in a single year by persistent right-thinking that one would scarcely know them. They have changed faces that were lined with doubt, disfigured with fear and anxiety, and scarred by worry or vice, to reflectors of hope, cheer, and joy.

Saint Paul was scientific when he said: "Be ye transformed by the renewing of your minds;" that is, by changing, ennobling, purifying and freshening one's thoughts.

Keeping fit means that the mind shall be as clean, pure, and healthy as the body. It is every one's sacred duty to keep himself fit, up to the highest possible standard, physically and mentally; otherwise he cannot deliver his divine message, in its entirety, to the world. It is every one's sacred duty to keep himself in a condition to do the biggest thing possible to him.

II

THE MIRACLE OF FOOD

Here is bread, which strengthens man's heart, and therefore is called the staff of life.—MATTHEW HENRY.

O hour of all hours, the most blessed upon earth,
The blessed hour of our dinners!—OWEN MEREDITH.

Cheese and bread make the cheeks red.

—GERMAN PROVERB.

BEHOLD a crust of bread and a jug of water let down into Bunyan's cell, which a little later appear in the greatest allegory that was ever written by man!

Watch that crust of bread as it is cut, crushed, ground, driven by muscles, dissolved by acids and alkalies; absorbed and hurled into the mysterious red river of the man's life blood! Scores of little factories along this wonderful river, waiting for this crust, transmute it as it passes, as if by magic, here into a bone cell, there into gastric juice, here into bile, there into a nerve cell, yonder into a brain cell. We cannot trace the process by which it arrives at the muscle and acts, arrives at the brain and

thinks. We cannot see the manipulating hand which throws back and forth the shuttle which weaves Bunyan's destinies, nor can we trace the subtle alchemy which transforms this prison crust into "Pilgrim's Progress." But we do know that, unless we supply food when the stomach begs and clamors, brain and muscle cannot continue to act; and we also know that, unless the food is properly chosen, unless we eat it properly, unless we maintain good digestion by exercise of mind and body, it will not produce the allegories of a Bunyan, the energy and achievements of a Roosevelt, the inventions of a Marconi, an Edison, or the successes of a great constructive man of business.

The age of miracles past! Why, there is a miracle performed at every meal which is more mysterious than the raising of the dead to life! You take a piece of bread, a piece of meat, a few vegetables into your mouth, and in a few hours they become man; they begin to think, they begin to act; that food takes on all the characteristics of your personality. Your ancestors relive and act in it. What was a few hours ago food is now making laws in Con-

gress, is passing decisions upon the bench, is farming, is running machinery, is doing all sorts of things. Is the quality, the quantity, the manner of partaking of the nourishing material which is to perform the miracles of the world of any great consequence? Is it worth much concern?

Part of your efficiency, your health, your mental vigor, your future welfare, lives in that meal of which you are about to partake. Can you afford to take in material which is going to give you deteriorated blood? Can you afford to take in that which will give you a second-class brain and can only manufacture mental processes in keeping with its own inferior quality?

Your food can give off, when assimilated in the body, only the force which Nature has stored up in its cells.

You may say it does not matter much what you eat,—so long as it satisfies your hunger. Do you realize that the cells in that stale vegetable and soft, spongy fruit, which has already begun to decay, and the poor meat you are eating, are much deteriorated; that they have lost their recuperative, renewing, refreshing force?

Do you realize that while you may satisfy hunger, you are manufacturing second-class blood, a second-class brain, a second-class nerve tissue, a second-class man? And you want to be a first-class man, do you not? *As a man eateth, so is he.* As he eats, so will he live, so will his strength be.

You have wondered, no doubt, many times, why you lack power to concentrate your mind, to hold your mental grip upon the thing you are doing. You perhaps have not realized that the quality of your intellectual grasp, of your focusing power, lies in your food. The quality of your vitality, of your brain power, the quality of your courage, of your initiative, of your productive power, will be in exact ratio to the quality of the material from which these are manufactured. The quality of the manufactured product cannot excel the quality of the raw material.

The fire and force, the vim for achievement, are put into our food by the power of the sun and the chemistry of the soil. The strength for which we long, the force which does things, the stamina, the grit, the brawn, and what we call "gray matter," Nature produces in her

laboratory, where she performs her wonderful miracles.

The roots of our spiritual life run through the material body into the food stuffs, into the soil, and outward to the source of all physical power, the sun. We are bound up together; we are of the earth, earthy. We come from Nature; we return to Nature. All vital energy is generated in the sun; Nature's alchemy takes the vital energy and recreates it in food products which we receive from her and assimilate, and from which comes the abundance of our achievements, our spiritual life.

The brain gets a great deal of credit for what justly belongs to good health, to a strong physique. "*Intense, rapid, sustained,*" is the motto of effective mentality. It is not a question of will-power so much as of vitality and strength. Robust health produces a positive intellectuality, and this is the force that does things in the world; whereas, in proportion to failing health, to lowered vitality, the mind becomes negative.

The man who accomplishes things is noted for his ability to decide matters vigorously and finally; while the vacillator is pained at the

very thought that he must make a final decision, and is always reconsidering, weighing and balancing, recalling his letters, tearing open the seals to see whether he has really meant what he has written, whether it were wise to send the letter, after all, or whether he has left out something important. But the man of decision is the man who succeeds, and decision is the child of strong vitality, of a well nourished brain.

Is it not astonishing that, despite these facts, in our efforts to economize, we often lose tenfold by cutting off our nutrition, in going without lunches, or bolting inferior food at a cheap quick-lunch counter? By trying to save a few cents a day in this way we cut off ten dollars' worth of vitality. We may reduce our business-getting ability by dulling the ambition, so that we may lose a hundred dollars' worth of business.

When we skimp on food we do so at the cost of power and vitality. If the body is not completely nourished, the blood will be impoverished, or made impure; and vitiated blood means poor quality of thinking; than which nothing can be more extravagant.

The great thing is to keep oneself up to the highest point of efficiency at any cost or pains. Anything which reduces the fire and force in the brain, which lessens the ambition or the energy, weakens will-power, courage, self-confidence, inclination to work, initiative, and power of decision. In fact, the whole mental apparatus, the efficiency of the whole of life's machinery, is affected. Such economies are criminal.

One might as well try to economize on the board of a horse about to enter a contest of speed, and expect him to win, as to economize on his own food and expect to remain in tiptop condition. Speed and staying power are what he is after for the horse, and these must come mostly from the food, the drink, and the general care.

Every ambitious man is in a perpetual race for supremacy of some kind. Can he afford to economize on that which produces brain force, that which produces health? Can he afford to economize on energy-producing material?

Many well-meaning people fail in life because they are not good to themselves. They

do not have enough to eat, or they do not have food of the requisite quality to keep their brains and bodies up to the highest point of efficiency.

We are not here simply to exist, but to achieve the greatest thing possible to us, and we cannot afford to deny ourselves the best of everything that can contribute to our efficiency. Multitudes are doing mediocre work just because they do not have the highest quality of brain food. They do not take proper care of themselves.

I know fairly well-to-do people who are too stingy to buy fruit, except when it is very cheap, although it is necessary to health; for it is not only a blood purifier, but it is also a blood-maker. Nothing else is better for the system than good ripe fruit; and, no matter how scarce or high in price every one should have some at least every day. Many people, without knowing it, are pinching their very life sources by foolish economies,—eating poor, tough meats, dried-up or half-matured or wilted vegetables, cheap, adulterated teas, coffees, spices, etc.

Now, every one ought to start out in life with

a determination to be good to himself, just to himself. He ought to resolve not to cheat his very source of power by feeding his body with inferior products. Pinching on the very source of one's supply of mental and physical power is fatal frugality. There is a great difference between the results of first-class and second-class brain power, and it is the quality of the food that often makes the difference.

Failure is frequently due to mental deterioration, to weakening of courage, of self-confidence and of mental grasp, so that men make business slips which they would not have made formerly. They have deteriorated physically, and they do not realize that their minds go up and down with their physical condition like the mercury in a thermometer.

The unfortunate thing about mental deterioration which follows the violation of physical laws is that it is so subtle as to be almost imperceptible, and people who have been successful are often suddenly confronted with failure because of the loss of their mental grip, the crippling of their courage and initiative.

Napoleon's downfall was largely due to physical deterioration. In youth he had given

much thought to diet, as a means of making the most of himself, but the subject was then but vaguely understood. Even as some savages think that the spirit of a conquered foe passes over into them and strengthens them, so he looked upon food. The stronger the animal eaten, the stronger the eater should become. Hence he who would become king of all the Giant-killer Jacks should eat elephants, the largest and strongest of land animals. But elephants were scarce and costly in France, and his purse was not that of a multimillionaire.

An ox was the nearest substitute he could think of obtainable at a moderate price, and oxen were slaughtered for the army every day. But even an ox could not be considered a full substitute, so he must exercise care and eat the strongest part of him and thus approximate his ideal standard as closely as possible. This strongest of all parts must clearly be the brain, for that rules all the rest of the animal. So he had saved and cooked for him, and daily ate, the brain of an ox.

Now it so happens that iron, lime, and sulphur are indispensable in the formation of red

blood corpuscles, and lime and sulphur are not found in brain substance. It also happens that sulphur is one of the best medicines for the itch, and probably, through its presence in the blood in proper quantities, one of the best preventives of that disease, at least in a severe form. Possibly because of his deficiency in sulphur, incidental to his peculiar diet, he caught or developed at Toulon the itch in an aggravated form, which annoyed him greatly for years. His physicians tried in vain to cure him, and repeatedly urged him to allow them to "drive it in."

To this he would not consent, for a long time, saying that the itch is but an outward manifestation of an effort of Nature to get rid of something bad inside. For his part he was glad that his system was so resistant and persistent in trying to throw off the bad thing, whatever it was, and he wanted that cured, not its mere itching manifestation or symptom. One might, he admitted, put an extinguisher on a volcano, but that would only cause it to break out in some other way or place.

But at the zenith of his power he consented, for he considered it very undignified for the

great conqueror of conquerors and emperor of emperors to squirm and scratch on even the greatest occasions, and scratch he had to, sometimes, no matter what was going on. He was never quite the same man after he "conquered his itch by driving it in."

He also suffered from epilepsy, due, perhaps, in no small degree, to his diet, for it is caused by insufficiency of red blood corpuscles and consequent disturbances in the circulation. When the itch, perhaps a kind of outlet for his real trouble, had gone, his epileptic attacks increased in frequency and severity and sometimes temporarily incapacitated him when under greatest pressure and needing the strongest and most perfect circulation,—even before or during some of his most important battles in later life.

Further, he had a very restless brain, and this was stimulated to undue activity both positively by the excess of phosphatic material in his dietary, and negatively by lack of nerve-quieting oxygen in his blood from deficiency of lime and sulphur in his food. As Faraday discovered, oxygen is slightly magnetic and hence is attracted by the iron in the red blood

corpuscles. When the red corpuscles are deficient in quantity, not enough oxygen is taken up by this magnetic attraction. So his brain, like an engine with an imperfect safety valve, drove the wheels of his life at a pace too furious to last long in perfect condition. Again, from lack of enough red corpuscles, he could not absorb enough oxygen to burn up or oxidize the fat produced by his food, and he became corpulent. Worst of all, not improbably the cancer of the stomach from which he died at St. Helena was occasioned, if not caused, by lack of sulphur in his food.

Close observers have repeatedly noted how decayed limbs of trees or even fence posts that have stood in the ground a long time, after the rains have soaked out their sulphates and warm damp weather has developed their phosphorescence, have thrown out growths of a tough white fibrous matter as foreign to them as are tumors and cancer in man. Perhaps Napoleon, who lacked sulphur and abounded in phosphorus, originated or at least cultivated his fatal cancer in much the same way.

It is as natural for a perfectly normal human being to undertake things, to have a strong

ambition and initiative, as it is for him to breathe. Originality is the product of a vigorous mind in a healthy body. People would be infinitely more original and resourceful than they are, if they kept their physical standards up. When a man is perfectly well, he is not an imitator. His mentality is forceful. He is not inclined to trail then, as he is when his physical standards are down.

Concentration is the secret of all achievement, but you cannot focus your faculties with vigor and efficiency if your brain is not properly nourished. Everything depends upon the quality of your brain, and that in turn depends upon the food with which it is nourished.

You are very particular about the quality of the material which you put into your manufactures. But what about the quality of your brain and your physical condition, which determine the quality of your career? Do you realize that your habitual diet is constantly adding to or taking from your brain power?

One great reason for the superiority of the brain power and achievement of successful business men over those who work for them is that they are better nourished; they have the

finest quality of nutriment, food that is fresher, riper, that has been more perfectly matured in Nature's laboratory. The man of means often overeats, but he usually eats foods of the best quality.

It is the positive mind, fed, sustained, and buttressed by nutritious food, that does things. The positive, decisive mind must be capable of complete concentration, must be the product of high food values, of perfected, full-grown cereals, fruits, and vegetables. The sun must have wrought this perfected work and ripened and developed the food values in Nature's laboratory, where she performs her miracle of canning life elixirs in the juices in her apples, her oranges, her bananas, her strawberries, and all the other fruits. Sometimes this canning process of Nature is not completed, and these things are not allowed to come to perfection. Perhaps the fruits are shaken off of the tree in windfalls before the sun has finished his ripening work, before Nature has had time to develop her sugar, her nutritive salts, and all the other health-producing ingredients; perhaps she has not finished her work when man plucks the immature fruit; or perhaps the worm which

has worked its way to the heart of the fruit has caused it to drop off before the processes have been completed. Then, if one has eaten the half-ripened, half-matured fruit, or half-developed vegetables, of course he has not been able to get the fire and force, the courage, the vim, the grit, and the stamina which would have come from Nature's perfect product. If, in addition to eating this imperfect food, man does not obey the scientific law and give Nature a chance to digest and assimilate her food values into brain matter, he must certainly expect inferior results, inferior brain force.

There is a vast difference between unscientific and scientific food, between mediocrity and success, between a negative and a positive mind, between superb and indifferent achievement. Power is the goal of our ambition, that power which comes from the union of all of our mental faculties, kept constantly in superb condition in order to give out the very maximum of their energy and force. How to acquire mental vigor should be the great study of every one who is resolved to make the most and the best of himself.

Dr. Talmage used to say: "We are constantly praying to Heaven for that which we could easily get for ourselves by correct diet." There are multitudes of men whose forcefulness and efficiency could be doubled and trebled by scientific diet.

The first thing for the success candidate to do is to put himself in a position to generate his maximum of brain power, brain energy, by eating foods which are capable, when digested, of evolving, of releasing, the greatest amount and the finest quality of energy. It is comparatively easy for a robust physique, with perfected food products, to develop efficiency in work; whereas, no amount of will-power in an enfeebled body can perform, by the utmost strain, the same work that the other does easily, naturally. Stamina and grit live in perfect grains, perfect fruits, perfect vegetables, intelligently, scientifically taken, digested, and assimilated. Here is the secret of power, the fountain-head of efficiency.

Many get the impression that their power to do things is something that has been handed down to them from their ancestors and that they cannot change it very much. They do

not realize that, if they go without eating only a few hours longer than they should, all their powers begin to decline, ambition evaporates, hope becomes dull; all their ability begins to deteriorate, and they are only revived by partaking of food: further, they do not seem to realize that on the quality and regularity of their food the quality of their renewal depends; that, *if shoddy goes into the loom, shoddy will come out in the cloth*,—it will show in deteriorated wearing quality.

The first qualification for efficiency, then, is the purest possible blood, and this can only be made by the purest food taken in just the right amount and variety, and afterward assimilated in the most scientific manner. This is the only way to manufacture a first-class man with the highest standard of efficiency. If the original cells in the cereals, the vegetables, the fruit, and the meat which we eat are deteriorated; if they have not been properly matured, or were originally defective, if the soil from which they were grown, or the material from which they were produced, was not up to the mark, and if they were not properly prepared and cooked and so eaten as to facilitate the

most perfect digestion; if the body is not in a condition to digest, assimilate, and transform the food into blood in the most favorable manner,—then we shall have a deteriorated body, an inferior brain, and our achievement will be of a low order.

Remember, your future, your possibilities are swimming in your blood. If that is poor, inferior, deteriorated, and diluted; if it lacks fire and force, is incapable of releasing the energy which achieves, the force which does things, it is because the food from which you manufactured it was inferior, for the brain cannot get force and power from the blood when these were not in the first place in the food cells.

The time will come when foodstuffs, which perform the miracle of making brain power, of building efficiency, will be inspected by government officials. The man of the future will not take the chances of producing an inferior brain force because the grains in his cereals have been blighted or harvested before they were perfected. He will not take chances of eating blighted, windfallen fruit, half-grown, before Nature in her laboratory has had time to per-

form her miracle in perfecting their juices, in developing their nutritive salts which would make perfect blood. Inferior grain and vegetables—everything that is unfit to make the highest quality of blood and brain,—will be condemned just as government inspectors now condemn diseased meats. The time will come when nothing else that affects the welfare of the race will be quite so scientifically guarded as man's food, because locked up in it is the mainspring of life, about all of human destiny.

III

WHAT TO EAT, OR, THE SCIENCE OF NUTRITION

Health consists with temperance alone.

—ALEXANDER POPE.

Lengthening of life requireth observation of diets.

—FRANCIS BACON.

Cheese is gold in the morning, silver at noon, and lead at night.—GERMAN PROVERB.

Such dainties to them, their health it might hurt;
It's like sending them ruffles, while wanting a shirt.

—OLIVER GOLDSMITH.

“Whose son art thou?” inquired King Lane, in wonder, when the stripling David came into his presence after slaying the huge Goliath of Gath. “Whose daughter art thou?” asked the equally astonished barons, bishops, priests, and princes, of Joan of Arc, who, as De Quincey puts it, “had come out of the quiet, out of the safety, out of the religious inspiration rooted in deep pastoral solitudes, to a station in the van of armies and to the more perilous station at the right hand of kings.”

Whose son—whose daughter—art thou? Is your strength of body, or mind, or purpose, chiefly derived from your ancestry?—or are you, in the main, the child of your individual physical, mental, and spiritual rules of life,—of your own aims, training, regimen, and deeds?

If the latter, one almost unconsciously wonders with the poet: “Upon what does this, our Cæsar, feed, that he has

grown so great?"—or what is lacking in his diet or his mentality that he remains so feeble in body, mind or soul?

AN authority who has made a study of bee culture says that as soon as a hive needs a new queen the bees begin to feed the larvæ of a few workers with the best part of a jelly-like substance called by bee cultivators the royal jelly. The one selected from the developed larvæ for a queen continues to be fed upon this substance, while the others, of course, are no longer thus favored. As a result of her special diet the future queen grows several times as large as her companions and many times more intelligent.

Numerous experiments made upon animals and birds with different kinds of food have resulted in radical changes in their structure and appearance. In the case of birds very great changes were made in their plumage. The disposition and the tissues themselves were materially altered, coarsened or refined, according to the nature of the food.

We all know what a difference there is in the appearance, in the spirit and bearing of the fine high-stepping horses of the rich, which are fed with the greatest care, on the best foods,

and those of the horses of poor people which are fed upon the meanest kind of hay, perhaps without any grain. Plants which have plenty of sunlight and nourishing soil have two or three times as much growth in a year as those whose roots are dwarfed in poor soil and whose leaves get little or no sunshine. Contrast the appearance of well-nourished crops with those that have had no fertilizer and have been grown on poor, arid soil.

There is just as great difference in the physical appearance of prosperous, well-fed men and women and of those who are underfed and under-nourished in the ranks of the poor as there is in the appearance of the high-stepping, well-fed and well-cared-for horses of the rich and the "dopey," stupid, half-fed and half-cared-for horses of the poor; just as marked a difference in the quality and strength of the children reared in homes of wealth and luxury and those brought up in city slums as there is in the quality and strength of the plants raised from nourishing soil in the sunlight and those that have struggled up in poor soil, largely deprived of sun and dew.

The appearance and quality of plants and

animals are alike dependent on the nutriment they receive. Sunshine, light, air, water, and the right kind and quantity of food are necessary for the perfect development of all.

Ignorance of food values and bodily requirements would reduce a Webster to a pygmy. It is just as necessary to know how to choose our foods and to know their action upon the body as it is to be trained for our vocations.

In repairing our homes and keeping them in order, we use materials like those that first entered into their construction. We repair bricks with bricks, stone with stone, wood with wood, glass with glass. That is exactly what we do, when we eat, for the houses in which our spirits dwell. We are repairing the temples of our bodies, and we must use the sort of materials of which they are constructed. Nothing else could be utilized to the best advantage.

In other words, our food supplies the elements which build, sustain, repair, and renew corresponding elements in our bodies. We eat oxygen, hydrogen, nitrogen, carbon, iron, arsenic, lime, magnesia, potash, soda, silica, etc., to replace similar elements in our bodies. These we find most abundantly in vegetables,

fruits, cereals, meats, eggs, fish, milk, etc., and we eat them in sufficient quantities to renew our bodies' waste, to replace the material which has been burned or consumed by the day's run of our human mechanism. Whatever we eat which is not like the materials of our bodies will do us no good, because it will find no affinity, no response in any of our tissues, and hence will have to be excluded as poison or waste. The tissues cannot use it, since they can only absorb things like themselves, things which have the same constituent parts. Only brain materials, for instance,—that is, the things that make our brains,—can build, repair, or renew brains. Only the materials which produce bone can be utilized in our skeletons; only foods which contain the materials that the nerves are made of can build nerves; so that, literally, we are ever eating and reabsorbing the elements of our bodies. Nothing else can be absorbed by our tissues when in health except to our injury.

There are three classes of food that are imperative for the building and maintenance of all the different parts of the body. Albuminous foods, which come mainly from meat,

eggs, milk, and the legumes, are good, everyday working foods. Sugars, starches, and fats, called carbohydrates, and vegetables produce various energies in the body, as illustrated in muscular activity, and the different fats which come from both animal and vegetable foods produce heat. We must also have mineral foods, such as iron, lime, phosphorus, magnesia, etc., which purify the blood, give firmness to the tissues, and help to maintain proper electrical tension.

The absence of any of these different forms of food, the tissue builders, the body warmers, the energy producers, or the blood purifiers, would cause starvation in certain tissues, and ultimate death. If the body were fed wholly on the materials which build tissues, the digestive processes and other functions would stop. On the other hand, if we should partake only of the materials which furnish energy alone, the energy of force-forming foods, we should soon die from overactivity and the starvation and gradual wasting away of the solid tissues. No matter how much of the starches or sugars or fats you might eat, they would maintain only the energies or the activities of the body, while

if you lack tissue builders the structure of your body would begin to deteriorate. The white men who first went to visit South America pined away one by one from tissue starvation, because, while they could get plenty of food, they could not get a sufficient variety to feed *all* of the tissues. That is, they could not get sufficient flesh formers and flesh warmers in the right proportion to sustain life.

In order, therefore, to maintain perfect health, there must be a balance, a poise, of the different kinds of foods, the tissue builders and renewers and the foods which furnish the heat and support the various energies of the body, as well as certain minerals which are purifiers and regulators of the blood and other secretions, and water, which liquefies and facilitates the carrying of nutrition to the various tissues. Of course, without water the blood circulation would be impossible; for though the water itself does not form tissues or furnish energy, its presence in large amounts is absolutely imperative for carrying on a multitude of life processes. Without it the various chemical changes, the circulation and the secretion of various organic fluids would also be impossible.

An ordinary adult needs from ten to twenty ounces of body warmers, according to activity and climate; that is, of carbonaceous foods, such as sugars, starches, fats, etc.; and five ounces of flesh formers, of nitrogenous foods which contain albumen, etc., or practically at least a pound of body warmers and flesh formers a day from animal or vegetable food.

It is supposed that about seven out of ten ounces of carbonaceous food would be burned in the bodily combustion, making heat and supplying the forces which are used up in the various activities of the body. The remaining three ounces should be used for padding between the muscles and for covering the bones to make the body more comely. When we are working very hard, or in the summer time, we burn up more of our fat and usually get thinner; but it is not safe to burn up all of the heat and energy food each day, because one would then not have a reserve of energy and in an emergency would lack resisting power.

This, of course, is a rough general estimate, and could not be laid down as a hard and fast rule, for all to follow. If the food of each individual were properly balanced and each of

the glands and tissues found just the right kind and the right amount of nutriment in the blood stream to maintain the integrity and perfect balance of the entire body, there is no doubt that the level of human efficiency would be raised very much higher than it is to-day. But no physician, no physiologist living, could possibly make out a bill of fare that would meet the needs of all alike.

No common diet could be prescribed for everybody. Each individual, according to his age, his physical condition, and his temperament would have to make exceptions and study his own requirements. But we know by experience that people living under different conditions, doing different kinds of work, are very materially helped by foods especially rich in the elements which enter into the structure and maintenance of the tissues which are most active in that sort of life or vocation. The kind and amount of food required by different people depend a great deal upon the degree of rapidity with which the cell life of any particular tissue or organ is broken down by its activity. The brain and nerve cells, for example, are broken down very rapidly in in-

tense mental exercise or mental application, whereas destruction would be comparatively light if the brain were used very little, as in the case of persons whose activity is chiefly muscular.

It is well known that animals should be fed according to the work they do and their mode of living. A hunting dog requires a different food from a house dog. A driving and trotting horse, a race horse, requires a very different food from a dray horse, that carries a heavy load. Speed requires food like oats, which gives up a quick energy. Corn is too heavy for the speed horse. On the other hand, oats do not have the same staying power as corn.

The human animal must also be fed to fit him for his particular work. What would you think of a trainer who would constantly stuff a young athlete with all sorts of food he could get regardless of its properties, whether it made fat or muscle? You would certainly think the man did not know his business. Even those who have not studied the matter know that an athlete must be trained for speed, endurance, or muscular strength, according to the nature of the contest. Every bit of food

that does not help toward this end is excluded from the diet. All foods that tend to produce fat instead of sustaining prolonged muscular effort are cut off. Every bit of material that will burden,—all overeating, is forbidden. Every mouthful which is unnecessary for sustenance and strength building, which would be an additional tax upon the digestive organs and the nervous tissues, in order to get rid of its injurious effects, must be excluded. The problem is to produce the maximum of muscular strength and endurance, to take only the foods which can sustain the heart in its stupendous strain, in running, leaping, wrestling, etc. The great object is to build up perfect muscle fiber and to eliminate everything which would tend to produce fat cells in the muscles, especially in the heart muscles, which would tend to weaken the vigor of its stroke.

The first consideration in the food question is to supply the physiological requirements of the body without a lack or scantiness anywhere which would cause deterioration in any tissue, or a surplus which would clog the organs and result in poisoning the body through the decomposition of half-digested foods.

For example, a person engaged in an athletic contest, like bicycle racing, carried on for a week or more, would need a great deal of energy-producing material to supply the rapid waste of broken-down tissues in the muscular system. This need must be quickly supplied by foods which are combustible in the body and which yield a large amount of energy and comparatively little of what we might call the tissue-building elements, because the principal loss of persons in such a contest is in the energy and heat producing products which come from rapid combustion. If a contestant took too much animal food he would get an oversupply of the tissue-building material,—too much albuminous and nitrogenous food, and too little energy-producing material.

On the other hand, many experiments on animals have shown the evil effects of an excess of the latter kind of food, which causes a very rapid deterioration in the physical life, especially in the lining cells of the alimentary tract and seriously interferes with the digestive and absorptive processes, so that the foods are not completely absorbed, assimilated and transformed into life tissues.

For instance, a dog, if fed largely upon rice, will not have sufficient structure-building material, and a fatty degeneration will take place in the mucous-membrane lining of the alimentary tract, so that if this diet is continued very long the absorptive power in the alimentary tract will become so impaired that the animal ultimately will not thrive even if its natural diet is restored.

There are many food elements which are necessary to the integrity of the bodily tissues. For example, there is no animal life in which phosphorus does not play an indispensable part; and, if we should eat food which does not contain any of the phosphorous compounds, life would rapidly decline. The brain would quickly deteriorate if deprived of phosphorus, which is found abundantly in the yolks of eggs, in fish, in milk, cheese, etc. Cereals and legumes also contain much phosphorus.

Most people, especially the poor, eat more than twice as much starchy food as is required by the system; and, as they do not get enough of other foods, some of their tissues are starved. Those who live largely upon the products of fine flour overtax that part of the digestive

system which takes care of the starchy food, and they often suffer from an overacidity of the stomach and sometimes of the saliva, which latter is very injurious to the teeth.

Children of the poor are often born with rickets, because the mothers have lived mainly on white bread and tea and have not themselves had sufficient bone-making material to transmit to their children for the building of their skeletons. Some of these children have not enough backbone to hold up their heads, and they become deformed in all sorts of ways,—if they ever reach maturity,—because after they are born they do not get enough of the material they lacked before birth to build up and remedy their defects. A child needs much phosphorus, lime, magnesia, and silica for his skeleton, which is the principal part of his little body, and he should be nourished with the object of growth in view. Yet many children are fed chiefly on fine white flour products and tea, and often coffee. It ought to be regarded as a crime to feed children on such things!

No infant can digest solid foods until it cuts its teeth. Children should have plenty of milk

until they are eight or nine years old, otherwise the bones will not get sufficient lime and other earthy salts to harden them, and rickets or bone diseases of some sort are likely to develop. While the body is in process of construction, all the tissues require a great deal more building material than when it has reached maturity, and milk contains everything necessary for early body-building. It is the only perfect food, and contains forty different substances. For proper development it is imperative to have every tissue in the body nourished, and to have every element in food which can build the tissues, furnish the fuel for combustion, and supply heat and the various energies for all the bodily activities. Some food authorities go so far as to say that drinking milk is almost like drinking blood, because, if pure and rich, it is such a great blood maker.

While milk is the only food which contains every element that enters into the human body, such as oxygen, hydrogen, nitrogen, carbon, phosphorus, sulphur, etc., yet taken alone it is not so well suited for an adult as for a growing child, because it contains too much building material, although that is the most impor-

tant factor before the body reaches maturity. Later in life there is not much body building, but we require food for maintaining and sustaining the body already built. At the same time, a certain amount of milk, or its equivalent, is needed all through life; and, in some cases of weak digestion and certain other ailments, a diet composed almost wholly of milk has had very beneficial effects.

Our diet should be chosen according to our individual needs, as determined by our age and our vocation. It should be planned to enable us to express the maximum of our ability, our efficiency, in whatever line of endeavor we are engaged, whether it involve mental or muscular effort. Yet in some families there are half a dozen members who represent different vocations, but who eat the same kind of food. Our system of eating is as vicious as our system of education, where thousands of students are put in the same education mold, with little or no regard to their individuality, to the fact that no two of them are alike, that their temperament, their inherited tendencies, their degrees of physical strength and vitality are all different.

Of course, this does not mean that a separate meal would have to be provided for each member of the family, which, in the majority of cases, would be impossible. As in education, the basis could almost invariably be alike; but there would be minor differences which, while they would not overtax the housekeeper, would make a great difference in the well-being of the family.

We have heard a great deal from time to time of concentrated nourishment; that is, of a large amount of nutriment in very much less bulk than in ordinary food forms. But it is not sufficient merely to take into the stomach just the quantity of nutrition which would keep the body in perfect food balance. It must be taken in a form adapted to its digestion and assimilation. For instance, it would not meet the requirements of nature to take food into the body in a very concentrated form, as in tablets. The stomach is a sort of bag in whose lining is contained follicles which secrete the gastric juices. When empty, this bag is closed up and is so contracted in size that if the food were taken in a very small bulk, it would not be sufficiently distended to

perform its function, even though the small quantity of food contained every element necessary for body building. In order to enable the gastric follicles in the stomach lining to do their normal work there must be a certain amount of pressure upon them, and this can only come from the presence of a sufficient bulk of food to open up the stomach bag to its natural size. The action of the follicles is induced by the alternate contraction and expansion of the circular and longitudinal layers of stomach muscles. This churning motion of the stomach is necessary for the proper mixing of the foods which the gastric juice is cutting up, dissolving, and macerating. When the whole contents are thoroughly mixed by this churning process, the liquid mass is ready to pass on and receive the other gastric juices of the bile, the pancreas, etc., along the intestinal tract, where the chief part of the digestion is done, for the work of the stomach is chiefly mechanical.

This is one reason why animals like horses require hay with their oats or corn. The latter alone would not make sufficient bulk to insure perfect digestion. In some countries clay and

earth are mixed with food in order to give a greater bulk to satisfy the requirements of the stomach. It also, in part, accounts for the fact that milk alone would not be an adequate diet for an ordinary adult. When it is taken alone, some twenty per cent. of it is lost through faulty assimilation, so that something like a gallon of milk would be required daily for the complete nutrition of an adult. Where, however, bread is taken with it, assimilation is much more perfect; so that, although milk is the only food that contains the elements necessary for building and maintaining the tissues of the body, because of its faulty assimilation when not mixed with other foods, and also because it would not make sufficient bulk in the alimentary canal for the purpose of digestion, it would not of itself make a practical or satisfactory diet for a healthy adult.

Most people look upon milk as merely a drink, but it is not; it is a food, and hence it is very bad to drink it as rapidly as water, as most of us do. When one drinks a whole glass of milk at a draught or two, it forms into a large, solid mass of casein in the stomach; whereas, if sipped slowly, there are many

little casein balls instead of one, which greatly facilitates the process of digestion. Many people have severe pains in the stomach after rapidly drinking a glass or more of iced milk in very hot weather, or when the body is for any reason overheated. The shock to the warm stomach of this mass of iced milk is really dangerous, as the work of digestion can be carried on with efficiency only when food is at the temperature of the blood—ninety-eight and one-half degrees.

Perhaps, everything considered, eggs, next to milk, come nearest to being a perfect food; although, as in the case of milk, if we should attempt to live on eggs alone we would not be able to maintain the bodily balance or poise, which is the object of a correct diet. They are especially good for building up the brain cells and the cells of the nervous system generally, for they contain considerable phosphorus and iron. As a rule, eggs introduce these substances into the body much better than drugs do. In addition to phosphorus and iron, eggs also contain arsenic, acids, and especially albumen, which are all extremely important for the building and maintenance of the organism.

Many people make the mistake of eating raw eggs because they think they are more digestible than cooked eggs. This is not so, because the white of an egg does not excite the secretion of saliva in the mouth unless it is cooked; so that hard-boiled eggs, thoroughly masticated, are really more digestible than raw eggs, though soft-boiled eggs are most digestible of all. It is a little more difficult for the liver to take care of the yolks of eggs than the whites, but they are more palatable, and for most people more easily digested.

Cereals are especially valuable for their large amount of albumen and skeleton-building material. Wheat and oats are notably rich in albumen. The wheat kernel contains eighty per cent. of starch, eleven per cent. of albumen, and about one per cent. of fat. Wheat bran contains even a larger percentage of albumen and almost as much starch. If bran could be as easily assimilated as flour, the value of wheat products would be multiplied many times. Many people think that coarse rye bread is very healthful, and this is true, but it is very difficult to digest and assimilate. It is good for people who have strong digestive or-

gans, especially those who live a rugged, outdoor life.

Macaroni is an excellent food, very nourishing, and it contains considerable albumen, also sugars and starches. Though a little lacking in fat, it is especially valuable because of the large variety of body-building elements it contains. It is not strange, therefore, that so many people, especially Italians, live almost entirely upon this diet, as do the Eastern Asiatics upon rice.

Macaroni is easily digested and easily assimilated, and therefore particularly good for people with weak stomachs and delicate digestive organs. It is also good for invalids and patients who are convalescing. It is especially good for those affected with kidney diseases, for gouty persons, and for those who are getting on in years and have more or less hardening of the arteries, because it does not contain any substances or poisons which would injure the kidneys, the liver, or the blood vessels. Macaroni also tends to neutralize intestinal putrefaction. On the whole, it is one of the best known foods.

It is a strange fact that corn foods, which

are rich in sugar, starch, and fat, and in some of the most important nutritive salts like phosphorus, potash, lime, magnesia, soda, and iron, should be made so little of in the American diet. Corn bread and corn cakes are very easily digested and assimilated, and are good body-builders. Why the great vegetarian restaurants, both here and abroad, make so little of corn products is a mystery, as they usually have so few foods that are rich in albumen. The Italians eat a great deal of corn products. Macaroni, which is made from flour, and corn products are as much a staple food with them as wheat bread is with us. We all know what tremendous workers they are and the great amount of fatigue they are capable of enduring.

Oatmeal porridge makes a very desirable food, particularly in the morning. We know how strong and vigorous, physically and mentally, Scotch people are, who live so largely upon oatmeal products. Oatmeal porridge with the yolks of two eggs would make a splendid breakfast, especially for those who are not subject to biliousness. Oatmeal contains considerable lime, phosphorus, acid, and a little

chlorine. Whole oats contain quite a large amount of potash, iron, and phosphorus, which last is very nourishing to the brain cells and nerve cells.

Buckwheat cakes, which are much used for breakfast in America, especially in restaurants and hotels, are not very digestible, because they contain a large amount of cellulose, which is hard to assimilate. Corn cakes are much preferable. Other foods that contain a large amount of cellulose, such as cabbage, beans, rye bread, etc., cause flatulence, especially those which also contain considerable sulphur.

The cellulose in vegetables corresponds to the connective tissue in meat, which is difficult of digestion unless thoroughly cooked. The starchy foods, like sago, tapioca, etc., are often given to people with weak stomachs, because they do not tax the stomach, the digestion being carried on farther along.

Potatoes and meat make a fairly good diet for those who insist upon eating meat, as the latter furnishes albumen and the potatoes sugar, fats, etc., and these supply the most imperative needs of the body:

An Englishman, Sir William Fairbairn,

who has traveled over the earth a great deal to study the influence of foods upon working people, decides that the strongest men in the world are the Turkish laborers, who live chiefly upon bread and fruit. They eat very little meat and drink no spirits or wines whatever. Frenchmen do not eat anything like as much meat as the English and rarely have stomach troubles. They eat twice as much bread as Americans do, and much larger quantities of fruits and vegetables.

Few realize the value of spinach as a food. Yet it is rich in iron, which is the real life of the blood. Lettuce grown in the sunlight has also a large amount of iron, but when grown in dark cellars or out of the sunlight, while it may be tender, it is very poor in iron.

It is well known that both men and beasts fed upon food poor in iron soon become very anemic. On the other hand, animals which have become anemic from this cause very quickly improve when fed upon a diet rich in iron, like carrots, cabbage, and the different grains. Poor people especially suffer seriously from lack of sufficient iron in the blood, particularly when they live and work out of

the sunlight. Tuberculosis is very common among those who are poorly nourished and lack iron in their blood.

Leguminous vegetables are prohibited to persons who are predisposed to intestinal and stomach diseases; also in cases of hardening of the arteries and gout. They contain elements which generate uric acid. More of this acid is produced by lentils than by peas or beans. When the secretions tend to an excess of acids, a large quantity of potatoes will help to correct this and to make them alkaline. In some cases of diabetes potatoes are not good, because their use is attended with an excessive elimination of sugar. Sweet potatoes are nutritious, but not so digestible as the white variety.

It is a curious fact that mushrooms, which spring up in a few hours after rain, contain a large amount of proteids, which are the tissue-building elements in food, and almost fifty per cent. of such carbohydrates as sugar, starch, and fat, as well as other valuable substances. When perfectly fresh, mushrooms are very nutritious.

Curd or cheese is nitrogenous food, and feeds the solid tissues of the body. There is more

nourishment in cheese that is made from new milk than there is in beef or mutton. Very few realize that cheese is more nutritious than meat. But it is a fact that it contains very much the same constituents, also that it is very much cheaper; but, if taken in large quantities, it is apt to disturb digestion.

On the other hand, the value of cream as a food is entirely overestimated. Dogs fed on it will die in a few weeks, because there is nothing in it to build solid tissues. It is valuable as fuel; its combustion generates heat in the body.

Oysters, if grown in clean water, are very digestible and desirable, although not as nourishing as some other kinds of food. The albumen in fish is very desirable, and for this reason fish is good for people who suffer from exhausting diseases, and when fresh it has the additional advantage of being very easily digested. Much less uric acid is generated by fish, barring salmon, than by meat. Most kinds, except salmon, are good for people suffering from kidney or liver trouble, or gout. Fish is especially good for diabetes patients, as it does not increase the amount of sugar in

the system. It is better, however, to accompany it with some of the carbohydrate foods, such as Graham bread, rye bread, fruits, etc. Such a diet will diminish the amount of sugar in diabetes. Fresh white fish has been found of great value in the treatment of hardening arteries.

The flesh of lamb is not very digestible, because of its fat, a high temperature being required to melt the fat. This is not true of lean lamb, but as lambs are usually fat many people digest their flesh with great difficulty. Pork is perhaps the most universally used meat by different peoples of the world, and while it is not easily digested, it has a pleasant flavor when properly cooked. It is doubtful whether people would eat flesh of any kind but for the agreeable flavors developed in cooking. Lean boiled ham taxes the stomach very little in digestion, as it is free from connective tissue.

The flesh of the domestic turkey, which originated in the United States, is much more nourishing than that of chicken. Domestic duck is quite a nourishing food, but it is not suitable for a weak stomach or delicate digestion. Goose is very nourishing, but very difficult to

digest because of its fat. The liver of young animals is easily digested and contains considerable phosphorus, and very nutritive minerals, such as iron. The brains of animals are rich in phosphorus and quite easily digested.

Many so-called harmless stimulants, like coffee and tea, make people irritable, and if taken in excess cause permanent injury by the constant enlargement of the blood vessels in the brain. This is due to a temporary paralysis of the nerves in the muscular fibres of the blood vessels, so that they lose their tonicity, and are powerless to restrict the blood flow. All alcoholic stimulants have a similar effect. It is this excess of blood which increases the brain activity, thus producing for a time a feeling of well being, a kind of mental exaltation. But this feeling, as everybody who uses stimulants knows, always has an injurious reaction.

Because tea and coffee produce uric acid in the system some food authorities prohibit them, when all other things which are known to generate it are excluded; but, as a small amount of uric acid is always developed, it is doubtful whether total exclusion of these beverages is absolutely necessary. In certain individual

cases of course it is. Cocoa, however, is much more healthful than either. It is also a very mild stimulant and valuable article of food. It is more easily digested than either tea or coffee and less exciting to the nervous system. Chocolate is made of cocoa and a large quantity of sugar, and really is more a food than a drink.

It would be impossible in the space of a chapter, or in a book of ordinary size, for that matter, to name all the different kinds of food and discuss their qualities and effects. The foregoing is merely meant to be suggestive to those who have not made some study of the food question.

The vast amount of ignorance that exists on this question is sometimes tragically, sometimes amusingly illustrated. As an instance of the latter, I know of a French baker who became so fat that he was ashamed to appear on the street because people made so much fun of him. He got so he could not raise his hand to his head to put on his hat. Fortunately for him, some one who knew something about the chemistry of digestion asked him why he did not drop his carbonaceous, fat-producing food

and eat nitrogenous food, such as meat, eggs, cheese, etc., and take a great deal of exercise. He acted upon this suggestion, and in a very short time was perfectly normal again.

I know people who have a perfect terror of their increasing fat who nevertheless continue to eat carbonaceous food and take very little exercise. Yet if the sugars and starches and fats are not burned in the combustion of the body the fat cells will accumulate. How many women are lamenting their increasing fleshiness and resorting to all sorts of drugs to get rid of it; whereas, if they knew the simple laws of the chemistry of food they could largely regulate their weight.

Health is, indeed, so necessary to all the duties as well as pleasures of life that the crime of squandering it is equal to the folly; and he that, for a short gratification brings weakness and disease upon himself, and for the pleasure of a few years passed in the tumults of diversion and clamors of merriment, condemns the maturer and more experienced part of his life to the chamber and the couch, may be justly reproached, not only as a spendthrift of his happiness, but also as a robber of the public—as a wretch that has voluntarily disqualified himself for the business of his station and refused that part which Providence assigns him in the general task of human nature.—SAMUEL JOHNSON.

IV

A VEGETABLE OR A MIXED DIET,—WHICH?

Man is a carnivorous production,
And must have meals, at least one meal a day;
He cannot live, like woodcocks, upon suction,
But, like the shark and tiger, must have prey:
Although his anatomical construction
Bears vegetables, in a grumbling way,
Your laboring people think, beyond all question,
Beef, veal, and mutton better for digestion.

—BYRON.

Some hae meat and canna eat,
And some wad eat that want it;
But we hae meat, and we can eat,
Sae let the Lord be thankit.

—ROBERT BURNS.

WHEN a great railroad is about to make a record run across the continent to compete for fast mail service, in order to outdistance its competitors it selects by hand, piece by piece, the purest coal that can be obtained,—that which contains the least possible slag, foreign matter, or other non-energy-producing material. The manager knows that, no matter how perfect the engine or how successful the

engineer, the success of the competition will depend upon the quality of fuel used. Consequently, no pains or expense is spared in getting just the right food for the locomotive.

The body is man's engine, and there is nothing else in our physical life so important as the fuel we take in for the running of our human train. Our food is our fuel, our chief generator of energy which we transform into efficiency and achievement. Its quality necessarily affects and modifies very materially the quality of our effort. Our ambition, courage, and initiative are dependent upon it, and its quality affects in turn the quality of our mental output.

Whatever nutrition will produce the highest state of health will naturally produce the greatest ability, the highest intellectual efficiency. We are all of a piece: what is best for the body as a whole is best also for the mind, inasmuch as the mind is the product not merely of the brain but also of the activities of all the cells in the body; and these are so closely tied together, so interrelated, that what affects one cell anywhere in our mechanism affects all the others.

There has been a deal of controversy as to what foods are the best and most natural body builders and maintainers, or in other words, as to whether man is naturally a vegetarian or a carnivorous animal, or both. There are physical peculiarities in his structure showing that he was intended by Nature to be both. This is especially indicated in the formation of our teeth, which combine the characteristics of both carnivorous and herbivorous creatures,—both flesh-tearing and grinding adaptations. Our teeth are similar to those of dogs and pigs, while the whole human apparatus for the transformation of food into tissue shows great similarity to that of the dog.

The alimentary canal is several times longer in herbivorous animals than in man, such additional length being necessary for storing and assimilating the larger bulk of vegetables and herbs needed to obtain our required amount of nutrition. Because of its poverty in albuminous substances, in order to get anything like enough to feed the tissues of the body, some varieties of strictly vegetable diet call for such a large amount of material that the digestive organs are overworked. This consumes so

much energy that it often keeps the strict vegetarian tired out in just trying to digest sufficient food to nourish himself. One would thus have to carry in the alimentary canal perhaps twice as much food in order to get the same quantity of nutriment as would be furnished by the more albuminous food products, such as meat, eggs, cheese, and leguminous vegetables. Suppose, for instance, that a person should try to live upon potatoes: he could do so, but it would take something like a peck a day to supply all the different kinds of nourishment required.

Because of the enormous amount of non-leguminous vegetable food one would have to eat to maintain life in its highest integrity, scientists estimate that the alimentary tract of human beings would have to be very much longer than it now is to enable him to live on such a diet, with no milk, eggs, or butter.

Strict vegetarians may get a good object lesson from the digestive apparatus of the cow, which has four stomachs and a very long alimentary canal. A human being ought to realize that he is not equipped in any such fashion. It is true that the Chinese, the Hindoos,

and other vegetarian peoples have a much longer alimentary canal than Europeans or Americans, but this has been developed by many centuries of herbivorous living.

There is a great difference of opinion among scientists, and probably there always will be, as to which is more advantageous to the human race, a vegetable or a mixed diet, especially one in which meat is included. Numerous arguments have been advanced on both sides with the advantages and disadvantages seemingly nearly equal. There is a homely adage that tells us, "The proof of the pudding is in the eating;" and in this matter, perhaps, the results obtained from both systems of dieting may best decide the question.

So far as I have been able to determine from a study of the best authorities, while a strictly vegetable diet has many advantages, it has produced but few of the greatest brain workers or the greatest achievers, the men of powerful initiative and extraordinary executive ability. The world's great inventors and discoverers have, as a rule, eaten more or less meat. The foremost nations of the world have been meat-eating people, or those who have eaten other

nitrogenous and phosphatic foods. On the other hand, what have the vegetarian nations achieved in modern times, especially those living on the more strictly carbonaceous vegetables and grains?

Take, for example, the most progressive of them, Japan. It is said that seventy-five per cent. of the Japanese have, until very recently, been almost exclusively vegetarians. Perhaps no other nation has accomplished so much *with other people's ideas* as has Japan, but she has not been original. Though the Japanese have enriched the sciences of medicine and surgery, yet they have made no important discoveries in these sciences. Originality is not one of their characteristics, but they are a wonderfully ambitious people, quick to copy and utilize the best in other nations, and they are tremendous workers.

Then there is rice-eating India, with her teeming millions, a conquered nation, subject to the little island empire which rules her from a distance of thousands of miles. Seemingly incapable of asserting her own individuality, although remaining forever apart from her conquerors, her position is anomalous amid the nations of the globe.

It is the albumen-eating people, those who get a great deal of it in some form in their food, if not from meat then from its equivalent—eggs, milk, cheese, and butter—that have been the great achievers, the most original, the most inventive and progressive. It is they who, in the later years of history, have accomplished things. They have been the great modern world movers and civilizers.

This albumen, so necessary in the building and nourishing of the most highly developed type of man, though it is found in large quantities in animal food, yet the same elements are found in eggs, milk, fish, cheese, beans, peas, and lentils, and I believe that these are much safer sources for the procuring of the albumen than is meat.

In animal foods the food elements are lifted one step above the vegetable kingdom. In vegetables the food values of the mineral kingdom are organized and lifted into a simple form. Man eats the flesh of animals, and, as it disintegrates, it drops from its higher organization to the simpler elements from which it came, and in this dropping it develops mental power and physical force. As a ball in falling from the top of a tower to the ground develops

exactly enough force to carry it back to the top again, minus the loss through the friction of the air, the food we eat releases force which we utilize for living, thinking, and acting.

Another advantage of animal food, which not only includes the various meats, but also eggs, milk, butter, cheese, etc., is that the albumen it contains more closely resembles that of the human tissues and is more readily absorbed and assimilated than that found in other food. For this reason it is believed by eminent physicians who have made a special study of foods to be the best sort of body builder and maintainer.

There is no doubt that there are many cases where the tissues have been greatly depleted by exhaustive diseases, such as tuberculosis, where a meat diet, perhaps almost exclusively meat, for a while is desirable. But under ordinary conditions I believe that milk and eggs are a splendid substitute for meat and that they are much more desirable.

There are many diseases, such as those of the kidneys and the liver, in which a meat diet is decidedly harmful and often dangerous. Experiments on dogs have shown that when

by artificial means, as by tying the bile duct, the functions of the liver are shut off from the digestive processes, they will instinctively refuse flesh, and if forced to eat it will show symptoms of poisoning. They would soon die if this were continued, because no organ except the liver can neutralize or eliminate the poisonous substances in a meat diet.

These experiments have taught physicians not to give meat or meat extracts to liver patients. The same thing is largely true of kidney troubles. Whenever meat is given in cases of liver or kidney troubles, it should be white, not red meat, and should be boiled, because this withdraws many of the injurious extractives.

We have seen that animal food gives us in much smaller bulk than vegetables some of the most important substances required for the body's needs. It is a great muscle builder, though less so than beans, peas, lentils, or corn raised in the southern part of the United States.

This accounts for the fact that, while strict vegetarians have greater powers of endurance without fatigue, they do not have nearly as

much *quick* muscular strength as meat eaters. This is because the starches and cane sugar of many fruits, vegetables, and grains have to be transformed into grape sugar before they can be assimilated through digestion, while the sugars of meat and other albuminous substances are already in the forms of grape and gelatine sugars, which are quickly absorbed.

A favorite saying of Napoleon's used to be: "Let us make haste to have our soldiers fight while they still have a piece of beef in their stomachs." Powerful muscles are built of albumen. The lion, which is a great albumen consumer, can jump over a fence with a two-year-old steer in his mouth. While the ox could not perform such a feat, yet he could drag a much heavier load for a longer distance than the lion could. The albuminous diet gives off a tremendous quick force; so that, when great sudden strength and energy are desired, albuminous food is necessary.

On the other hand, vegetarians often win in athletics because success in such matters depends so largely upon endurance; but where great strength is required, as in lifting, they are placed, as a rule, at a disadvantage with

the meat eaters. The Indian guides who take tourists up the Himalaya Mountains, and ascend the 17,000 feet in three or four hours, live exclusively upon a vegetable diet, such as dates, rice, etc. These men are so thin that they are nearly all skin and bones, but their endurance on the march is marvelous.

Congo negroes who are naturally vegetarians are also noted for their astonishing physical feats. At one time thirty of them rowed a boat of the commissary general of the Congo army for thirty-six hours, day and night, and this always against the current.

It is a fact worth noticing that, although these negro tribes live usually upon a vegetable diet, they occasionally have a great craving for meat, and when they get a kid or some other animal they will eat it, skin, entrails, eyes, and all,—even the blood. This is undoubtedly because of the great craving of their tissues for more albumen than they get in their vegetable diet.

There is not only a deficiency of albumen in the diet of the strict vegetarian, but a lack of fats and carbohydrates, such as starches and sugar. In other words, a vegetable diet is not

well balanced in all of the three different groups of foods which are absolutely necessary to maintain the integrity of the body—the albumen, the carbohydrates, and the fats. This is why strict vegetarians are constantly overtaxing their digestion; for, in order to get anything like a balance of nutrition it is absolutely necessary for health to take into the system several times as much of some articles of food as are necessary in a more varied diet.

But some vegetarians tell me that they only eat the things which they crave. True, but they may crave a certain food just for the little albumen it contains, and in order to get enough of this they may be obliged to eat a great deal too much of that particular article, and, in so doing, take into their systems some substances that are not only superfluous but injurious, because their tissues are already oversupplied with them. For example, a cow which has been for a long time without salt will sometimes eat too much food which contains only a trace of salt, if this is the only salt obtainable, because of the great craving of her tissues for this special substance. Cattle which are deprived of common salt and other salts and

alkalies will often eat a great deal of dirt just for the little salt and lime contained in the soil. They will lick fertilizer bags with avidity for the potash and soda in them.

Vegetarians who exclude from their diet all animal products, such as milk, eggs, and butter, often suffer from an oversupply of some nutritious substances and a serious lack of others. The very fact that infants could not even be kept alive upon a strictly vegetable diet (without milk), is a pretty good argument against it. On the other hand, a meat diet should never be given to very young children, because their organism is not sufficiently developed to eliminate the chemical poisons which generate in the body; nor should people in advanced life eat much meat, for, their eliminating functions not being so active as when younger, they cannot take care of the decomposing animal products, and hence they suffer chronically from poisons of which their system is powerless to rid itself.

But a strict vegetable diet which excludes milk and eggs is one-sided and on the whole does not tend to produce the highest mental and physical condition. In such a diet there

is constant danger of undernutrition, especially for those who were once meat eaters and whose systems have not been adjusted to taking care of the much larger necessary vegetarian bulk.

It has been observed that many people who live upon a purely vegetable diet, without milk, eggs, or butter, have an anxious, troubled, drawn expression on their faces, and that they are often pale, anemic, and prematurely old in appearance. This may be merely fanciful, for I know strict vegetarians who seem to be perfectly healthy and strong, and they claim that they are in much better health, better spirits, and that their brains are clearer than when they ate meat.

Most strict vegetarians undoubtedly suffer evils which come from undernutrition of some of the tissues. As a rule vegetarians have less disease-resisting power than eaters of a mixed diet. A vegetable diet without milk and eggs is especially risky for those who have inherited a tendency to tuberculosis, or similar diseases, because the perils of infection, for those undernourished people, are increased.

Strict vegetarians often suffer deterioration

somewhere in their system, especially in the ductless glands, which govern the transformation of the food into tissues, which generate heat and energy; and whatever causes deterioration in these glands, particularly the thyroid gland and the sex glands, affects the brain power. This would account for the lack of inventiveness, ingenuity, and initiative in people generally whose food is seriously lacking in albumen.

The great defect in a strictly vegetarian diet seems to lie in the lack of albumen and in the great danger of overloading the system in the effort to secure sufficient albumen from such a diet.

All mental and physical force must come from the blood, and the blood is manufactured from the food we eat. If this is deficient in quantity and variety of nutriment the blood becomes impoverished and the quality of our thinking will correspond.

Many food investigators claim that there has been a mental deterioration as well as a falling off in the general appearance of those who have adopted an exclusive vegetable diet. They believe that strict vegetarians who ex-

clude milk and eggs do not generate the physical and mental vigor, the brain power, developed by those who live upon a mixed diet. Of course, enthusiastic vegetarians strenuously deny this, and also claim that they have discovered one of the great secrets of power; that is, ability to concentrate the mind more completely, because they claim that their brains are clearer and their blood purer, because it does not contain many poisonous products from meat decomposition. They claim that the glands, such as the liver and kidneys, are not so overworked with a vegetable diet as they are with a meat diet.

It seems to me that, in spite of all the arguments in favor of a strictly vegetable diet, it is not the kind best calculated to fulfil the requirements of the complicated human machine, and does not furnish the best fuel that can be selected for running it satisfactorily.

If we exclude all flesh and fish products from our diet, some animal products like milk, eggs, butter, and cheese should be substituted. They are, I believe, in our present state of development, absolutely essential for the maintenance of perfect integrity of the body.

When we attempt to live upon any one article alone, or diet of one class alone, there is a perpetual call for nutriment in all of the tissues which are not properly supplied, which do not get fully fed by this particular kind of food. There is no doubt that many people, after a while, become accustomed to the semi-starvation of some of the tissues through their one-sided diet, but this fact does not minimize the injurious effects of insufficient nourishment. Inhabitants of countries where polished rice, which is inferior to the unpolished, is the chief diet, suffer from a bad nervous disease called beri-beri. This disease was very prevalent in the Japanese navy until meat was substituted for rice. The Hindoos, who live mainly upon rice and millet and vegetables, are always thin, though rice contains over eighty per cent. of carbohydrates,—more than any other vegetable.

Nature guides us instinctively to do the things that are best for us. She gives us a sort of instinctive desire for the foods that are best calculated to build up and nourish the body. Perhaps we never thought of any particular reason why we always like to eat meat

and potatoes together. It is because the potatoes furnish the starch and sugar which are lacking in the meat, and the meat contains the albumen which is lacking in the potatoes. If we should attempt to live upon potatoes alone we should have a constant craving for albumen in some form which might possibly be best supplied in such things as eggs and milk rather than meat.

Owing to the large amount of potash and the small amount of soda in potatoes, we also crave salt with them. On the other hand, we do not need salt with rice, for it contains plenty of soda. We all crave butter with bread, but would not think of eating either alone. Together they form a balanced food, as palatable as it is nutritious. Thus Nature tends to proportion food values in a manner best adapted to tempt the appetite, to give us the greatest amount of pleasure in eating, and to maintain the integrity of the body.

In order to make up as far as possible for this lack of balance, people who insist upon a strict vegetable diet eat a considerable quantity of leguminous vegetables, such as beans, peas, etc., so that they may get as much albumen as

possible. When there is too little albumen in the food, more fats should be taken. Many vegetarians seriously suffer from lack of fat. There is considerable fat in green vegetables, especially in those which are grown in strong sunlight. Some kinds of nuts are very rich in fat, which often makes them indigestible. Cauliflower contains a large amount of fat, but is easily digested. Mushrooms contain considerable albumen. Tapioca, sago, and rice are especially rich in hydrocarbons. Asparagus is a very delicious and nourishing food and contains a considerable amount of iron, potash, and soda. It is very stimulating to the kidneys. Spinach is one of the best vegetable foods, containing a large amount of iron, some arsenic, and considerable fat. Many physicians prize it more than any other vegetable in restrictive diets. The chief objection to spinach is that it contains considerable oxalic acid, and hence should not be eaten too freely.

It is a pity, however, to be obliged to eat large quantities of vegetable food in order to get the necessary albumen, when it could be gotten so much more easily and conveniently in an egg-and-milk diet, if meat is objection-

able or does not agree with one. Milk and eggs of themselves constitute a marvelous combination. They contain practically every element that enters into the human body. They are also invaluable as nutriment in certain diseases.

There is no question that nervous people are materially helped by a vegetable diet, supplemented with milk and eggs. Patients suffering from gall-stones are wonderfully relieved by confining their food to milk and vegetables. Milk, vegetables, and fruit, even when taken in large quantities, do not produce any harmful effects on the liver and kidneys, as little poisonous matter is produced by intestinal decomposition.

It is equally true that an excessive meat diet unduly excites the sexual instincts, the brain, and makes one nervous, and increases the difficulty of bringing the mind sharply to a focus. Most people suffer from an excess of solid food, especially of meat and bread. They do not eat enough fruit and vegetables and cereals, some of which are especially helpful in eliminating poison from the system. I have known people, who have changed from an al-

most exclusive regimen of meat and solid food to one of fruits, vegetables, milk, and eggs, who have revolutionized their health and their appearance. They are more robust; their minds are keener; their skins are clearer and softer, and they tell me that they are not so susceptible to cold, feel much stronger and younger, and can think and work better than they ever did before.

When in doubt about your diet, or any particular article of food, you are not likely to make a mistake by substituting milk and eggs for meat. Many people find hot rice and the yolks of eggs very nutritious and easily digested,—but the rice should always be unpolished. This is far superior to the rice of commerce or the polished variety, nine-tenths of the nutritive values of which are lost in the robbing of the grain of its shell in the polishing process. It also loses its silver screen which is rich in phosphorus, and other nutritive salts which make the unpolished rice so valuable.

One reason why so many people think that they would not be so strong if they did not eat meat is just because this food is transmitted

into energy so much more quickly than a vegetable diet. But fish and eggs have a similar advantage, and the latter constitute a cleaner food, for they do not leave so large a putrefactive residue in the intestines after digestion, and hence do not cause so much danger from the absorption of poisons into the system.

We all know that nothing is quite so foul and repulsive as the decomposition of a dead body; and this is what takes place, practically speaking, in the system of habitual meat eaters, especially excessive meat eaters. Much of the meat taken into the stomach, not being digested and assimilated, it decomposes. Many of the foul poisons from its decomposition are absorbed into the system, and cause chronic ill-health. There is perhaps no one thing which causes more self-poisoning and distress, and more often accounts for a sallow, muddy complexion, than too prolonged retention of food stuffs, especially meat, in the body, whether from intestinal inactivity or from lack of regularity in one's habits. When the food has given up all the nourishment which the digestive process will take up and absorb into the system and properly assimilate, the residue (usually very large) is a menace, and the re-

sulting poisons not only bring on all sorts of troubles, such as biliousness, headaches, mental dullness, restlessness, and lack of energy and of zest for life, etc., but also lays the foundation of many a disease.

It is well known that, soon after life is taken, decay sets in. It is also well known that animals are subject to a great many diseases which it is very difficult and often impossible to detect without a scientific chemical examination of each animal. According to a recent report of the government inspectors, more than a million carcasses each year are condemned as unfit for food, and most of these because of the presence of tuberculosis. There is no doubt, therefore, that meat eaters, in addition to the other diseases to which human beings are exposed, run the risk of taking on the diseases of animals. There is probably less tendency to the development of uric acid, rheumatism, gout, apoplexy and other physical ills in people who do not eat meat. Many of those who have discarded a meat for a vegetable diet claim that they do not suffer as formerly with a sense of fatigue and that they have greater power of endurance.

In opposition to this, brain-workers, artists,

writers, some literary geniuses, and other professionals who have experimented with a vegetable diet claim that thereby they experienced a certain intellectual deterioration or loss of mental force, vim, ambition. It is possible that they may have made the mistake, as so many do, of a too sudden change of regimen. The adaptation of the billions of cells of the body to a certain kind of nutrition naturally suffers from violence of this sort. The digestive organs are accustomed to doing a certain kind of work, and when suddenly shifted to an entirely new work there is naturally more or less rebellion. Such a radical transformation should be made very gradually, the change covering, perhaps, many months. I know people who, after a lifetime of meat eating, have suddenly adopted a vegetable diet, and have deteriorated physically and mentally. Such violent changes wrench one out of a habit, which has become largely normal, because the tissues have become adjusted to that order of living. They should be avoided.

For many people fish is an excellent substitute for meat, and there is no doubt that most of us would be greatly benefited by omitting

meat altogether, and substituting milk, fish, and eggs. This should be done very gradually, so that our cell life may become accustomed to the change without any shocks.

It is a significant fact that there is a growing tendency among intelligent people to eat less and less meat. It is my belief that it should not be eaten more than once a day, if at all, and then very sparingly and not at the morning meal.

Anthropologists tell us that man, in the early stages of his evolution, was a fruit-eating animal and lived largely in trees; and that, five thousand years before Christ, he began to make spearheads and knives from flint, first for defence and attack, and then for killing game, which he ate in connection with his former food. After centuries of experiment with a flesh diet, shall we become again a non-meat-eating people?

When all the arguments for and against a strictly vegetable diet on the one side and a meat diet on the other have been weighed, I, personally, think we can safely omit meat and get the same nitrogenous food values in other articles which will keep the muscles, nerves,

and other solid bodily tissues in good condition. It is not necessary to kill animals for food. Milk, cheese, butter, eggs, etc., are splendid substitutes for meat. Neither is it necessary to be strict vegetarians. I take the middle ground, and am fully in accord with the views of the greatest modern authorities on food values. They claim that, taken all in all, the best known diet, everything considered, is a vegetable diet, plus milk, eggs, butter, and cheese. I am confident that this offers many of the advantages and very few of the disadvantages of either an exclusive vegetable or meat diet.

V

NATURE'S OWN FOOD

“An't please your honor,” quoth the peasant,
This same dessert is not so pleasant;
Give me again my hollow tree,
A crust of bread, and liberty.”

—ALEXANDER POPE.

His thirst he slakes at some pure neighboring brook,
Nor seeks for sauce where Appetite stands cook.

—CHARLES CHURCHILL.

Like the sap that turns to nectar in the velvet of the peach

—WILLIAM WALLACE HARNEY.

For he on honey-dew hath fed,
And drunk the milk of paradise.

—S. T. COLERIDGE.

EVERYTHING which feeds the body can be traced to the chemistry of the sun, the soil, and moisture.

Fruit and water, two of Nature's most valuable food products, come to us from her laboratory all ready for consumption. They need no preparation at the hands of man to make them more palatable. The most cun-

ning treatment by the most skillful chef cannot improve their flavor.

Fruit is concentrated sunshine, condensed force. It is adapted to people of all ages and conditions, and is especially desirable for those in advancing years. Its food values lie in the sugar, salts, acids, water, potash, lime, iron, etc., which it contains. Some fruits are particularly rich in such important substances as iron and lime. All of these substances are of the greatest value in the building and nutrition of the body, but they produce their normal effect only when the fruit has been ripened in the sun.

The general impression that fruit is a very healthful diet is a correct one. But most people jump to the conclusion that fruit, if fruit, must be good anyway. As a matter of fact this is not so. For example, fruit that is gathered too early, in order to be in better condition to ship long distances to market, has not been exposed to the sun sufficiently long to have its injurious acids extracted. These acids abnormally hasten digestion and hurry the food contents along so rapidly in the alimentary tract that the digestive processes are

very imperfect. The chemical changes in this half-digested material generate poisons which are most injurious. The result is that the eaters of unripe fruit not only do not get the benefit of ripe fruit juices, the starch of which the sun has actually digested into sugar, thus preparing it for the body, but instead they get juices which are actually harmful.

There is always a large surplus of acids in green fruit, like unripe apples, plums, gooseberries, etc. Children often eat them, and sometimes grown people, and experience the effects of too rapid digestion. The laxative tendency of unripe fruit often deceives people, and they take it for granted that they are being benefited, when they are positively being injured. Owing to the hurrying of the food mass along the alimentary canal the various digestive fluids which are pouring into this tract at different points, in order to perform their specific digestive functions, do not get a chance to do so, and the consequence, as we have already seen, is a very imperfect digestion and the development of injurious poisons.

Not only all green, immature fruits and vegetables, but also half-grown cereals hurry

the digestive processes so rapidly that the nutritive values of even the healthful foods taken at the same time are not extracted, absorbed, and assimilated. Consequently, the vitality is lowered and the resisting power of the body is lessened.

Fruit should never be eaten until actually ripe, and the sun should do the ripening. Much of the fruit that is shipped across the continent is gathered in a very green state, long before the sun has had an opportunity to work its marvel in it, extracting the injurious acids, and by chemical transformations changing the crude, sour juices into sugar.

All half-grown or prematurely gathered fruit should be condemned. Bananas, for example, are sent long distances to us before the sun has had a chance to perform its miracle of chemical changes, and, as a consequence, multitudes of people are seriously injured by what would be a perfectly delicious and most healthful fruit, if it were only allowed to ripen naturally in the sunshine. As bananas are now shipped it is not safe to eat them until black spots begin to appear on the skin, and even then they only contain a comparatively small

part of their possible value. Most people are entirely ignorant of the nutritive value of this fruit, because it is eaten in a half-developed, unripe condition. A perfectly ripe banana is a very nutritious and eminently natural food.

There is a vast difference between the value of ripe fruit, that which has had the sun miracle performed upon it, which has ripened naturally, and the half-developed green fruit which people are forced to eat because they cannot get the other. Green, immature fruits contain substances which are positively poisonous to the body, and multitudes who eat them suffer from chronic fruit poisoning and do not know what is the matter with them. In order to make it more palatable many people put sugar upon this green, unripe fruit, but this actually changes the natural sugar into an unnatural substance.

The sun is the great giver of life, and it should have an opportunity to finish its work. Its heat is just as necessary for the ripening of fruit as the heat of the oven is for the baking of bread and other cereals. It changes its chemical composition, developing new flavors and healthful substances.

The time will come when no fruits or vegetables will be allowed to be gathered until the great Chemist of nature has completed his work in them. Government food experts will seize and destroy all kinds of half-grown, half-ripened fruits and vegetables that are exposed for sale. The selfish commercial motto of today, "Anything which will sell, whether it is healthful or not," will not be tolerated. It will not be possible to do what men are at present doing,—scientifically growing fruits not with a view to generating and developing healthful articles, but of producing fruits which will ship well. One of these products which commercial plunderers are now breeding is a hard, juiceless apple, whose chief value is that it keeps a long time. It has very little of the nourishment and the delicious starchy sugar products which abounded in the apples formerly produced in the Eastern States, especially in New England. Beware of these products of commercial greed! Eat less fruit, if you must, but let it be a natural product, ripe, wholesome, nutritious.

Fortunately, we have a great variety of excellent fruits, both home-grown and imported,

fresh and dried, from which to choose, and many of them are so cheap that they are within the reach of all but the very poor. Even they eat a great many bananas which, in spite of the fact that they lose much of their natural value by not being ripened in the sun, still contain a great deal of nutrition. Indeed, the banana has been called "the poor man's beefsteak." When well masticated and eaten alone it is easily digested. Many people make the mistake of eating too many kinds of food with bananas.

Oranges, lemons, and grapefruits are excellent popular fruits; the two former we have with us nearly the year round, and the grapefruit a good part of it. All three are great aids to digestion. An orange or a portion of grapefruit is especially beneficial when eaten before breakfast.

Lemons are perhaps the most valuable of the three. They are extremely healthful and are splendid sterilizers of poisonous substances. Physicians claim that they will even sterilize liquids containing typhoid fever and other disease germs. The lemon juice tends to keep the digestive tract clear of germs and is a splen-

did antiseptic. Lemonade makes a delicious and refreshing drink in summer. Most people would be much healthier if they would eat more lemons.

Nothing can be more healthful than apples, which, like oranges and lemons, we have all the year round. They are also, like citric fruits, aids to digestion. This is true of most fruits, fresh or dried. Plums, cherries, strawberries, pears, grapes, pineapples, currants, raspberries, peaches, should be eaten plentifully in season. It is possible, however, to eat too much fruit, and this is as harmful as eating too much of any other one kind of food.

Too much fruit or too large an amount of vegetables, like too much meat, overworks the liver and causes biliousness, skin troubles, constipation, etc. Some people, when they read an article about the great value of fruit as a food, pretty nearly live on it, until they find that they are running down. They feel fairly well, but as fruit, at least in our climate, does not generate sufficient staying power, they soon find they must add other articles to their diet. That is, the system requires considerable solid food, such as breadstuffs, and other things

which furnish the body with necessary ingredients not contained in fruit or vegetables, or not in sufficient quantities to supply its needs.

Many people eat fruit with milk and sugar. These tend to change the natural acids into an abnormal product. As a rule, it is better to eat fresh fruits alone, without sugar, cream, or any other accompaniment. Every fruit, even the lemon, has an amount of natural sugar which is usually in the right proportion to be healthful. There is no more delicious fruit, for example, than strawberries; but most people so smother them in sugar and cream that they not only neutralize much of their healthful effect, but they lose altogether their delicate flavor. We do not get the best effect of this or any other fruit when we use sugar with it.

The juices of ripe fruit are especially good for the liver, whereas too much sugar produces a torpid liver and hence biliousness. In winter, when we have few, if any, fresh fruits, dried varieties, dates, figs, raisins, prunes, etc., may be substituted with advantage.

In the matter of fruits, as in all other things, Nature has provided that we shall have them in

the greatest variety and abundance during the seasons when we need them most—spring and summer. Fruits and vegetables are then at their best, just when the body especially requires their cleansing and cooling effects.

A century ago, when sailors took long sea voyages on sailing ships, they were much afraid of the dread disease, scurvy. This disease is largely due to the lack of certain elements in fruits and vegetables which are absolutely necessary for perfect bodily health. As there were no refrigerating plants in those days, or other means of keeping perishable foods in good condition, the sailors lived on salt meat, biscuits, very poor water, and alcoholic drinks. Some of the things that were lacking in this diet were salts of potash and lime which the blood must have in order to maintain its purity.

Captain Cook, who was the first man to sail around the world, made a study of scurvy and discovered its cause; and, although he could not take sufficient fruits and fresh vegetables to last many months, he found that lemons may well be used as a sort of substitute. The result was that after a four years' voyage the

great explorer returned to England having lost only four men from scurvy.

Explorers to-day dread scurvy more than anything else, owing to the fearful ravages it works on the human system. Commander Evans, one of the companions of the heroic Captain Scott on his famous dash to the South Pole, in a lecture given in New York a short time ago, said, "I will always have scars in my lips where I bit through the flesh when the agony of my disease [scurvy], gripped me." Again, showing the value of fruit and vegetables in healing the disease, "I was revived sufficiently to be fed fried onions, which helped my scurvy greatly, and in a day or so I could eat a little fruit."

Many people of rheumatic tendencies eat but little fruit because they are afraid of too great an amount of acids. But they will find, by experimenting with different kinds of fruit, some which will not only not disagree with them, but will rather be a great help in washing out the earthy salts deposited in the tissues, thus helping to preserve their health and to lengthen their lives.

Water, next to air, is the most important

element in sustaining life. Just its exact use in the system aside from flushing and cleansing the tissues and facilitating the distribution of more solid food material is unknown.

We do know that water constitutes more than seventy per cent. of the entire weight of the body; that it enters very largely into the structure of all foodstuffs, and that it is found in all the tissues of the body. On the other hand, while there is a great deal of mineral nutriment in our drinking water, picked up as streams run over the soil dissolving the minerals, we know that water cannot build tissue, or furnish heat or energy or repair waste. Yet a great deal of water is absolutely indispensable to our diet, and human life has been sustained for long periods on water alone.

The importance of water in the system is indicated by the fact that the body of a person weighing one hundred and fifty pounds would contain nearly one hundred and ten pounds of water. Much of this, however, comes from fruit and vegetables, of which water forms something like ninety per cent.

When, for any reason, there is a lack of water in our system, our muscles lose their

elasticity and resilience and the cells become shriveled. All the cells in the body would be completely ruined if all their water were extracted and they were allowed to become dry. There is not a single brain cell that could survive the loss of all its water. So, while not in itself a food, water supplies a great want everywhere in the system. When we drink too little of it, chemical poisons from food combustion and wear and tear in the system accumulate with disastrous results.

Animals and birds often die for lack of water. I once knew of a man who kept a rabbit with a large litter of young ones without any water whatever. He said it was bad for rabbits. Think of the mother supplying these young ones with milk and herself getting nothing but dry food like barley! Of course the poor animal died.

Few people drink enough water. All the tissues of the body require it, in varying amounts. There are multitudes of employees in shops, factories, and offices who scarcely taste water during the day. The result is that the solid portions of their food are not properly diluted, hence, not properly distributed, and

the waste products, the broken-down cells from muscular and brain activities, are not carried away, because there is not sufficient water in the blood to properly flush the cells. The blood is too thick.

A great many people, especially women, purposely refrain from drinking water because they are afraid it will make them fat. This is a great mistake, as it has been proved that, under no circumstances, whether drunk while eating or between meals, does water make flesh. While drinking at meals is not so injurious as many think it is, it is best to take between meals a large proportion of the fluids used, unless one has a weak circulation, when he should be very careful about drinking much before violent exercise, as this causes unnecessary strain upon the heart. Mineral waters should be used with caution, especially if containing much mineral matter.

Some people are injured by adopting the water fad. Having been told by physicians that the majority of people suffer from taking too little liquid, that the cells are kept too dry to perform their normal functions, they go to the other extreme and drink too much. The

consequence is that they take so much liquid into their stomachs that they not only dilute the digestive fluids too much, but they also hasten the food products too rapidly along the alimentary canal, getting very serious results in imperfect digestion and mal-assimilation. Too much water puts too great stress upon the digestive organs.

We must use common sense and good judgment in all matters relating to food and drinks; and not be carried away by fads or extremes in any direction. Although all foods contain a great deal of water, it is necessary to take it into the system in liquid form to a greater or less extent. Thirst is merely a call of the cell life for water which is so rapidly evaporated and excreted from the body; and, when the amounts of liquids is reduced below a certain percentage, the tissues cannot get the nutriment they require from solid foods. For this reason, a large amount of fluid is necessary to dissolve the food substances so that they can be absorbed and appropriated by the various tissues.

Man needs water, just as plants need it. He absorbs it, just as they do. We have probably

all noticed that bathing will relieve thirst, because the liquid is absorbed into the body through the pores.

A last word on the subject: be sure that the water you drink is absolutely pure. Nothing is more dangerous to health and life itself than impure water.

VI

HOW FOOD AFFECTS CHARACTER

“We who did our lineage high
Draw from beyond the starry sky,
Are yet, upon the other side,
To earth and to its dust allied.”

To be strong
Is to be happy.—H. W. LONGFELLOW.

Without health life is lifeless.—FROM THE GREEK.

From labor health, from health contentment springs;
Contentment opes the source of every joy.

—JAMES BEATTIE.

All human history attests
That happiness for man,—the hungry sinner!—
Since Eve ate apples, much depends on dinner.

—BYRON.

“MALNUTRITION is responsible for criminality in many cases, and by proper feeding of criminals their criminal tendencies may, to some extent at least, be removed,” says Dr. A. F. Gillihan, Health Director of Oakland, California.

In conjunction with Muer E. Jaffa, Pro-

fessor of Nutrition at the University of California, Dr. Gillihan recently arranged a schedule of scientific dieting for prisoners in the Oakland jail. He believes that his experiments with the prison diet will prove the truth of his theory, that malefactors while in prison may be put on such a diet as will relieve them of their vicious tendencies and restore them to liberty better able to withstand temptation and less likely to revert to criminality.

Thirty-nine of the unemployed men who were taken out of the "bread line" in New York some time ago were found to be totally unfit for work. Owing to lack of nourishment, they had become impoverished physically and mentally and were not in condition to perform the duties of positions offered to them. How long would it be before men undergoing such privations would be driven to desperation and the possible development of criminal tendencies?

There is a great truth in the German proverb, "As a man eateth, so is he." Insufficient diet, or devitalized food, frequently badly cooked or unsuited to one's needs, causes slow starvation in the tissues and consequent phy-

sical and mental deterioration. What we eat and how we eat it not only affect our efficiency, but also very materially determine our disposition, our temperament, and not infrequently our characters.

How few realize to what an extent not only their success or failure, but not one whit less their popularity or lack of it, depends upon their diet!

How many, for example, suffer tortures from "nerves" who would get relief by eating proper food! They go through life cross, crabbed, crotchety, burdens to themselves and all who know them, largely because they eat wrong things, which tend to irritate their nervous systems, which do not properly nourish them, and which do not in any sense supply their individual needs. Most of them are meat eaters, and do not know that such food, especially if red meat, is too stimulating for nervous people. They would be materially helped by substituting a vegetable diet, with the addition of milk, eggs, butter, and other milk products. Some vegetables, like celery and lettuce, whether eaten singly or in salad form, are especially good for the nerves. They have

a soothing effect and tend to produce refreshing sleep, and are particularly good for sufferers from insomnia. Asparagus is similarly beneficial.

Many dispositions are ruined by poorly chosen food. Dyspepsia or any other ailment induced by wrong eating, makes them pessimistic, gloomy, discouraged. They cast a shadow of gloom and walk in it, as it were, wherever they go. They antagonize others when they do not mean to. They cannot seem to get on. They are failures,—victims of bad food.

Everywhere we see business men, professional men, men in every walk of life, who are chronic dyspeptics, cross and crabbed with their help, sour and irritable at home, and misery-makers of everybody around them because they never learned the science of proper eating.

Thousands of homes are made wretched and discordant because of the nature of the food or by poor cooking. Nothing will ruin the peace of a family more effectively than bad digestion. One dyspeptic member will banish the rightful happiness of a whole household.

How sad it is to see the faces of once beautiful women deeply furrowed with wrinkles, made ugly by fretting and nagging caused by preventable dyspepsia!

I know of a family almost every member of which has had dyspepsia for years, and they are continually quarreling, bickering and fault-finding, especially at table. In fact, the family board seems to be a sort of clearing house for the display of bad temper. It is a common thing for one or more to get angry and leave before a meal is finished. More than once they have been known to throw articles at one another across the table. Sometimes their heated discussions, in which there is much bad blood, will last until they are exhausted. No two members of this family seem to be able to agree about anything.

More suffering and discord are caused by too much food than by the want of it. More homes are wrecked by the sins of overeating than by hunger. More tempers are ruined by indigestion, by foolish diet and by bad cooking than in any other way. Many a home has been wrecked, many a divorce has been caused by improper food. Half of the fretting, worry-

ing, faultfinding, and nagging in the world is caused by overeating, undereating, or eating wrong kinds of food.

Envy, jealousy, and selfishness are exaggerated by table sins; sweet tempers are ruined, equable dispositions are unbalanced. Often a naturally sweet-tempered mother will "fly all to pieces" with irritability over trifles because her stomach is out of order.

Oh, the wastes of life, the sins of life, the misfortunes, the crimes, the worries, the fretting, the nagging caused by bad food!

There is an intimate relation between health and morals. Dr. Max Groszman, of New York, has made an exhaustive study of the relation of indigestion and lying. He says that people who are naturally truthful develop a decided tendency toward deception, which even grows to lying, when suffering severely with indigestion. There seems to be a pretty close relation between one's stomach and his morals.

When one is ill or is distressed from indigestion or dyspepsia, the world takes on a correspondingly somber hue. Courage is very dependent upon the physical condition. It is

hard for a man to be courageous when suffering from physical ills, when he is downhearted and discouraged; hence, when truth-telling involves any unpleasant consequences for himself, the sufferer is tempted to misrepresent.

Invalids — especially nervous invalids — frank, outspoken, courageous when strong and vigorous, will often deceive, because they do not feel physically able to tell the exact truth when their own interests and comfort are at stake.

Cheerfulness, which is our duty for others' sakes and which makes the sunshine of character, takes flight with courage also. The whole world of the dyspeptic is clouded by gloom, which sometimes lifts only to plunge him into deeper darkness than before. His conversation is fitful and uncertain. What was bright and cheerful and sunny yesterday may be black and forbidding and melancholy to-day.

We want a man who is well balanced and is not cursed with some little defect or weakness which cripples his usefulness and neutralizes his powers. We want a man of cheerfulness and courage, who is not a coward in any part

of his nature. No one is qualified to live sanely and bravely unless he has superb health, and in most cases his food makes or mars this.

In reply to some enthusiastic admirer, who was lauding her husband's genius, Jane Welch Carlyle said, "Aye, man, but think what he would have been if he had had a stomach!"

"Who does not know," says Dr. William Matthews, "that nine-tenths of the ill humor, fretfulness, and despondency of men springs from ill health? Who that has read the biography of Carlyle, that Prometheus with a vulture forever at his heart, does not remember with what deep suffering this strong spirit struggled through the long, weary years against his tormentor? How much of the irritability, crabbedness, and censoriousness which he manifested were due, not to a naturally bad temper, but to the pangs of an obstinate malady by which his whole nature was warped and distorted?"

If Carlyle could have made a scientific study of food, he would no doubt have been able to rid himself of the dyspepsia which ruined his stomach and darkened his life.

I believe that our religious views are very

materially affected by our food. If Calvin had lived an entirely different life; if he had had a different diet and plenty of outdoor exercise, if he had played golf and tennis, he would have given the world a very different kind of theology. It is difficult for a theologian, even with the aid of his Christianity, to get very far away from his stomach as far as his views are concerned. They would depend a great deal upon his digestion, and that would limit his mental outlook. It makes a great difference in one's manner of looking at things whether he is an optimist or a pessimist, and his food will go very far toward determining this.

The connection between the mental and the physical is so close and sympathetic that one is constantly reacting upon the other. It is very important, therefore, that all of us should be properly fed. It is especially important for the young to keep strong and robust physically, for this helps them fundamentally in their character building. Right eating is right living.

Some philosophers have tried to exalt sickness into saintliness, and to laud infirmity as a

means of spiritual growth. Clergymen used to tell us that pain, weakness and disease have a chastening influence; that they are factors in the Divine plan to soften our hard natures, to prevent us from getting too worldly, and to keep our minds upon heavenly things.

Think of bringing up children to believe that the God of Love, the God of Kindness, the Father-Mother God, would from cruelty or indifference afflict any human being with distress or disease, or handicap an innocent child by inflicting pain upon him, instead of showing him that these things are merely the results of bad living on his own part, or of the sanitary sins or breaking of other health laws by his ancestors!

Children should be taught that the Creator intended that everybody should be strong and robust, should be healthy, and should radiate joyousness and goodness. They should be taught that there are a thousand evidences in our human structure that physical discord of every kind is absolutely abnormal; that it is the result of wrong eating, of wrong thinking, of sin—always of breaking some laws of health or of life.

While pain and bodily weakness may have a chastening, spiritualizing effect on some natures, it has quite the opposite on others, and there can be no question that frailness of body is an inevitable handicap.

Every child ought to be early taught to know the foods that are his physical friends and those which are inimical,—that good wholesome food, properly eaten, suited to his age, temperament, and activity, with plenty of refreshing sleep and of invigorating exercise in the open air, and with lots of play and healthful recreation, and a right mental attitude, are the friends which are helping to build his body and will develop his highest efficiency, and be the means of bringing him the greatest happiness. He should learn that everything which cuts down his vitality, such as dissipation, irregular living, overeating, undereating, eating the wrong things, or explosive passions like fear, anxiety, jealousy, hatred, envy, and greed, are the enemies of his well being and will reduce his achievement and mar his happiness. He should be taught that any violation of the laws of his being, in whatever direction, whether wrong thinking, wrong

acting, or wrong eating, will minimize his possibilities of success in the years to come.

Our schools teach many things which are of little practical value, as they are never really used, yet fail to teach what to eat and how to live in order to get the maximum of efficiency and happiness out of life.

Everywhere we see human dwarfs, children and men and women, whose development has been arrested and whose skeletons and muscles and brains are deficient, because of lack of proper food.

How often we see ignorant mothers, who have never learned the most ordinary principles of foods, feeding their babies and children with all sorts of dishes, many of which are totally unfitted to make blood or build tissue! Only recently I heard of a mother in a boarding-house who always fed her baby with mixed pickles, because, she said, it wouldn't eat anything else, and she let it eat them until it was sick! How often are poor babies in the slums of our great cities fed with sausages, pickles, bananas, tea, coffee, or even beer, while they are yet in arms!

A great many babies and children who are

almost always cross, who cry a great deal of the time, and who make everybody miserable day and night, are not properly fed. This is often the cause of all the trouble. Many dispositions are ruined in this way.

Mental power and efficiency, disposition and success or failure, live chiefly in the food we eat, which builds up and sustains cell life. The building cannot contain anything which was not in the building material. The body and its organs can only contain what exists in the elements taken in the food and drink, plus what we gain from breathing the atmosphere and absorb from the sunshine.

Many go so far as to say that we resemble the animal whose flesh we eat habitually and in large quantity. Writers have fancied that they could trace many of the characteristics of the hog in people who were excessive pork-eaters.

However that may be, there can be no doubt that meat is a great excitant of the nerves. In some countries there is a custom, as in Abyssinia, for example, of eating a large amount of raw flesh and drinking blood on great festival days. The result seems to be genuine

intoxication. The people become exhilarated, or even wildly excited, by the stimulating energy given off by the meat. They dance for an hour or two afterward, singing and shouting hysterically all the time.

One of the chief arguments against flesh eating has been that people who live upon a meat diet have more of the animal in them, are more passionate, excitable and hot-tempered, than those who do not eat meat. War-like tribes have always been great meat eaters. The Spartans lived on rare meats and blood soups.

Animals also show more fight and are much more vicious and fierce when fed upon meat. In taming wild, carnivorous animals it is always necessary to take away their meat diet, and experiments have shown that often, even when they have grown very tame, if flesh is given them, they will become wild and ferocious again. Dogs often become vicious and savage when they eat too much meat. Some animals are absolutely unmanageable when fed upon a meat diet. Oftentimes wild animals in the Zoological Gardens become so vicious that their meat diet is cut down or omitted

altogether. Then they become noticeably more docile.

It is beyond question that the animal passions in man are very seriously influenced by food, especially by meats, pungent sauces, and rich, stimulating dishes of any kind. Fat meat, particularly, is said to be too inflammatory for the young and tends to excite the sexual nature. For this reason a rich, and especially an excessive meat diet, is very injurious for youth who are approaching puberty, who should then eat the simplest but most nourishing kind of food. It has been found that in addition to an abnormal sexual nature which many children have inherited from bestial parents, their animal passions are unduly stimulated by a rich diet and by overeating. Simple food means simple life, and tends to purity of thought. Indeed, our stimulating American climate, our strenuous life, our pushing, hustling, and driving, and our rich living all tend to bring youths to premature puberty, when the whole training, diet, and mode of living should tend to retard rather than advance this period.

Our children, long before they reach their

teens, attend theaters, all sorts of picture shows, and vaudeville entertainments, are kept up late at night, and in many similar ways are forced to premature puberty, with, in numerous cases, fatal results. They are not kept simple enough. Their lives are too complicated. There is too much that stimulates and continually forces them on.

One of the principal arguments advanced in favor of a vegetarian diet is that it does not stimulate the baser passions in man, but on the contrary tends to eradicate them. Among civilized races those who live mainly on a diet of vegetables, fruit, and cereals are of a peaceful, gentle nature. They are more quiet and less likely to engage in warlike enterprise than meat-eating people. They do not live such a strenuous life as the meat eaters. The Hindoos, for example, remain a subject people largely because of their philosophy of non-resistance, and many Brahmins retire at fifty years of age to devote the rest of their lives to study and meditation. The vegetarians have been the thinkers and the dreamers; they have developed some of the most spiritual philosophies of mankind.

It would seem, therefore, that the more animal and coarser the food, the coarser and more animal will be the ambition and the efforts induced by it.

Whether we are vegetarians or meat eaters, of this we may be certain: that the quality of our food very materially affects our disposition, our temperament, and our outlook upon life. Whether we are gross or spiritual, whether we are optimists or pessimists, whether we have ideas and ideals or a crazy, one-sided philosophy—whether we are level-headed and have a good, sound judgment or are irresponsible—will depend very largely upon the way we feed ourselves. If a man is not firmly grounded in spiritual principles, bad cooking will in a little while transform an optimist into a pessimist.

It is hard for a man to be a gentleman, to be honest, if he is badly fed. There is a moral quality in our food and manner of partaking of it. A man is not easily tempted to do wrong when he feels right. Health is a great preserver of virtue. It is very closely connected with morals.

Wrong conditions affect mental harmony,

and cause mental discord, and this discord is reflected throughout the system. Right, truth, and health belong together. Health and sin are natural enemies, and health is more closely related to the stomach than to any other organ in the body.

Ah! what avail the largest gifts of Heaven,
When drooping health and spirits go amiss?
How tasteless then whatever can be given!
Health is the vital principle of bliss,
And exercise of health.

—JAMES THOMSON.

We are always beginning to live, but are never living.

—MANLIUS MANLIUS.

VII

CULINARY CRIMES AND COMPLEX LIVING

Great pity were it if this beneficence of Providence should be marred in the ordering, so as to justly merit the reflection of the old proverb that, though God sends us meat, yet the devil does cooks.—COOKS' AND CONFECTIONERS' DICTIONARY.

Their best and most wholesome feeding is upon one dish and no more, and the same plain and simple; for surely this huddling of many meats one upon another of divers tastes is pestiferous: but sundry sauces are more dangerous than that.

—C. P. S. PLINY.

On his weary couch,
Fat Luxury, sick of the night's debauch,
Lay groaning, fretful at the obtrusive beam
That through the lattice peeped derisively.

—EDWARD POLLOCK.

“FOR my part,” says Addison, “when I behold a fashionable table set out in all its magnificence, I fancy that I see gouts and dropsies, fevers and lethargies, with other innumerable distempers, lying in ambuscade among the dishes.”

“Make your whole repast out of one dish,” says an eminent physician. “If you indulge

in a second, avoid drinking anything strong till you have finished your meal; at the same time abstain from all sauces, or at least such as are not the most plain and simple. A man cannot well be guilty of gluttony if he sticks to these few obvious and easy rules. In the first case, there would be no variety of tastes to solicit his palate and occasion excess; nor, in the second, any artificial provocatives to relieve satiety and create a false appetite."

When Dr. Abernethy, the eminent English physician, visited his rich patients, he used to go into the kitchen and shake hands with the cook, saying, "My good friend, I owe you much, for you confer great favors upon me. Your skill, your genius, and your delightful art enable us medical men to ride in fine coaches. Without your existence we would go on foot and starve."

Our cooks are, indeed, adepts in life-shortening. Human beings have ever been great sufferers from the ignorance of cooks and from their own lack of knowledge of dietetic values and the chemistry of foods. Injudicious selection of foods and bad cooking lay the foundation for many human ills.

Nothing else touches life so closely as the kind of nutriment which makes one's blood, builds up his physique, and constantly renews and maintains all the tissues in his body.

Our food is the basis of our minds, our thinking, our efficiency. Our achievements in life, our happiness, depend upon what we eat, the manner of its preparation, and the way in which we partake of it. Yet in the majority of families the choice of foods is largely left to ignorant cooks, who give us the things they happen to like themselves, or which they have been accustomed to prepare, and which may not be at all adapted to our constitution, our temperament, our mode of living, our habits, or our vocation. Our diet, accordingly, is not only badly prepared, but the articles which compose it do not have the proper values, and have very little bearing upon our real needs.

There are multitudes of people who are not actually ill, but who do not feel right habitually, and yet they do not know why. Their brains are heavy, they cannot think clearly, their minds are cloudy, their thoughts are dull; they do not have that masterful feeling, that thrill of health, which we all feel is normal

to us. They consult physicians, who assure them that they have no organic disease, but who do not seem able to give them any material help in getting rid of their troubles.

The truth is, many of them are suffering from the incompatibility of different kinds of food, which may be all right when taken separately, but which develop chemical antagonism when taken into the body together. In some cases the trouble may be that the food is not properly prepared; or they may habitually eat too much, so that all the cells of the body are clogged with an excess of nutriment, which the digestive organs cannot take care of and which the tissues do not need. When the blood is thus overloaded with nutrition, all the organs rebel at the excess, the brain is heavy, the thought labored, and the whole system is not only overtaxed with the extra load, but is also poisoned with the undigested, unassimilated food, which partially decomposes in the alimentary canal.

Vice-President Marshall is right in saying that cooks are more important to civilization than governors. They are far more essential, and I believe the time will come when that

which affects the health and the destiny of human beings, more than anything else, will be under the strictest supervision. Our foods will then be selected and prepared at scientific coöperative stations, and every cook will have to have a license or certificate, just as a doctor must have a license in order to practice medicine. We shall then have municipal kitchens where the best foods will be selected and prepared in the most scientific manner by trained, experienced cooks, who will be experts in the chemical values of their products. These cooks will know the affinity between different foods, and what kinds should never be eaten together, because of their natural antagonism, because of their combustion-generated poisons which cause serious trouble in the system.

“A chair of nutrition in a medical school, in my opinion, is almost as important as a chair of the practice of medicine,” says the pure food expert, Dr. Harvey W. Wiley. In teaching the science of nutrition, not only would attention be called to the general composition of foods, but also to the balancing or proper adjustment of rations, the relative digestibility of different classes of foods, and the

principles of assimilation, use, aid, and destruction of nutrients.

How many of our cooks and housekeepers to-day know anything of the science of nutrition? How many of them know anything of the chemistry, the anatomy, the physiology of foods? How many, for example, know that wise Nature often puts the cells which contain the most delicious flavors and the most valuable nutritive salts, the starch cells, the cells which form the very life of the tissues of the body, right under the skin of many of our fruits, like the apple, pear, plum, etc.? How many of them realize that the iron and arsenic which are so necessary to blood building and which are tonic to the body, are largely thrown away in the parings of apples and other fruits, and of some vegetables like potatoes?

And, as if this were not a sufficient insult to Nature's wisdom, the peeled potatoes and other vegetables are frequently put to soak, often for hours, in tepid water, before cooking, so as to draw out as much of the flavors and nutritive salts as possible. Matters are then carried a step farther by putting the vegetables into cold water and bringing them

slowly to the boiling-point, when further great loss occurs; so that, when they are ready for the table, about all their flavor and the larger part of their nutriment is gone. It is astonishing how many cooks and housekeepers are ignorant of the simple fact that putting vegetables into boiling water instead of cold closes the pores and prevents the escape of much of the nutritive value and flavors.

The same thing is true of meats, which should be put into a hot oven at once in order to sear the outside and coagulate the albumen, and thus prevent the escape of the juices and flavors. Yet how many cooks put the roast of beef or mutton or other meat into a half-warm oven and allow most of its precious nutriment to flow out while it is slowly heating through! A similar mistake is made in the boiling process. Think of eating meat that has been first soaked in cold water, slowly brought to the boiling-point, then boiled for hours, and the liquid, which really contains the best part of the meat, thrown away! Fresh meat should be put on a slow fire in a close-covered receptacle without water, and cooked in its own juices. Then all the flavors and

much of the nutritious value, which would be boiled out if cooked in water, are preserved.

The French people are much better informed in regard to culinary matters and the chemistry of food than we are. Even the poorest peasant woman among them seems to have an instinctive knowledge of food qualities. They know how to cook meats in the most nutritious, palatable, and economic ways. Whether roasted or boiled or steamed or stewed, none of their most important constituents or flavors is lost in the process. Nor does one ever see a French housewife peel potatoes and then soak them in tepid water for an hour or two, so that the nourishing parts which were not peeled off will be soaked out. She knows very well that the most nutritious substances and the finest flavors of the potato come from the corky layer right under the skin, and that when this is removed much of the value of the vegetable is lost. She knows that potatoes should always be cooked in their skins, and that if they must be pared they should immediately be dropped into boiling water, which closes the pores and thus serves to retain whatever nutritive value is left. The Irish peasant-

try, who before famine decimated their country lived largely upon a diet of potatoes, know more about them than any other people in the world, and they never take off the skin before cooking, for they know there is a tremendous loss in doing so.

Is it any wonder that many children grow up sickly, or even chronically diseased, or that they are stunted physically, mentally, and morally, when so few wives, mothers, or cooks know anything whatever of the chemistry of foods, the chemistry of cooking, or the compatibility or incompatibility of different foods?

We are largely what our food makes us. Poor food, unscientifically cooked, unscientifically taken, cuts down our mental and physical efficiency, and makes us inferior beings, when perfect nutrition might have made us very superior. Many of us go through life less than half the men and women we might be; weaklings—inferior beings, when we have the natural endowment to have been something infinitely higher and grander, just because of the ignorance of our cooks and our own ignorance of the laws of nutrition.

Not only do our foods lose a great many

of their choicest substances in the cooking, but also much of their palatability. This, mind, is one of the greatest culinary crimes committed by ignorant cooks, the destruction of the appetizing quality of food, which is of the utmost importance because of its vital effect on the secretion of the digestive fluids. When food tastes good to us, Nature generates an abundance of saliva and other digestive juices; but when we take it from a sense of duty, because we think we need about so much nourishment, but without any relish in eating, Nature protests by refusing to generate the necessary digestive fluids. She does not respond to the food which we eat indifferently or which disgusts us. She intended that eating should be almost a religious process, and that it should be thoroughly enjoyed; and, when this is so, she blesses the food with her abundant supply of saliva and other gastric juices necessary for its digestion and assimilation. If we do not relish food, we do not get sufficient gastric juices to digest it properly, the whole digestive process is retarded, and Nature's protest is shown in the defective absorption and assimilation of the food.

Another thing of great importance in the care and preparation of food is to guard against its absorbing foreign flavors or destructive germs by exposure. Yet there are not a few cooks who know nothing whatever about the absorbent powers of different foods, such as milk and butter, which quickly take on the flavors in their vicinity when exposed. At dinners where tobacco-smoke is very thick, it has been noticed that the butter on the table very soon takes on a tobacco flavor. The same thing is true of milk and cream. Fish, in a very short time, when lying open in a hot kitchen, will not only absorb all the flavors of the cooking in its vicinity, but also all sorts of odors—of the garbage, coal gas, steam, etc.—so that its own delicate flavors and nutritive value are quickly lost. There is no other flesh food which deteriorates and disintegrates so rapidly as fish. It should be brought directly from cold storage to the hot coals, or to the steamer or boiling water. If this is not possible it should be kept separate from everything else, especially from vegetables, butter, cream, and milk, in a tight compartment in the refrigerator until used. Fish should never be frozen.

This kills all the flavors and makes it dry and insipid. To get it at its best it should be cooked, if possible, almost as soon as caught, because it begins to deteriorate the moment life is extinguished.

On the other hand, meats which are kept for some time are supposed to develop agreeable flavors. Many hotel and restaurant keepers appreciate this, and sometimes allow game and other fresh meats to hang in cold storage until they actually begin to decompose. It is true that by this means they develop new flavors and are also made more tender, but it is positively dangerous to take into the system food which has thus begun to decompose. It is especially so where any of the digestive organs are weak or disordered. Yet actual decay is so far advanced in some of the meats that are eaten that they would be nauseating if it were not for the flavors which are developed in cooking them.

Oh, what a price we pay for appearances and fashions even in our foods! Isn't it amazing, for example, that people will pare potatoes before cooking them, even when they know that by doing so they are sacrificing the best

part of their nutriment, just because they will look so much nicer when served? Isn't it incredible that we allow commercial greed to exploit our food-stuffs for profit by robbing the wheat, the rice, and other grains of their chief life and force-imparting ingredients in order to make them a little whiter, a little more attractive to the eye?

If we realized what a difference it makes in the quality of our brains and the quality of our work whether from infancy we have been superbly nourished or have been starved by the commercialization of our foods, we would not encourage this vandalism as we do. Since our whole lives are influenced by what we eat and how we eat it, it makes an immense difference whether our foods are perfectly pure and sound and perfectly grown, or the grains have been blighted or artificially robbed of their values, the cattle diseased or viciously fed, and, finally, whether the resulting food products are well or ill cooked.

It is positively wicked to remove the life-giving principles which the Creator considered essential in our food-stuffs for the sake of making them a little more attractive to the eye.

It is a crime to sacrifice health, happiness, vitality, brain force, efficiency, and power, thus seriously marring our destiny, for the sake of the appearance of food or the development of artificial flavors.

The time will come when the State will see to it that her children, her greatest asset, will have scientific instruction regarding the laws of health, especially the laws of nutrition, and the immense importance of food in the human economy and in the progress of the race.

It is a lamentable fact that a student can be graduated from school or college to-day utterly ignorant of these laws; ignorant of the specific offices the various foods perform in the tissues of his body, ignorant of the chemistry of foods and their ministry to life, practically ignorant of the scientific meaning of what he eats at least three times every day of his life. He learns many things in college which he never directly uses, but of his food, that which nourishes and sustains life itself, he is practically ignorant.

Many of our college graduates wonder why their bodies get out of order when they eat enough grease and meat at a single meal to

supply a dozen healthy individuals, and yet many of their tissues may be actually suffering for lack of nutrition. They gorge their bodily organs with all sorts of excesses, and then resort to artificial means, such as unnatural drugs, to straighten themselves out.

When we consider how utterly all of our mental and physical faculties depend upon our food, is it not strange that we should treat so lightly our feeding processes, our food, its preparation, and our manner of partaking of it? Our meals and mealtime are really the most important events in our lives, and yet not one cook in a thousand is fit to prepare a meal even for day laborers, and not one in a thousand averagely intelligent men or women knows anything accurately of the nutritive qualities of his food. Owing to our ignorance of food values we abuse our stomachs, insult our digestive apparatus, and, in innumerable ways, injure ourselves.

Some people bemoan the curse of poor digestion when the whole difficulty is caused by incompatible foods, or a too complicated diet—by eating many things at one time, especially rich dishes. Many a man is a partial or prac-

tical failure to-day, unhappy or even miserable, when his whole life would be revolutionized by a simple fare, by eating a few simple, nourishing articles of food, articles which are naturally friends, not inimical. The simple life would revolutionize our American people physically. With all our other crowding, we crowd our digestive organs often worst of all. We make them do work which they were never intended to do. Is there any sense in taking a dozen or more different kinds of food into the stomach at a time—foods which chemically antagonize one another, which are natural enemies in the digestive processes?

Eating ought to be both a science and an art, but instead the process is usually carried on in the most haphazard, thoughtless, unscientific manner. It is a wonder the stomach does not rebel altogether when it sees course after course of indigestible, incompatible things come down, most of which antagonize one another. Then, to cap the abusive climax, after people have gorged as much as they can, they often pour down a lot of ice water, which actually retards the digestive processes for at least half an hour, for those processes cannot proceed until the

temperature of the contents of the stomach rises practically to that of the blood. Oftentimes, with the ice water comes down a lot of champagne; and, to add still more to the embarrassment, other spirituous liquors, ice cream, tea, or coffee will be taken on top of this mass of entirely heterogeneous food elements, three-quarters of which are perhaps not only not needed, but are even a positive hindrance to the system.

In fact, the human body is undergoing an evolution in order to adjust itself to the increased complexity of living. The primitive man could not have eaten with impunity such food as some of our modern men do. His digestive organs were accustomed to taking care of only the simplest kind of food, and of very little variety; they could not possibly have managed the food that is eaten to-day at a single one of our great dinners of a dozen courses. The chances are that the primitive man who undertook such a feast would have died a few hours after in mortal agony.

The poor often look with envious eyes upon the rich. They think it unfair that a few people who do not work at all should have all

the luxuries, everything that money can buy, while they are compelled to live upon such plain fare. But the fact is that the luxuries of the rich are often their undoing. In trying to get so much pleasure out of what they have they often eat and drink to excess, and keep their bodies choked, clogged, and congested; overload their blood with nutriment of which it cannot take care, and which plays great havoc with the delicate digestive and secretory organs. People who are forced to plain living are infinitely better off than those who stuff themselves with incompatibles. Overeating is one of the greatest curses of the race.

Not long ago the millionaire president of a large magazine concern in New York City died in his prime, not yet forty-seven years of age. Ten years before he was earning fifteen dollars per week and was in the best of health. After he became prosperous he had taken less and less exercise, and had fallen into the habit of having an automobile waiting for him wherever he made even a short stop. He had built a great palace of a house in one of the most fashionable sections of Long Island, and in

the immense Georgian dining-room he gave most elaborate dinners. The cause of his death was acute indigestion, brought on by overeating and too little exercise. So, in ten years only, the strong young man who had risen so rapidly burned out with the excesses of prosperity the fuse of his life.

If the poor, abused, modern stomach could but soliloquize at one of our great banquets, it would be something after this fashion:

“What, four more courses, when I am already overburdened and struggling to take care of half a dozen! I have now more than my delicate membranes can stand, and to-morrow I shall be completely undone.

“Why is it that my master cannot understand that my mechanism is extremely simple, and that I cannot digest so many kinds of food at one meal without serious injury, because foods which may agree with me when taken singly, when taken together form antagonistic compounds?

“At these dinners, when I am already so overloaded that I do not know what to do with the material I have received, a fresh invoice of pepper along with all sorts of other

hot condiments is rushed down, and my membranes, which are almost as delicate as those of the eye, become so gorged with blood from the irritation that I can scarcely stand the strain. Then, as a climax to all my troubles, when I have a score of different kinds of food—some of them soaked in rich greases and gravies and sauces, and all sorts of French fixings—down comes a glass of cold water!

“Is it not strange that my master does not know that the digestive processes cannot go on unless the temperature of my contents and the temperature of the blood correspond—98½ degrees—and that it often takes half an hour to heat this ice water up to that temperature? And, often, when this has at length been accomplished, down comes a lot of ice-cream or another glass of water, or, worse still, a lot of alcoholic drinks, which thicken my velvety lining and the deeper tissues, also the thin sheets of nerves all through the body and the gray matter of the brain. Then I simply have to give up. And yet, my master complains because I express my distress and my protest against such abuse in acute indigestion!”

Is it any wonder that the poor, abused or-

gan has to give up at last? Just think what a conglomerate, heterogeneous mass of materials—soups, fish, meats, sauces, vegetables, salads, confectionery, nuts, raisins, wines, fruits, etc., it is called upon to take care of without a murmur!

What wonder that our bodies get out of order, when we eat enough grease and meat at a single meal to supply a dozen healthy individuals! We gorge the different internal organs with all sorts of excesses, and then we resort to artificial means, to unnatural, inhospitable drugs, which were never adapted to or intended to be taken into the human system, to straighten ourselves out.

People who constantly overwork their stomachs by overloading them with incompatible foods little realize that they are laying the foundation of many diseases.

After big dinners of rich and complicated foods—for example, after Thanksgiving and Christmas dinners, and after elaborate banquets—certain diseases are much more likely to develop, both because the overworked bodily organs have been enfeebled in their efforts to take care of the variety and excess of food,

and also because the greater accumulation of poisons from the half-digested material which the body could not assimilate has greatly weakened its natural resisting power.

It is very noticeable that after overeating we take cold much more readily, because of the accumulated poisons in the system and our lessened resisting power. Obesity, diabetes, gout and hardening of the arteries are some of the diseases which are often caused in this way. There is no doubt that this is also one cause of the great increase of premature deaths from heart disease, especially among the well-to-do. Many of them keep themselves so gorged with food, the blood so overloaded with nutriment which the tissues cannot use, that a great deal of extra and unnecessary work is put upon the heart which, even under normal conditions, is by far the hardest-worked organ in the body.

People who habitually gorge themselves, especially with meat and very rich foods, usually have sallow, muddy complexions; their skin is not clear, and they often look many years older than they are. This is caused by the poisons resulting from the partial decomposition of the foods and the absorption into the tissues

of poisonous products of which the eliminative processes are not able to take care. The blood and other secretions are often so overloaded with these poisons that robust health is impossible. They manifest themselves in all sorts of ways—in bilious symptoms, in sick and nervous headaches, mental dullness, indifference, lack of ability to concentrate the mind, discouragement, depression, and melancholy. Sclerosis of the liver, from which so many people die, and many other maladies, are also induced largely by a complicated and too rich diet.

Many thus cut their lives short, often by many years. They seem to think that a large part of the happiness of life comes from the palate, and that the main object of their existence is to gratify it.

The result is that they not only shorten their lives, but also, while living, are not so efficient, so healthy, or so happy as they would be upon a simpler diet, suited to their age, occupation, and general mode of life, whether young or old, sedentary, strenuous, or indolent.

If all were scientifically fed with foods scientifically bred and developed and prepared

and cooked by experts in the chemistry of foods and in the culinary art, not only would the life of the race be lengthened, but most of the physical ills of mankind would be done away with.

Luxury and dissipation, soft and gentle as their approaches are, and silently as they throw their silken chains about the heart, enslave it more than the most active and turbulent vices.—HANNAH MORE.

Patients, patients, and the physician's pill box becomes an automobile.—LONDON "PUNCH."

VIII

APPETITE AND JOY IN EATING

The consummate pleasure [in eating] is not in the costly flavor, but in yourself.—HORACE.

Better a dinner of herbs where love is than a stalled ox and hatred therewith.—SOLOMON.

A cheerful look makes a dish a feast.—GEORGE HERBERT.

Unquiet meals make ill digestions.—SHAKESPEARE.

“WHAT are these benches for?” asked John B. Gough, who had gone to see a church in Bedfordshire, England, in which Scott, the commentator, once preached. The seats, worn smooth all except the knots, reminded him of those in an old-fashioned New England school-house.

“Please, sir, they are for the Sunday-school children, sir.”

“And what do the school children do on these benches?”

“Please, sir, they get the colic, sir.”

“The colic! Good gracious! what do they get the colic for?”

“Please, sir, they are obliged to, every Sunday morning, sir.”

“The thing puzzled me greatly,” said Mr. Gough, “particularly the apparently reverential attitude of our guide, until one of our party explained, ‘She means that the children are required to learn the collect for the day, every Sunday morning.’ ”

How many sit at meals under compulsion to get “the colic,” dyspepsia, or something of the kind, because of their total disregard of dietetic laws, their bickerings and faultfindings, instead of learning and exemplifying the collect of careful selection of food, thankfulness to the Giver, and cheerfulness in their table associations!

“Every mouthful of food means degeneration or regeneration,” is but an epigrammatic way of stating a plain truth.

I know of nothing else which means quite so much to human welfare as the art of right eating, eating the right things in the right way, in the right amount, at the right time. Upon

the hygiene of eating depends our wellbeing, our happiness, our longevity.

It does not follow, because you eat enough food and of the right kind, that you are properly nourished. It often happens that, owing to the impairment of the efficiency of the digestive fluids, or through mental poisoning from fear, worry, or any other disturbance of the mind, many of the tissues, even when there is plenty of food in the digestive organs, suffer seriously from starvation.

The most appetizing nutriment, although eaten when we are in the best of health, will not be properly digested or assimilated, and consequently will not properly nourish us, if eaten under distressing conditions, when the mind is filled with fear, great anxiety or forebodings of calamity or misfortune.

The condition of the mind very seriously modifies the effect of food. It governs, to a large extent, the amount of nutrition we draw from it. Our moods, our emotions, our mental attitude, our joys, our sorrows enter our food and take serious part in the digestive processes.

The digestive organs—the liver and stomach,

for instance,—are so dependent upon harmony that when there is the slightest mental disturbance they cannot act normally, and digestion is interfered with.

A great Russian specialist, Dr. Pawlaw, has been making some dietetic experiments with dogs and cats. He has found that, when these animals are irritated while eating, scolded, or teased, the flow of gastric juice is either very materially lessened, or ceases altogether, and that, when it is not entirely cut off what remains is of very inferior quality. It is well known that victims suffering from great habitual anxiety, fear, jealousy, melancholy, or any other mental discord are badly nourished not only because the flow of gastric juice is materially lessened, but also because of their greatly demoralized condition. In such cases it is more dilute, watery, weak, and lacking in pepsin and acids which are so necessary for cutting and dissolving the harder foods.

Life-prolonging specialists assert that the mental attitude when partaking of food has everything to do with its effects upon the body; that, if the mind is troubled, worried, suffering from fear or any of the acute effects of

the explosive passions, the digestion is very imperfect; that the food is not only not properly digested, but vicious poisons are generated from the residue, and malnutrition and general debility follow.

I know a mother whose mental moods are often very prejudicial to her nursing baby. Fear, anxiety, anything which makes her worry, any mental depression, very seriously affects the baby, as does the food she eats.

A sudden shock caused by a telegram or letter containing bad news will often completely arrest the entire digestive processes, which will not be resumed until the mind is again in comparative harmony.

If we could examine the stomach after a severe mental shock from such bad news, we should find the natural flow of fluids from the digestive follicles suspended; the follicles would be found parched and feverish and for the time deprived of their digestive power.

So closely is the digestive apparatus connected with the brain that an accident of any kind, or sudden fright, will instantly stop all of its processes, just as if they had received an imperative command to cease working.

While it is true that chemical changes in the system which generate poison are often caused by overeating, irregular eating, and eating incompatible things which should never be taken into the stomach at the same time, many can be traced to mental causes, and are often chronic from the continued presence of such poison, as in the case of a habitual worrier.

Some people so poison themselves mentally during their meals that they cannot digest their food. It is a dangerous thing to quarrel or to be angry and hateful at any time, but especially so during meals. Whatever you do, do not take your troubles to the table with you, for there is nothing which will ruin digestion quicker than a troubled, worried mind.

The world's greatest authorities now agree that people should not eat when their minds are disturbed, that it is of the greatest importance to be cheerful at meals, to eat only when in good humor. They also emphasize the importance of freedom from mental discord, especially on retiring, because of the bad influence of a distressed mind upon the digestion and assimilation of food and the consequent loss of refreshing sleep.

In short, however uncomfortable, unhappy, worried, or troubled you may be at other times of the day, it is imperative to keep as happy and as harmonious as possible during meals and the digestive hours; otherwise the gastric fluids will seriously lack in digestive essentials, and the whole system will suffer in consequence.

People who carry their crotchets and worries to the table, who bring their surly, ugly moods to their meals, little realize that by so doing they poison everything they eat.

This is one reason why habitual fretters, who constantly suffer from fear, anxiety, and the effects of their explosive passions, are often semi-invalids. Chronic worriers are never good digesters.

It is worth your while to make a determined effort to form habits of good cheer during meals and also before going to sleep, because it will have a powerful influence upon your health.

The stomach is the partner of the brain and each suffers with the other. It is just as necessary to come to your meal in good humor as it is to be pleasant when you meet your friends

at a public reception. If you manage always to be cheerful, hopeful, optimistic at meal-times and when you retire, you have made a conquest which will be of untold benefit to you.

Make it a rule that, whatever your troubles or anxieties or worries in your vocation, your business, or your profession, there shall be two places where they never will be allowed to come—your dining-room and your sleeping-room. Put up a sign in large letters in each of these rooms,—NO WORRY, NO ANXIETY, NO TROUBLES ALLOWED HERE. THIS IS A PLACE FOR JOY AND GLADNESS, FOR PEACE AND HARMONY.

The dining-room should be regarded as a place for a jolly good time, a real frolic. Make it a point to bring your best jokes, your funniest stories to the family table. Do not reserve your brightest sayings for your club, or for other people's tables. Do not be afraid of laughing at your meals. Do not suppress your children at the table. Let them laugh and joke all they wish. This is a thousand times better than indigestion or dyspepsia. Make the dining-room the real amusement place of the home. Let all leave their grouches, their

hatreds and jealousies, their troubles, their worries outside. Let the dinner-bell always be a signal for a jolly good time.

The fact that we experience a pleasurable sensation at the mere thought of food, its anticipation, when we are hungry, that our palate is tickled by the appetizing odors of cooking, the agreeable sensation we feel when we actually take time to taste our food, are all indications that the eating process was intended to give great pleasure. Horace Fletcher says that few people have any idea of the real enjoyment a hungry person may derive from the eating of a crust. He says he often eats a piece of dry bran very slowly, masticating it thoroughly, and relishes every morsel.

One of the greatest promoters of health and happiness is a habit of enjoying your food. Whenever you sit down to eat just think what a wonderful thing the miracle of nutrition is and what an enjoyable thing the function of eating was intended to be. We should approach each meal with reverence, with appreciation, and in our happiest mood. We should say to ourselves, "I am eating life, force, strength, and vigor which have come from the

sun and which are regulated by a power back of the sun.

The perpetual miracle which Nature is performing in our body through the action of food, of pure air, and of sleep, would make angels wonder; yet we scarcely stop to think what all these things mean. Too many of us are not unlike the hogs which eat nuts and apples under trees without ever looking up to see whence they come or even bestowing a thought of gratitude upon the Giver.

Many seem to think that they were created once for all. They do not realize that they are re-creating themselves with every mouthful they eat, with every breath they breathe; that life is a perpetual re-creation, and that, if this creative power should be withdrawn from us a single second our lives would be snuffed out.

There is no experience more wonderful, more beautiful, than the transformation of bread, meat, vegetables, or fruit into living tissues, nothing more marvelous than that the apparently lifeless things we swallow in a very short time think, act, live, create again. But how few ever think of the miracle of it all!

The majority simply eat from necessity and the mere animal enjoyment they get out of it. Instead of making eating a mental and spiritual feast, a soul sacrament, it is with them a mere animal function.

It is unfortunate that the beautiful custom of saying grace before partaking of a meal has become obsolete with so many; for, although it was often said in a merely perfunctory way, yet it did call a halt for an instant, tended to make us think of what we were about to do, and gave us an opportunity to express a thought of gratitude to the Creator of all we were going to enjoy. But, even then, what it all meant, the sacredness and the marvelousness of it all, the fact that our eating process included re-creation, seldom entered peoples' heads.

The next time you partake, even of an apple or an orange, think of the wonderful intelligence which prepared it for you. Just consider that the same creative power which made such delicious fruits adapted your senses, your physical being, for their enjoyment. So, every time you see a beautiful face, a beautiful bit of nature, or any other beautiful thing any-

where, remember that it was the Power which created you that adapted these things for your eye, for your consciousness, for your enjoyment. The next time you sit down to a meal, whether audibly or silently, offer up your gratitude and your appreciation to the Creator for what it all means.

You will be surprised to find how much more you will get out of your food if you mix love and appreciation of its source, a sweet, beautiful cheerfulness, with it; if you get into the habit of thinking of the meal as the partaking of a sacrament, something which is to re-create your very life, to renew your thought, your vigor, to sharpen and improve all your faculties.

Nothing will give you greater satisfaction than to learn to enjoy your food because of the wonderful things it does for you, by thinking that it is good for you, that it is going to make you strong and vigorous, that it is going to re-create you and make you more fit for your life duties.

The more we spiritualize our meals, the greater benefit we shall receive from them. The more of the spiritual we project into them

the more physical and spiritual stamina we shall draw from them. It makes a tremendous difference in our lives whether we get mental and spiritual results from our food by partaking of it in appreciation, in cheerfulness, in love and harmony, by looking on it in a spiritual as well as a physical sense, or whether we get mere animal results because of our animal appetites and the display of animal propensities in eating.

Partaking of a meal ought to be a real sacrament, for in this miracle of food we are brought face to face with the creative processes which first formed us and which are constantly recreating and renewing our lives every moment of our existence. Children should be taught what it means to sit down to table in the right mental attitude. They should be taught to mix gratitude, appreciation, love, affection, and good cheer with their food. It would have a wonderful influence upon their health, their general well-being and happiness.

If fathers of families were to show a proper realization of these things, they would never think of sitting buried in a newspaper during an entire meal, or of bringing home their busi-

ness worries and talking them over at dinner. Nor would mothers nag at the children to "behave themselves" and not talk or laugh while they were eating. Quarreling, fault-finding, bickering or nagging at a meal would be looked upon as really sinful. People would no more think of doing such things at table than they would in church.

If people not only knew what to eat, but also how to eat, their health and efficiency and happiness would be insured. I have in mind a family in which quarreling, especially at meals, has seriously affected the health of nearly every one of its members. If our mental attitude is not right, particularly when eating, our health will not be right. Not one of the functions of the body can be normally performed when the mind is in an abnormal condition, whether it is suffering from the cyclonic effects of a hot temper or from fear, worry, jealousy, or despondency.

We should never lose sight of the fact—and we should impress it on our children, in the home and in the school,—that digestive processes follow mental processes, and coincide with them. If we persistently, habitually entertain

joy thoughts, contentment thoughts, good-will thoughts, which are always working in us for health, and which produce harmony, serenity, and poise, we tend to establish mental health; and when this is done, the body will fall into line. On the other hand, discordant, inharmonious thoughts will manifest themselves in various forms in the body; now as rheumatism, now dyspepsia, headache, or some other form of ill health.

Appetite, which is the call of the whole cell life of the body for nutriment, food and drink, is also powerfully affected by our moods, and by the eye. A sudden fit of anger, no matter how hungry we may have been before, will for the time rob us of every particle of appetite. The finding of disgusting things mingled with our food will have the same effect. We all know how, when traveling, we have been affected in a hotel or restaurant by soiled linen. How quickly a fly or other insect dropped in the milk we are about to drink will kill our appetite! Our sensation of hunger departs instantly and the very thought of food nauseates us. Sometimes the thing may not be disgusting in itself, but in being in the

wrong place. The finding a hair, for instance, in soup or in any dish at the beginning of a meal will so affect a sensitive stomach that it will not take another mouthful. Just think of the tremendous power thought must have to cause this instantaneous revulsion and complete cessation of all the digestive processes!

Our appetite is very much dependent upon the suggestion carried to the mind through the eye. The appearance of the table; soiled china or linen, or of a slovenly waiter, with grease spots all over his clothing, or the knowledge that the cook is not cleanly—how quickly these things nauseate us! No matter how much we may really need nourishment, we cannot eat while the mind is filled with such pictures.

I know a lady who is so extremely sensitive to the appearance of things that often, when traveling in foreign countries, she is nearly half starved because of the manner in which the food is served, when it is not the food itself, offends her taste through the eye so that many times she cannot eat. Her sense of fitness, her love of everything that is attractive and cleanly, is repelled by the least slovenliness,

or sign of dirt, especially in connection with food.

Even those who are not so fastidious as this lady are more or less affected by the appearance of things and their general surroundings when eating. The very food that would nauseate us, no matter how hungry we might be, in a filthy restaurant, full of flies, in the slums, if served in a first-class hotel, on delicate china and spotless linen, in the midst of flowers, we should probably think delicious.

A friend of mine who is very fond of oysters when delicately served on the half-shell on cracked ice, would be disgusted by the same oysters served on a thick plate, without the shells or the ice. He says that, no matter how he might long for it, he could not possibly swallow an oyster under such conditions.

Our esthetic taste has a powerful influence upon our physical taste. Caterers in high-class restaurants appreciate this and do everything in their power, by a tempting display of delicious viands, daintily served with the accompaniment of the finest music, beautiful silver, cut glass and china, and exquisite flowers, to attract and hold patrons.

In the better homes in Spain, previous to meals, the most tempting and delicious eatables and dainties are placed on the tables in the most attractive manner, merely to tempt the appetite. They are appetizers, not supposed to be eaten, for they are removed before the meals begin.

Not only is our appetite improved by eating in an attractive environment, but our general health also is improved, for pleasant surroundings always have a cheerful uplifting influence on the mind. The table, the china, the linen, and everything associated with our meals should be as clean and as attractive as possible. Even a dinner of bread and cheese and milk may be served in such a way as to whet the appetite. If the tablecloth is not of fine damask, it may be clean and white, no matter how coarse; if there is no cut glass or china, the dishes may be spotless; and, if the home be in the country, the table may be decorated with a few simple wild flowers, which will add a grace to the meal that may be lacking at many a rich but vulgarly spread table, where genuine taste and refinement are lacking.

While everything possible should be done

to make the meal attractive to the eye and tempting to the palate, the appetite should never be unduly stimulated or pressed. This often leads to overeating, when, perhaps, the stomach needs a rest, and should not be urged.

Many suffer all the ills of overeating without realizing that they are really eating more than they need because they are constantly prodding their appetite with cocktails and all sorts of artificial stimulants. I know hearty men who take preparations of iron and wine, and other appetizers, to make them eat more when they have already eaten too much. They seem to think that unless they eat a great deal they won't have much strength.

Every kind of artificial appetite-producer is vicious and always dangerous. Mothers do not realize the harm they do by urging their children to eat when they are ill and have no desire to, telling them that if they do not eat they will not have any strength. Many of our ills are greatly exaggerated and the cure long delayed because of crowding nourishment into the tissues, which may already be suffering from an overload, or may not be in a condition to ab-

sorb any. Nature knows best when all the tissues of the body are properly nourished, or when, for any reason, they are not in condition to absorb food, and she will notify us when we need more. Every cell in the body will call for food when it requires it. But, in order to avoid the danger of not following Nature's guidance, we must eat very slowly, and masticate thoroughly. Otherwise, we may get too much food into the stomach before the appetite has had time to indicate her satisfaction by the cessation of desire.

Nature is the best guide to the quantity of food essential to maintain the integrity of the cell life, and if we eat properly she will notify us when we have taken in sufficient fuel to run the human engine with the greatest efficiency. But when we bolt our food, fill the stomach in a few minutes, the saliva and the other gastric juices do not have sufficient time to dissolve it and the cells, which clamor for food, have no means of determining when the stomach contains enough. Then the digestive apparatus is seriously taxed, trying to take care of its unnecessary burden.

Nature knows her business far better than

we do; and, if we obey her call, she will not only tell us how much to eat, but also when to eat. We have all experienced the flow of what has been called the "appetite juice," which is developed in the mouth when we are very hungry, when perhaps we have been out fishing or tramping in the woods, and on our return smell the delicious odors of cooking food. This appetite juice is Nature's call to eat. But how many people go to meals just because it is time to eat, not because they need anything, or have any appetite, but they eat because they think they ought to! Regularity is of great importance, but it is much better to skip a meal, taking, perhaps, something very light—a glass of milk, an orange, or fruit of some other kind—than to eat an ordinary meal just because you think the body requires it. When you "don't feel like it," you may be sure it is Nature's protest against eating, and to eat at such a time, especially a hearty meal, to force food when the tissues are already sick with too much nourishment or when the body is in some way disorganized, is positively dangerous.

What a vast difference it would make in the

health, happiness, and efficiency of the entire race if we were taught from childhood not only what we eat for, what a wonderful and beautiful miracle our food performs in re-creating the body, but also all about the hygiene of eating! Ignorance of our physical needs, of the marvelous construction of our body, and of the laws governing its proper nourishment and maintenance, is the great enemy of humanity. There are multitudes of men and women who, if they were enlightened in regard to the food question, could double or treble their ability, their originality, their effectiveness, their brain power, and their happiness.

In order to be the highest, the most efficient type of man or woman, it is just as necessary to cultivate the body, to develop its greatest possible strength and beauty, as it is to develop the mind, to raise it to its highest power; and, since the body is renewed, re-created by the food we eat, it is easy to see what an important part it plays in our lives.

To have a perfectly healthy body one must possess a cheerful, healthy, optimistic mind. Both are dependent to a great extent on what we take into our stomach. Love, peace, joy,

gladness, kindness, unselfishness, contentment, serenity—these are the mental attributes which, by bringing all the bodily functions into harmony, produce a sound, healthy body. Any one who chooses may externalize these attributes in himself by right eating and right thinking.

Use three physicians;
Still, first, Dr. Quiet,
Next, Dr. Merryman,
And then Dr. Dyet.

—REGIMEN SANITATIS SALEMITANUM.

IX

OVEREATING

I hold this to be the rule of life, "Too much of anything is bad."—TERENCE.

The food from which a man abstains, after he has eaten heartily, is of more benefit to him than that which he has eaten.—LOUIS COMARO.

"Hunger and thirst scarcely kill any,
But gluttony and drink kill a great many."

The cattle know when to leave their pasture, but a foolish man knows not the measure of his own appetite.

—HANS CHRISTIAN ANDERSEN.

Some, as thou saw'st, by violent stroke shall die,
By fire, flood, famine; by intemperance more.
In meats and drinks, which on the earth shall bring
Diseases dire, of which a monstrous crew
Before thee shall appear, that thou may'st know
What misery the inabstinence of Eve
Shall bring on men.

—JOHN MILTON.

"ARE you full inside?" asked a woman of the coachman, gazing dubiously at a somewhat crowded stage. Upon this Charles Lamb put his head through the window and said: "I am quite full inside; that last piece of

pudding at Mrs. Gillman's did the business for me."

For how many a boy has "that last" green apple, that last piece of pie, that last cookie, etc., done woful stomachic or colic business! For how many girls, or even women, has one more dish of ice-cream, or a handful more of chocolate creams, done the business of a sour stomach or a start in facial pimples or other disfigurements of complexion! For how many a man has that last helping at table or that last glass of drink brought headaches, indigestion, and poor work!

"But what of that?" asks the boy, when the trouble is over; "ain't apples, and pies, and cookies good? Then what were they made for?"

Addison says that Diogenes, meeting a young man who was going to a feast, took him up in the street and carried him home to his friends, as one who was running into imminent danger, had not he prevented him.

"How many, so far?" asked Dr. Lewis, who had called upon his friend, Jacob Schneider, about 9 o'clock one evening, and found him

alone, very seriously occupied with a big wooden bowl of doughnuts.

“Oh, eight or ten, perhaps—only a few, any way.”

“Didn’t you have supper?”

“Yes, of course I did; I ate supper as usual, and I shouldn’t have touched these, but somehow I didn’t feel very well and was sort o’ lonesome, and these doughnuts are kind o’ company for me, you know. The old woman always fries them for me in the evening, and when they are nice and hot I sometimes eat more’n twenty of ’em, just to sort o’ pass away the time, you know.”

His wife would urge Jacob to “clean up” the doughnuts evenings, for he wouldn’t seem to care for them at all mornings, partly because they would be cold, but even more because of his catarrh, biliousness, liver torpidity, constipation, sleepiness, dullness, low spirits, etc., which always bothered him the most mornings. But the doughnuts after supper had nothing to do with those things, or with his pimples, blotches, and yellow or brown spots! Of course not! Those were mysterious afflictions, which the doctor would help him to get

rid of; and perhaps would show him how to avoid.

The sin of overeating is not peculiar to the rich or the well-to-do. A Jacob Schneider with his doughnuts can be as much a glutton as a Dives or a Lucullus with rich and costly foods and rare wines. Excess in eating is not confined to any class or country. It has been well said that civilized man lives upon one-fourth of the food he takes, and the other three-fourths he takes at the peril of his life. The great majority of people suffer seriously from overeating, from burdening the system to get rid of what it cannot convert into tissue and power.

In reality, only a small part of what overeaters take into the system is required for the building up and maintaining of the tissues. The residue is only a poisonous, dangerous burden, and instead of being built up most of it becomes the body's enemy. It overtaxes the energy of the different organs, which, instead of going to increase the power of the whole system, is expended in getting rid of the excess of food and in eliminating the resulting poisons.

Perhaps more of the American people than of any other nation mar their health and happiness and cripple their careers by overeating and eating the wrong kinds of food. The great majority of us eat twice as much as is consistent with the best physical condition and do not realize what a tremendous risk we run in so doing. It never occurs to the average man or woman that any surplus nourishment taken into the body, any food, no matter how good, which is not necessary for the healthful nourishment and maintenance of the cell tissues, becomes a perpetual menace in the way of intestinal putrefaction poisoning. This clogging of the system through overeating and the consequent putrefaction of unnecessary and unabsorbed nutriment cause more headaches, dyspepsia, biliousness, mental dullness, and general lack of ambition than almost anything else.

We all know how much better we feel in the morning after eating a comparatively light dinner the night before than after a rich and heavy meal of which we have partaken too generously. Every one ought to wake in the morning with new life, feeling wonderfully

refreshed and rejuvenated, and having a keen zest for the day's work. The reason we do not is because we violate so many of Nature's laws, especially that one which bids us eat moderately. Some of our best physicians claim that all sorts of mental and physical ills are fed and aggravated by the poisons of an excess of food half digested and assimilated, and that there are diseases which could be cured merely by the adoption of an extremely plain and simple diet. They say that apoplexy, heart failure, and, in many cases, sudden death, can be traced directly to stomachs overtaxed and weak, yet pushed on to tasks for which they are unequal by those who have not yet learned to control their appetites.

How many people are suffering from chronic headaches, biliousness, nervousness, rheumatism, gout, and all sorts of liver and head troubles, who would be entirely relieved of those evils just by quitting their overeating and regulating their diet to suit their ages, occupations, and personal needs!

Business men who overeat complain because they feel stupid and dull the next day, yet it never seems to occur to them that their tem-

porary stupidity and dullness have anything to do with their eating habits. Some of them cut down their efficiency greatly by habitually overeating.

It is bad enough to overeat in the evening, when the day's work is done, and the brain, at least, if not the poor overworked stomach, can have a rest; but to overeat in the middle of the day and then force the brain to go on working the rest of the day is even worse. I used to go to luncheon frequently with a prominent business man who complained that he rarely felt well or did good work in the afternoon, so he was obliged to do all of his important work in the morning. He said he couldn't understand why this was so, for he felt all right the whole forenoon—indeed, until after he had lunch; and then all the rest of the day he did not feel like himself; he had no vim, no ambition to do things. No wonder! When he told me this I began to notice what he ate at luncheon. He invariably chose the most complicated meal he could get on a large bill of fare. He partook of soup, fish, several kinds of meat and other dishes, with rich gravies and mixed sauces, followed by

pudding and various kinds of sweets. In other words, he ate an enormous luncheon and a great variety of food; a heavy dinner of several courses rather than a lunch. I have lunched with him on occasions when his check would amount to five or six dollars. Yet he wondered why he could not do any good mental work in the afternoon, and why he had nervous dyspepsia, liver trouble, severe headaches, and insomnia a large part of the time!

He would sometimes express his disgust when I would take a bowl of bread and milk or rice and milk, with perhaps an orange or a simple pudding, while he gorged himself with a lot of food he did not need and of which his digestive apparatus could not take care; but at the same time he envied me my better health.

I once suggested that he should follow my example, and try the experiment of eating only light things for luncheon; such as rice and milk, vegetables and fruits, and see if he could not do as good work in the afternoon as he was in the habit of doing in the morning. He laughed and said perhaps he might try, but he did not think he could live on such "chicken

feed.” He was then about to leave the city on a business trip, and I did not see him again that summer. A few months later, however, I met him by chance and was much surprised at the marked improvement in his appearance. He looked like a new man, brisk, alert, happy, all alive. I asked him what had worked so marvelous a change in his appearance in such a short time. “I followed your advice,” he laughed; “stopped eating rich and heavy dishes at luncheon, and took a great deal more exercise in the open air than I used to. It was not long before I found I could do as good work in the afternoon as in the forenoon. My food didn’t distress me, either, and I was soon sleeping better and feeling better in every way. But I didn’t have any idea, until you spoke to me about those lunches, what the trouble was. Nothing would induce me to go back to them.”

How many are as ignorant as this man was in regard to the philosophy of eating and the physiology of digestion! They do not realize that a stomach filled with a great variety of rich foods requires nearly all of the energy that the blood can generate for hours to take care

of the conglomerate mass. They do not know that the digestive organs alone are capable of holding all of the blood in the body, and that after eating it is called from all parts of the system to those organs in order to do this extra work of digestion quickly and well.

Hence, nearly all of the blood is taken away from the brain during the digestive processes. Yet they rush from a heavy lunch back to their offices, and force their brains to continue working, totally ignorant of the danger they incur in doing so; ignorant of the fact that mental work requires a great deal of blood in the brain which it is impossible to supply for several hours after a hearty meal.

They remind me of a friend who was much troubled by what he was pleased to call the slowness and laziness of his old horse, whose working days were practically over. A neighbor to whom he was complaining of the animal's defects advised him to try a new and wonderful remedy—a whip. He said that it had always worked wonders with *his* horses, and that, if applied when they first grew tired or showed any inclination to lag, it would immediately wake them up. Without delay my

friend procured one of these wonderful articles, and whenever his horse lagged applied it with great vigor and was well pleased with the results. For a short time the treatment seemed to work like a charm, but, on going to the stable one morning, to his great dismay he found the poor old animal lying dead in his stall.

Many a man keeps slashing his brain to work, when the blood which sustains and nourishes it has been drawn away to help the digestive apparatus in its processes of assimilation and absorption. As a consequence both the brain and the digestive organs are often taxed beyond endurance and the whole system succumbs to the cruelty of its master. There is no doubt that overeating and eating too rich foods, with all the attendant evils that they cause, cut short by years the lives of many men.

It is a rare thing for a man who habitually overeats to do anything great in literature, in art, or in any other line of human endeavor. As a rule, overeaters are never in physical and mental condition for great achievement. The brain will not give up its best excepting under

absolutely normal conditions. When one is guilty of excesses of any kind, it will refuse to realize its maximum of efficiency. Nature forces us to live simply and naturally, or pay the price in inferior mental product. High living and high thinking do not go together.

Excess in eating, or eating rich, complicated foods, is usually accompanied by other forms of self-indulgence, and those who thus indulge are not the world's producers, nor are they models of virtue. They are usually the consumers and demoralizers, the blighters of virtue.

The tissues require very simple food elements, but in our modern life we are not only constantly forcing the system to take care of a great excess of food, but also of too great a variety and too complicated foods. The brains of most people are so clogged with overnutrition that clear thinking is impossible. When the digestive organs cannot clear themselves of food without chemical decomposition and the consequent generation of poisons, when an excess of nutriment is forced upon the brain cells, the thought is clouded and the mental faculties cannot be used with effect. It is a

noticeable fact that the world's greatest writers have been very simple liver.

The body cells are so inactive, so clogged from overeating, so deadened by dissipation, that many people are scarcely half alive. They go about in a sort of torpid state, like wild animals just coming out from a season of hibernation. They cannot think or act clearly, consecutively, or with force. Very few people live so that they are alive all over. Some are half-dead in their livers, some in other internal organs, their muscles, or some other part of the body.

When a man is perfectly normal he feels conscious of a power which borders on omnipotence; he feels that he is in close touch with the Divine and yearns for achievement, which is as normal to him as breathing. In one who lives a truly normal life, every cell is clear, clean-cut, is not clogged or befogged from overeating, or self-indulgence of any kind, but is thoroughly alive, sentient, responsive. This is the life that gives power, the life that generates vigor.

What can be expected from a man when more than half of the cells of his body are half

asleep, when they are choked, clogged from unscientific living, under-exercising and over-feeding?

I know some enormous eaters who are constantly complaining of being tired. They say they are tired when they get up; they are nearly always tired. There is no doubt that multitudes of people have this chronic tired feeling largely because of overeating. Much of their vitality is exhausted in taking care of the surplus which the body cannot use. This surplus not only clogs the system, and does infinite harm to many of the organs, especially the liver—not only causes indigestion, biliousness, and kidney troubles—but often, when overeating is habitual, develops a coarseness of appearance which is sometimes almost repulsive. Nothing else is more fatal to a woman's beauty than overeating. An excess of food or a very rich and complicated diet will soon ruin the best complexion in the world.

Multitudes suffer all their lives all sorts of discomforts and little ailments from overeating, without knowing the cause. I know men who constantly complain of a dull heaviness in the head. They cannot think clearly. They

do not know why, but it is because they habitually overeat. Many have indigestion, or are bilious, stupid, sleepy most of the time. They often think there is something the matter with their heads when the whole trouble comes from their poor stomachs, which are constantly overloaded. Then they resort to drugs and pills of all kinds, which naturally do not reach the real *cause* of the trouble, and frequently aggravate the *effect*.

Dyspeptics are continually dosing themselves with medicinal stimulants, and trying to find what they can eat with safety. Everything disagrees with their digestion, yet they never stop for a day or two to allow the wheels to rest; they never think of giving their poor, overworked stomachs a holiday. The health of many of them would be revolutionized by cutting down their food supply. Great numbers of people who used to suffer from dyspepsia, headaches, or other ailments have been materially helped by eating only two meals a day instead of three or four, as formerly.

It is infinitely better to be kept a little short of food—to be compelled to go hungry occasionally—than to have one's system perpet-

ually gorged with nutriment which is not only not necessary, but, on the contrary, seriously taxes the eliminating powers of the body in trying to get rid of it. Nothing else is more injurious to health of mind and body than the constant overloading of the system with food and then dosing one's self with drugs to get rid of the bad effects. This very seriously affects such organs as the liver and the kidneys. Many victims of this vicious drug habit have a very mistaken idea that they are assisting Nature by physicking themselves. First they abuse their bodies by overeating, or by eating too rich and too complicated foods, and then they think they can remedy the effects of their indiscretion and gormandizing by resorting to drugs. They have not the slightest comprehension of the very serious results that this unnatural forcing of the food through the alimentary canal produces. It is hopeless to try to get rid of any evil by dickering with effects. We must remove the cause or continue to suffer for our folly.

If we eat proper food in the proper way we shall never need the assistance of drugs or any unnatural methods to stimulate digestion.

Nature takes care of herself when we treat her fairly. But we cannot expect to commit all sorts of sins against the body, abuse it in innumerable ways, and then expect to remedy the evils by resorting to drugs.

Doctors and druggists grow rich in trying to correct the effects of overeating. The surplus earnings of many families, instead of being put away for a "rainy day" or a needed summer vacation, find their way to the pockets of their physicians and apothecaries. They keep themselves physically and financially poor by overeating and its deadly aftermath. Their efficiency is lessened because they are physically crippled; they are handicapped in the struggle for existence and their comfort and happiness are destroyed because they continually stuff themselves with a great variety of foods which they do not need.

The fact is, that the system requires only very simple foods. Man was planned for a simple life, and upon any attempt to force pleasure by overeating, overdrinking, or by the gratification of other purely animal appetites he finds himself in trouble. Overstimulation of any function is followed by conges-

tion, an increased demand for gratification, which is never satisfied, but is always clamoring for more, only to give greater pain, dissatisfaction and disgust after it has been gratified.

Is there anything more pitiable than to see a rich glutton hunting for some new delicacy to stimulate his deadened appetite, or for some new tonic to stir up his satiated nerves, which have become benumbed by being overstimulated?

Much abnormal craving for stimulants is due to food poisoning from overeating. Multitudes of people suffer from this form of poisoning without knowing what the trouble is. They cut down their efficiency, their happiness and well-being, and die ignorant of the fact that their deterioration is due to vicious feeding and overeating.

Is it any wonder that so few live to old age when the majority keep their digestive organs crowded and clogged in such an unnatural way, for many years, that they are unable to perform their functions normally?

Many diseases and a great variety of distressing physical and mental conditions are

greatly helped and often entirely cured by fasting. This would indicate clearly that much preventable illness comes from over-eating.

Horace Fletcher says that we should eat less and chew more. He claims that the more completely we enjoy every mouthful of food the more good we will get out of it, the less likely we will be to injure ourselves by eating too much. It will pay to follow his advice not only for the sake of health, but also from an economical standpoint, because if we Fletcherize our food we will feel better and happier and we will not require more than half as much as when we eat hurriedly and do not take time to masticate thoroughly.

Habitual overeaters ruin their enjoyment of food. They do not know what real palate enjoyment is, for this can only come from simple living, eating slowly, masticating thoroughly, and digesting perfectly. Over-indulgence has taken away their natural appetite, which alone can give that hearty, healthy zest for food which insures pleasure in the eating, and, most important of all, which results in the increase of power and efficiency.

In the last analysis, as all power comes from the sun, and this power is transferred into the human being through foods which the sun produces, everything—our success, our happiness, our well-being,—depends upon our digestion. The stomach, therefore, is the pivotal point of everything that is worth while in life. If our digestion is weak or imperfect, everything in our life suffers accordingly. Everything is bright or dark according to the state of our digestion. A gluttonous dyspeptic is always a pessimist. A well-nourished man who neither overeats nor undereats is an optimist. The pessimist's horizon is always dark. The optimist's is always bright. He is the wise man who "eats to live." The pessimist is the glutton who "lives to eat."

If thou well observe
The rule of "Not too much," by temperance taught
In what thou eat'st and drink'st, seeking from thence
Due nourishment, not gluttonous delight,
Till many years over thy head return;
So mayst thou live till, like ripe fruit, thou drop
Into thy mother's lap, or be with ease
Gathered, not harshly plucked, for death mature.

—JOHN MILTON.

If we consider the ancient sages, a great part of whose philosophy consisted in a temperate and abstemious course of

life, one would think that the life of a philosopher and the life of a man were of two different dates; for we find that the generality of these wise men were nearer a hundred than sixty years of age at the time of their respective deaths.

—JOSEPH ADDISON.

“Divine Sobriety, pleasing to God, the friend of nature, the daughter of reason, the sister of virtue, the companion of temperate living; modest, agreeable, contented with little, orderly and refined in all her operations! From her, as from a root, spring life, health, cheerfulness, industry, studiousness, and all those actions which are worthy of a true and noble soul. All laws, both divine and human, favor her. From her presence flee, as so many clouds from the sunshine, reveling, disorder, gluttony, excessive humors, indispositions, fevers, pains, and the dangers of death. Her beauty attracts every noble mind. Her security promises to all her followers a graceful and enduring life. Her happiness invites each one, with but little trouble, to the acquisition of her victories. Finally, she pledges herself to be a kind and benevolent guardian of the life of every human being—of the rich as well as of the poor; of man as of woman; of the old as of the young; to the rich she teaches modesty, to the poor thrift; to man continence, to woman chastity; to the old how to guard against death, and to the young how to hope more firmly and more securely for length of days. Sobriety purifies the senses, lightens the body, quickens the intellect, cheers the mind; makes the memory tenacious, the motions swift, the actions ready and prompt. Through her the soul, almost delivered of its earthly burden, enjoys to a great extent its liberty; the vital spirits move softly in the arteries; the blood courses through the veins; the heat of the body, always mild and temperate, produces mild and temperate effects; and, finally, all our faculties preserve, with most beautiful order, a joyous and pleasing harmony.

“O most holy and innocent Sobriety, the sole refreshment of nature, the loving mother of human life, the true medicine

both of the soul and of the body; how much should men praise and thank thee for thy courteous gifts! Thou givest them the means of preserving life in health, that blessing than which it did not please God we should have a greater in this world—life and existence, so naturally prized, so willingly guarded by every living creature!"

X

EATING FOR EFFICIENCY

Our stomachs
Will make what is homely savory.

—SHAKESPEARE.

I sing the sweets I know, the charms I feel,
My morning incense, and my evening meal,
The sweets of hasty pudding.—JOEL BARLOW.

We may live without poetry, music, and art;
We may live without conscience, and live without heart;
We may live without friends; we may live without books;
But civilized man cannot live without cooks.
He may live without books,—what is knowledge but grieving?
He may live without hope,—what is hope but deceiving?
He may live without love,—what is passion but pining?
But where is the man that can live without dining?

—OWEN MEREDITH.

“TELL me what thy food is and I will tell thee what thou art,” says Anthelme Brillat-Savarin.

Your ability, your accomplishment, your position in life, your happiness, are manufactured out of your blood. What your brain, what your ability, what your efficiency will be depends largely upon the quality of the

blood, and this in turn depends upon the quality of the material the blood is made of—the food. First-class blood cannot be made out of second-class food, nor can first-class ability be made out of poor blood.

One reason why so many naturally strong men do such poor, ineffective, weak work is because of their ignorance of the brain and its needs, and of the laws of eating, digesting, exercising, and recreation. They try to force good work out of mental faculties which are exhausted from lack of proper and sufficient nourishment.

Multitudes in this country are filling very ordinary positions and doing very ordinary work because they are not properly nourished and do not know what kind of food they require to produce their maximum of results.

Most of us go through life victims of our ignorance. We are not half developed. We are unable to utilize much of our ability, because we have not been taught the laws of health or trained in their practice.

Inasmuch as we are largely products of what we eat, we cannot afford not to take pains with that which re-creates our very life, that

which makes the quality of our blood and determines the quality of our brain, the quantity and quality of our energy, the quality of our courage. Science is beginning to discover that thinking is not confined to the brain alone. There is more or less intelligence in all of the cells of the body, which are so intimately tied together, their affinity so interwoven, that man is a thinking machine and thinks all over. Each of the billions of cells in his body is affected by every thought that passes through his brain, for his intelligence is a product of the action of the entire system, especially the nervous system; and the condition of the whole nervous system is governed by the quantity and quality of the blood with which it is supplied.

In view of these facts, is it not strange that shrewd, long-headed business men who figure everything down to the minutest fraction, in order to increase their own and their employees' efficiency in the production and handling of merchandise, should think so little about the quality of the food which is to generate their own force, in our brain power which is to run their entire establishments?

What would we think of a shipbuilder who should build the finest ship that was ever made and equip it with the best engines that were ever produced, and plan everything for speed and safety, and then try to economize by using poor, cheap coal in making a speed test across the ocean? In reality, this is just about what many business men do.

How often we see them on the street, both business and professional men in middle life and later, who have developed paresis, or some other mental affliction! When they ought to be in the very prime of their vigor, they go about dragging their feet along, walking with an unsteady gait, because their brain has lost its co-ordinating power through overwork, overstimulation, overstrain in their mad race for the almighty dollar or for fame, for place, or for power. They forget altogether that the body and brain which has directed all their wonderful activities has needed the same intelligent care that they have given to the ships they have owned, or the big enterprises they have conducted to success.

There is no doubt that people who are disappointed with their lives, disappointed with

the mediocrity of their attainment, and who are unhappy and miserable, could immensely improve their health, multiply their efficiency and their happiness by a scientific diet taken in a scientific way. Everywhere we see people in poor health, suffering agonies from thwarted ambition, haunted by aspirations which they are powerless, physically and mentally, to realize, either because they do not know how to care for their bodies, or because they stupidly and foolishly neglect to do so.

On every hand we see authors of great ability writing very ordinary books, because they do not know how to feed the brain, and are consequently suffering from brain starvation; we see artists with great possibilities who are painting very ordinary pictures, because their ideals are dimmed and their perceptions blurred by imperfect mental nourishment, due to their ignorance of food values. A great many are suffering from brain fag and chronic fatigue through brain starvation, due to imperfect or insufficient brain food.

People who do things must have force-producing food, food which will enable them to generate great energy, forceful ideas, orig-

inality, resourcefulness, inventiveness. Second-quality food makes second-quality blood, and poor blood makes a poor brain. I know brain workers who are not getting half of their ability into their writings because they eat food which makes heavy, thick, sluggish blood. A large part of the cells in the average human being are only half alive. Our thoughts are muddled, we are not clear thinkers, largely because our brains are clogged from vicious habits of eating and drinking.

Most people waste a vast amount of nervous energy in trying to take care of substances which, through lack of exercise in the open air, cannot be taken up into the various tissues of the body and assimilated. Not only is there no nourishment derived from this extra quantity of food, but the very effort to utilize and absorb it requires a great deal of nervous energy which might be employed for some useful purpose.

Is it any wonder we have nervous dyspepsia, headache, liver trouble, and insomnia, when we take into the system three or four times as much fuel as the human machinery requires, when we take in enough to run all of the brain

cells and all of the muscle cells of the body, with practically no actual exercise except of the brain cells during the day?

Here we find a man who is a prodigious brain worker, who gets but little exercise and yet takes into his system the amount and kind of fuel which only a hard-working day laborer could possibly take care of. That is, he has taken in fuel enough for active exercise of the five hundred different muscles of the body, which are practically not exercised at all, and he wonders why his system gets clogged, why he feels heavy and dopey, why his mind is clouded, his spontaneity and enthusiasm lag or are gone altogether. Men of all kinds of occupations and professions go into the same restaurant and eat practically the same kind of food, when their requirements are vastly different.

If we are leading sedentary lives, if we get very little exercise, and especially if we tend to take on flesh, we require a very different diet from that which would be suited to a physically active person. If we are engaged in a mental occupation, and have very little physical activity, we should not eat largely of the

sort of foods which feed the muscles, like a heavy meat diet. The food that would be normal for a writer would be abnormal for a day laborer; what would be normal for a healthy physique would be abnormal for an unhealthy person. If you should have kidney disease, your otherwise normal food would then be abnormal; you would have to select a diet to favor the kidneys, which cannot extract the poisons from the food when their delicate lining is inflamed. You would eat the things that would make the least trouble for them.

A person who is constantly using his mind creatively in writing, composing, planning, or any other sort of mental effort, uses up his brain tissues very rapidly, and he should take foods which can supply the waste as quickly and as perfectly as possible. Brain workers should eat foods which are especially rich in such mineral salts as phosphorus, iron, and arsenic, in addition to a certain amount of nitrogenous material, like albumen. The same thing is true of the entire nervous system.

On the other hand, while brain workers require comparatively little starchy food, day laborers, people who do muscular work, re-

quire a very large amount of albuminous food and considerable starch. A muscular worker requires the more solid, the more substantial foods, containing a great deal of combustible material which give off a large amount of physical force.

Of what use is it for the brain worker to take in a great surplus of muscle food which cannot possibly be used for any other purpose than nourishing the muscles? You cannot make brain food out of muscle food, or compel a muscle diet to do brain work.

Again, one who does light work does not require the same sort of food as one who does heavy work. A bookkeeper in a store should not eat the same kind of food as a shipper or a floorwalker. He cannot take care of so much muscle food. He has no use for it. He does not get sufficient exercise to need it.

The great food problem is to supply the right sort of nutrition to all the different tissues in the body and to preserve a balance by supplying an extra amount of nutrition to those which are most actively exercised.

For example, a diet which would maintain a food balance in a person on a vacation or in

idleness would not afford the proper food when he was actively engaged in his vocation, either mental or physical. If a person is engaged in intense brain work he is exhausting brain cells much more rapidly than usual, and to supply this destruction from the more active brain combustion he requires a much larger supply of brain food.

If a person engaged in a mental occupation does not get sufficient brain food, there will be mental starvation. The book he writes, the picture he paints, his work, whatever it is, will show the deterioration, and before he realizes it he will be subject to chronic brain fag, due to brain starvation, because the blood does not contain sufficient phosphorus and other brain material to maintain the integrity of the brain cells. His diet must contain, besides phosphorus and other elements for generating mental energy, a certain amount of foods that produce staying power; otherwise he will lack stability; for, even if the muscular system is not active, it must be sustained by proper food.

Many people suffer from brain starvation who yet eat a great deal of food, but it

does not supply brain nutriment. Poor writers, artists, and students often try to subsist upon a bread-and-butter diet, and do not realize that they suffer seriously from brain deterioration, because their diet does not produce mental force. Needy students and artists in Paris sometimes live almost entirely on stale bread and tea and a little milk. It is impossible to keep the brain up to its maximum of power on such a diet. Naturally the productions of those people deteriorate, and many of them become discouraged and think they are failures, when they merely lack brain food. If they had adequate nourishment, the quality of their output would be wonderfully improved. They do not realize that the brain is fed from the blood, and the blood from the food, and that you cannot put anything into the brain which is not in the food. If there is not fire and force in the food, there will be none in the blood, and the brain is made from the blood.

On the other hand, I know mental workers who gorge themselves upon a meat diet and take heavy drinks, like porter or London stout, who are able to write but very little of the time because their diet is too heavy for their seden-

tary life, and also because it does not contain sufficient phosphorus and other elements which enter into brain construction and generate mental force.

The result in the one case is as bad as in the other. A heavy meat diet is no better calculated to develop brain-power than is a starvation diet of bread and tea. Brain workers require very different food from that suitable for people who use their muscles, and a hearty meat diet is no better adapted to them than a light diet would be to day laborers who use their muscles constantly and require muscle-building foods.

If our work is peculiarly mental, our diet should be of the sort specially calculated to restore brain waste from broken-down brain cells, such as fish, milk, eggs, fruit, and vegetables. Milk and eggs are especially good for brain workers. Where there is a very great tendency to biliousness the yolks of the eggs may be excluded, for the liver of some people does not seem able to take care of the yolks of many eggs without serious disturbance. Sometimes this bilious tendency can be overcome by a great deal of outdoor exercise. The

liver is a pretty good indicator of the condition of the digestion. Biliousness is one of the first danger signals which Nature puts up in the digestive tract. As long as the liver works normally and the digestion is clean and perfect, the general health will correspond.

Many are habitually bilious and do not realize the dangers of this condition. It means the presence of chronic poison in the blood and, of course, in the brain and other tissues, and this is one reason why so many people are dull and stupid much of the time, their thoughts muddy, their thinking powers clouded. If they should cut off a rich diet, especially a meat diet, and eat more vegetables and fruit, they would find the biliousness would clear up and the brain would correspond.

I know some literary workers who get splendid results from eating the whites of eggs alone, thus avoiding any danger of biliousness from the sulphur in the yolks. Oysters and all other shell fish are good brain foods, because they contain a large amount of phosphorus. They do not, however, constitute an economical diet, because they contain so little staying power, and to some people they are

indigestible. Many who "carry everything to extremes" have injured themselves by eating too much fish and other foods supposed to contain a large amount of phosphorus, because of the brain-food fad which has been so prevalent. While fish contains elements which are very desirable for brain workers, including phosphorus, as a matter of fact the larger part of this substance does not enter into the brain structure, but is used in the skeleton as phosphate of lime in bone building. It has been found that people who live chiefly upon a fish diet, which is generally the case in places where fish is cheap and meat is dear, are rather deficient mentally and physically. There is a general loss of muscle power and tone. Some authorities claim that the hair of people who live largely upon a fish diet turns gray very prematurely. I have noticed this tendency to premature grayness in people who live upon islands in the sea.

While beef is essentially a muscle food, it also contains some very good brain food, provided the brain worker takes a great deal of exercise. Otherwise the mind will become heavy and dull from an excess of nutriment

of which the system cannot take care. Duck, goose, and mutton are good for many brain workers. Food which has not come to maturity, like lamb, veal, and young chickens, is not of much value as brain food. In fact, immature fruits or vegetables, or any other products which have not come to maturity, are lacking in brain nutriment. Many brain workers find that lean mutton chops, especially if eaten with tomatoes or lemon juice and salads, furnish a splendid nutriment.

Fat meats do not contain very useful elements, and to most people are indigestible. For meat eaters venison is one of the best kinds of brain foods, especially for those in advancing years.

Salt meats are practically useless as brain foods, because the soluble nitrogen and phosphates are extracted by the brine, and this is the very material which the brain requires.

Some of our best authorities differ greatly as to pork. Some claim that it should never be eaten, both because of its evil physical effects, and especially because of its deteriorating and demoralizing effect upon the character. Others claim that pork, particularly red pork,

is not only healthful, but is a splendid brain food, especially in cold weather.

Many people who eat white poultry and game with comparative impunity cannot eat red meats, on account of their being too heavy and because of the excess of uric acid which they produce. Brain workers who eat a large amount of meat, especially red meats, and take too little exercise, do not throw off the products of the meat combustion, and the result is an accumulation of uric acid in their systems.

Peas and beans are remarkably rich in nutriment—much more so than the same relative amount of beef steak or roast beef. They are not easily digested, but they are good brain foods. They are deficient in heating qualities, hence they are especially good in hot weather. Lettuce, cucumbers, and raw vegetable salads are also good for hot weather.

Some people duplicate food values too much. For example, many who live largely upon a meat diet also eat corn bread, mush, wheat, oatmeal, and other things which are meat substitutes.

As we require so many different kinds of food to preserve a true physical and mental

balance, we may be really starving to death even when we are overeating foods which only nourish a very few of the tissues. The brain, for instance, might be starving, but it could not eat muscle food or bone food; it must have brain food. There is no doubt that many nervous diseases which baffle specialists are due to nerve starvation, from lack of the kind of nutrition which will feed the tiny nerve cells.

We should bear in mind, then, that nerve or brain food should contain a large amount of soluble phosphates, which are easily assimilated; and that these are found in different kinds of lean meats, game, fish, shell fish, whites of eggs, etc.; also that muscles require considerable solid food, starchy food, such as is found in bread products, wheat, rice, barley, oats, etc. These make the muscles firm and generate staying power.

With these general principles in view, and the fact that food authorities differ so widely, each individual must exercise his own best judgment in choosing and regulating his diet and find out by experience and experiments what foods are best for his particular needs.

Only experience will show the sort of food the stomach will tolerate or that the digestive organs will take care of. This is where many physicians make mistakes, in ordering the same sort of food for the same kind of symptoms in different patients; for what would agree with one person suffering from indigestion or dyspepsia might cause great distress to a person with a different kind of temperament and susceptibilities. The advice of a skilled physician is always very materially modified by the experience of the patient.

Many of our best physicians claim that the great majority of the diseases and the ills of mankind are due fundamentally to wrong eating and to insufficient and improper digestion. "Stunted and starved, physically and mentally, by wrong foods in early life," would make a fitting epitaph for many a failure or mediocrity.

For the sake of economy, owners of menageries have repeatedly put their herbivorous animals on a diet of white bread and water, with the invariable result that they soon fell off in condition, and if the regimen were persisted in, died. But when fed upon whole or

cracked wheat, usually boiled but occasionally raw, they lived and thrived.

It is estimated that one-half of the earnings of poor people is spent for food, yet so great is their ignorance regarding the real nutritive needs of the body that a large part of this expenditure is practically thrown away. They do not eat for health and efficiency; they know nothing about the chemistry of foods, or what kinds are necessary to nourish and sustain the different tissues and organs. The result is that there is a tremendous economic waste in their foodstuffs alone. This is also true of people of means, but they can better afford the waste and loss. Properly and intelligently expended, one-fourth of the money now paid out for foodstuffs by poor working people would yield more satisfactory results and give them far better and more scientific nutrition than they have at present. In fact, a very few cents a day spent with especial reference to the elements which build up the various tissues would do more to keep people in trim, physically and mentally, for health and efficiency than is now accomplished by ten times that amount.

Poor people who need to spend their money

for the most nutritious food values actually buy foodstuffs containing the least. They buy cheap fruit, which has been gathered green and does not perform the functions of ripe fruit. They buy cheap food products of inferior quality, and hence very deficient in nutrition. They buy adulterated foods, which are much deteriorated in quality; hence they are in a demoralized condition, physical, mental, and moral. In fact, much of the food they buy is devitalized by its immaturity, by being only half grown or half developed; or after it has ripened and been harvested, it is devitalized by the use of all sorts of harmful chemicals in adulterating it; so that, while they often think they are buying the best, they are really buying what staggers their brain growth and body growth and makes great achievement for them impossible; which tends, indeed, to degeneracy, for badly nourished people are never normal, efficient, or happy.

It ought to be impossible for any human being in the twentieth century to throw away or to dwarf his life through ignorance of how to make the most of himself. We should have health stations, diet schools, vocational schools,

where all youths could be studied scientifically, instructed in regard to the laws of health, and started on the road along the line of their bent instead of, as now, throwing many years away and perhaps their whole lives through their ignorance of hygiene and their mistakes in choosing a vocation.

It is true that our state and federal governments are already doing a great deal in efforts to improve and conserve the health of our people. But much more needs to be done and will be done in instructing people in regard to right foods and right living generally. What a great thing it would be, for instance, if our government maintained, as it some time will, health stations where great food chemists and food experts would teach people, especially the poor, how to get the maximum of food values out of the minimum expenditure of money!

Instead of buying foodstuffs as they now do, regardless of their nutritive values, at these government health stations or schools, poor people would learn how and where to get the kinds of food which would supply their peculiar needs, build up and maintain their physical integrity, keep them in the most superb con-

dition, mental and physical, for the least expenditure. They would be taught what different foods do in the system, and what is the particular kind of work or function that certain kinds of nourishment will best fit an individual to perform. For example, poor people who buy oatmeal, crackers, flour, Graham bread, or different kinds of meat, would be taught what forces, what building material, these various foods will supply for use in the system, and what offices their various ingredients will perform. As it is, they buy ignorantly, perhaps because certain members of the family like certain things, without any reference to their food values. Many poor people, for example, live largely upon salted meats, which have very little nutritive value and supply no brain food whatever. How often do a prospective mother and her growing child pretty nearly live upon white bread and butter. Now, butter contains practically no brain food, and white bread but little, while a growing brain, as well as a much-used brain, requires a great deal of nourishment. The result is that multitudes go through life half successes, who might have done things worth while

but for the fact that their brains were dwarfed, starved in childhood by the wrong kind of food.

How many women of poor families know that nine-tenths of the food value of the ordinary rice of commerce is lost in the polishing and coating process through which it is put to make it more salable, because it is more attractive? Not only are nine-tenths of the nutriment taken out of the rice by this process, but people pay more for the product, because this is what all this polishing and coating is done for. Food experts should not only instruct people in regard to the deteriorating processes through which many food products are put in order to enhance their appearance and make an excuse for putting up their price, but they should also show them how they can get the real articles at less cost. Consumers in the North, for example, could be shown how a few families could group together and procure unpolished rice for five dollars a hundred pounds directly from the rice plantations, thus securing a much cheaper article and yet many times more valuable as a food than polished rice. They would also show them what a dear price they are pay-

ing for the fancy packing of certain articles of food like oatmeal and other "prepared" breakfast foods. Very few poor people realize that they could get the best oatmeal, for that which is put up in fancy packages. How many, too, are ignorant of the fact that there is more real nutriment in a penny's worth of peas or beans than in an ordinary beef steak!

The time will come when the government will make a scientific study of food and food conditions in various parts of the country, with a view of assisting people to increase their efficiency and to prolong their lives, rather than to cut down both, as they now do, because of their ignorance of the effects of different kinds of foods and drinks upon the body.

Every child not only has a right to be well born, but also to be well reared—physically, mentally, and morally; and it is the duty of the State to see that her children shall not grow up dwarfs when they might be giants, or weaklings when they might be superb men and women. Just think what it would mean if every human being were scientifically reared from infancy to maturity! It ought to be impossible, in a great, prosperous country like

ours, for children to grow up in vile, unhealthy slums, in a semi-starved condition, fed upon foods which can only produce human scrubs instead of the great oaks they might become.

The principal concern of the government should be the protection of humanity, the conserving of the health and the welfare of the people. We hear a great deal about the conservation of the forests and the water-power, the coal and iron mines, the oil wells; but these sink into insignificance in comparison with human conservation, the conservation of human health, human energy, human possibilities, human life.

Oh, better no doubt is a dinner of herbs,
When seasoned by love, which no rancor disturbs,
And sweetened by all that is sweetest in life,
Than turbot, bisque, ortolans, eaten in strife!
But if, out of humor, and hungry, alone,
A man should sit down to dinner, each one
Of the dishes of which the cook chooses to spoil
With a horrible mixture of garlic and oil,
The chances are ten against one, I must own,
He gets up as ill-tempered as when he sat down.

—OWEN MEREDITH.

XI

FOOD FADS AND HABITS

It will be hard to know the ways of death, unless we search out and discover the seat or house, or rather den, of death.

—FRANCIS BACON.

He that will have a cake out of the wheat must needs tarry the grinding.

Have I not tarried?

Ay, the grinding; but you must tarry the bolting.

Have I not tarried?

Ay, the bolting; but you must tarry the leavening.

Still have I tarried.

Ay, to the leavening; but here's yet in the word "hereafter" the kneading, the making of the cake, the heating of the oven and the baking: nay, you must stay the cooling, too, or you may chance to burn your lips.—TROILUS AND CRESSIDA.

Wouldst thou enjoy a long life, 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.

Pitch upon that course of life which is the most excellent, and custom will render it the most delightful.—PYTHAGORAS.

"ONE Graham cracker eaten in my way," said an enthusiastic dietician, "will give one more pleasure than a full-course dinner eaten at a palatial hotel in the usual way."

“Well,” said Dr. Lewis, a little skeptical, “let me see you eat a cracker in *your* way.”

Having obtained a cracker, the other adjusted himself carefully in a very comfortable chair. “You may think this is a very simple affair,” said he, “but I am going to show you the ripest wisdom gleaned from my forty years of observation and thought about health.”

“Very good as to theory, but I am impatient to see how you begin the magic eating.”

“Don’t be in a hurry! People should not begin to eat in haste. All my life I have thought about the laws of health, and I have reached the deliberate conclusion that the manner in which I am about to eat this cracker is the most important discovery I have ever made.”

“But,” exclaimed his auditor, “you have told me that same thing before! What I want to know is, when are you going to begin on that cracker?”

“Never, unless you let me begin in quiet and peace. One can’t eat properly by jerk.” Then, after a few moments’ quiet, he took a small bite and began to chew, and went on chewing, and chewing, and chewing.

“Wouldn’t you like a little drink?”

“Never; I do not think of such a thing as drinking a mouthful, even, while I am eating.”

“If that’s the way you do things,” said Dr. Lewis, “I want to see how long it takes you to eat one cracker. Very thoroughly done,” he added, when his watch recorded the necessary time as six minutes; “now how did you like it?”

“Nothing sweeter ever entered my mouth. Let me add that any plain, simple nutriment, such as brown crackers, Graham or whole-wheat bread, cracked wheat, oatmeal cakes, etc., when masticated thoroughly and ground down to a fine paste, will be found to be the most delicious food in the world. If one bolts his food, it is pleasant to have condiments spread over the surface; the palate is thus tickled as the food slips down; but if one eats with deliberate, thorough mastication, the plainest food is the sweetest. If, after a motion or two of your jaws, you swallow a mouthful of some liquid, you will find sponge cake one of the sweetest of foods; but if you masticate what you eat thoroughly, without drinking at the same time, one mouthful of good bread

and butter will give more pleasure than ten of sponge cake.”

Give this more than passing thought; think of it every time you are tempted to hurry in eating. The human race is not a race to be run at meals; if it were, it would only lead to lives of invalidism or early graves. When you have but little time for dinner make your dinner a lunch. Eat less in proportion as your time for eating is short, and what you thus eat will do you far more good than a load of provender dumped into your stomach like a load of potatoes or turnips into a cellar.

A story is told of a criminal in Tibet who was condemned for many years to lie on a bed of sharp spikes, which stood in the only place in his dungeon where he could stretch his limbs. His skin became so calloused and his body so accustomed to the spikes that when his sentence expired he could not sleep on an ordinary bed. He had to have a spike bed made!

A habit may be a great enemy or a great friend, and man has been defined as “a bundle of habits.” The marvelous power of the human body to adapt itself to the habit of entertaining even its enemies is well illustrated by the

amount of poisons which those who have acquired drug habits can take into their systems without killing themselves. "The Confessions of De Quincey," the noted opium eater, furnishes one of the most remarkable examples of this kind. A habitual tippler can drink more and more alcohol without becoming intoxicated, and often he is unconscious that his vicious habit is slowly sapping his vitality, destroying the delicate cells of his brain, and steadily robbing him of power and efficiency.

"Excuse me, sir," said a German, in a Berlin restaurant, after noting the calm, deliberate manner in which a stranger was eating his lunch, "I see that you are an American, and, as I happen to speak English, I cannot forbear to compliment you upon your exceptional moderation at table."

"I don't know that I quite understand you," said the American.

"Have you a thin skin? That is to say, are you sensitive to criticisms of your country or your countrymen?"

"Not particularly, but still I do not quite catch your meaning."

“Well, then, let me tell you that during six years’ residence in America I saw nothing which surprised me so much as the way in which Yankees eat and drink. Why, I really think it is worth an admission fee to stand at the end of a dining-room and see a hundred Yankees at dinner. Each one has something to eat in one hand, and something to drink in the other. When the food hand goes up, the drink hand is down; and, when the food hand goes down, the drink hand goes up. It always reminded me of one of those walking beams on a steamboat,—when one end is up the other end is down. Now, sir, I think that is the reason that the American people are such dyspeptics. Why, I believe that, in a world’s exhibition of dyspeptics, your country could show more than all the rest of the world.”

Can any one deny the applicability of these criticisms to many of our American restaurant patrons?

The body can habituate itself to endure overdoses of fatigue poisoning, just as it can to endure overdoses of opium and alcohol. Trainers in Marathon races, for example, have found that the runners can become so accus-

tomed to such poison by forcing themselves each day to exercise a little more and more beyond the fatigue point that they can stand a very large amount of it, whereas the contestants who have not become thus habituated would succumb during the final contest. Many men in various occupations and professions accustom themselves to such noxious influences by forcing their activities by sheer will-power to go on long after the point of natural exhaustion has been reached. But after a while this poison accumulates to such an extent as to cause very serious physical results. The resisting power of the body has been so reduced that it becomes an easy prey to the development of disease.

Few realize how much habit has to do with what they eat and drink. Those, for example, who are brought up on the farm and eat pork every day, almost from infancy, form a pork, especially a salt-pork, habit. This is very injurious, because pork does not supply the needs of the organs they use most. The result is that there is semi-starvation going on in some of the tissues of the body which are overworked, overexercised, and underfed, while

others are underworked and underexercised, as well as overfed.

The articles of food and the manner of cooking which happen to be popular in certain sections of the country have a powerful influence on the eating habits of the people, and those who move away carry their habits with them into totally different conditions of life and work. New England people, for example, who are accustomed to baked beans and brown bread, think that nothing else can quite take their place, no matter where they may happen to live or what kind of work they may be doing. This is true of many other articles of food. I know professional men in New York, natives of New England, where pie is one of the chief articles of diet, and they still crave it and eat it, too, in large quantities, although they know it is unfitted to furnish the mental force required in their vocations; that, in fact, it is positively injurious to them. Some of them believe that they could not get along without mince pie, although they confess that they often suffer from indigestion after eating it.

Most disastrous results sometimes follow

from clinging to such habits, as when young men who come from a section where they were accustomed to eat pork and beans, and other heavy foods daily, which agreed with them when they were leading vigorous, active lives on the farm, but which nearly ruined their health when they went to the city to study law, medicine, or some other profession, or to engage in some sedentary occupation where they had very little physical exercise. The food they had become accustomed to was fitted for one engaged in severe muscular work, but totally unfitted for a brain-worker. They did not know that the latter requires a different quality of blood and must use food materials different from those demanded by farmers.

If the brain is heavily charged with muscular diet, with an excess of meat, it will be heavy and dull. On the other hand, the muscles, which have very little exercise, cannot use up the surplus of muscular elements which come from a heavy diet like pork and beans. Consequently there is an excess of muscle-creating material floating in the blood of the brain-worker who has very little physical exercise but continues to live on a diet of this sort.

This excess cannot do any good anywhere, as the muscles do not need it, and the brain and the nerves cannot use it; so it clogs the system, poisons the brain, so that the young man from the country cripples his career from ignorance of the chemistry of foods and by clinging to dietetic habits formed on the farm. The change from an outdoor to a sedentary life, aggravated by eating unsuitable food, soon begins to tell on his constitution and he gradually breaks down. But he cannot understand why, because, as he says, his work is not nearly as hard as it used to be on the farm!

It is pitiable to see a strong, well meaning, ambitious man, who is making a supreme effort to succeed in life, crippled, cramped, handicapped, his plans dwarfed or wholly ruined just because he does not know what kind of food is suited to his condition. Many are thus rendered miserable all their lives, and their power of achievement immeasurably lessened, by living on a diet not suited to their manner of life. Men and women who are well educated in other respects, who know foreign languages, advanced mathematics, astronomy, and other sciences, are in many instances

utterly ignorant of one of the most important things of life,—the composition and chemistry of foods, the things on which health, happiness and achievement so largely depend. Not one young person in a hundred—perhaps not one in a thousand,—has the slightest knowledge of the properties of what he eats. He does not know what part it plays in his physical economy, what tissues it builds up, supports, or injures. He eats because he is hungry; that is all he knows about the matter,—he is simply governed by appetite and habit. Yet it would be worth everything to him to know just the best things to eat,—to know how to make out a dietary programme which would be best adapted, all things considered, to the life which he intends to live.

When we eat we bring to the body all of the elements which enter in any way into its structure. The object of food is growth, repair, a new supply of physical, mental, and nervous energy. Instead of these processes of supplying, repairing, reconstructing, and recreating, being performed as they should be, scientifically, in the majority of cases they are conducted in a most haphazard way. Most of us

are guided wholly by our appetites instead of our intelligence. We eat what tastes good, if we can get it, no matter whether the body requires it or not. Instead of applying the most intelligent discrimination to our choice of food we simply take what happens to be convenient or what we crave, and then we wonder why our machinery does not run noiselessly and harmoniously, why it does not produce the greatest possible amount of efficiency and happiness. We might just as well expect a cotton mill to turn out splendid cloth when it is fed with wool and shoddy instead of pure cotton. The body should be fed with a view to what it is to produce, fed with a scientific knowledge of what the food is to accomplish.

From babyhood a child is supposed to be hungry when it cries from any unknown cause. The real trouble may be that it has lain too long in one position, that it is too warm or too cold, that a pin is out of place, that it is afraid of something, that it is merely fretful, or even that it has already eaten too much, with a touch of colic as the result. For these and a dozen other mysterious annoyances, there is one "universal remedy,"—eating. If the

mother does not think of it and resort to it at once, a "kindhearted" nurse or aunt or grandmother or visitor almost surely will, and will protest, "Why don't you give that child something to eat? My mother never let her children cry that way." Even when the cause of the crying is plainly manifest, as a cut finger, a bleeding nose, a splinter, etc., a piece of candy, a cookie, or something of the kind is considered part of the cure.

"It is astonishing, indeed," says Andrew Combe, "with what exclusiveness of understanding eating is regarded even by intelligent parents as the grand solatium or panacea for all the pains and troubles which afflict the young. If a child falls over a stone and bruises its leg, its cries are immediately arrested by a sugar-biscuit stuffed into its open mouth. If its temper is discomposed by the loss of a toy, it is forthwith soothed by an offer of sweetmeats, the ultimate effect of which is to excite colicky pains in its bowels, which are worse than the original evil, and for which, in their turn, it is presented with nice peppermint drops, or some other equally pleasant antidote. Because the mouth is open when the child is

crying, and the mouth leads to the stomach, parents jump to the conclusion that it is open for the purpose of being filled, and proceed to cram it accordingly, forgetting that the mouth leads also to the windpipe, and may be open for the admission of air to the lungs.

“To confound crying and the expression of pain with the cravings of hunger is far from being a matter of indifference to the child. If food be given when it wishes only to be relieved of suffering, the offending cause is left in activity, and its effects are aggravated by the additional ill-timed distention of its stomach. But so far is this important truth from being sufficiently impressed upon the minds of parents and nurses that nothing is more common, when an infant refuses to swallow more, but still continues to cry, than to toss it in the nurse’s arms, as if on purpose to shake down its food, and then resume the feeding. In such attempts, it is only too true that the perseverance of the nurse often gets the better of the child, and forces it at length to receive the food which it really loathes.

“Many mothers imagine that milk is so bland a fluid that it is impossible for an infant

to take too much of it; but the fallacy of the notion is exposed when we recollect that milk is coagulated the moment it reaches the stomach and that the real subject of digestion is curd,— a substance not quite so light as milk.”

Many think that the appetite will crave what is best for the body. But we must remember that our habits are not easily changed, and we crave the thing we are in the habit of eating, not because it is the right food for us, but because the cells of the body have become accustomed to it and call for their habitual nutriment. I do not claim that one should not be guided at all by his likes and dislikes, his appetite, but I do say that one by continued use may learn to eat, and even like, that which may be very injurious and which may be totally unsuited to the work he is doing or to his physical condition.

It is not always safe, therefore, to follow one's inclination in choosing a diet because of the dominating part habit often plays in these matters. What the bodily cells have been accustomed to for years they will continue to crave, notwithstanding you have completely changed your life habits, so that the salt pork

and potatoes or other diet on which you were brought up no longer furnishes the nutrition which your vocation demands. The mere fact that your tissues still call for the food which you had when leading an active, outdoor life, in which you required a great deal of muscle food and fat food to supply the bodily combustion, is no scientific reason why you should continue this diet under absolutely changed conditions. Your manner of life regulates your food needs. The bodily organs or tissues which are most active should have nutrition which corresponds to their needs. Where there is most activity, there also will be the greatest exhaustion of force, the greatest breaking down of tissue cells. After you have decided upon your vocation your diet should be changed to correspond to that which will give you the greatest efficiency possible in your new environment.

In some cases it is dangerous to be guided by what the palate longs for, which may be merely what we have been accustomed to eat. When the body is in a diseased condition, or not normal, we often have an intense craving for things that would be most injurious to us.

Many people with diabetes, for instance, have a great longing for all sorts of starchy foods, especially potatoes, sugar, and other sweet things, which actually aggravate the disease. Others, suffering from rheumatism or gout, often have such a craving for oranges and other fruits not adapted to their condition that it is a real hardship for them to give them up; yet they suffer if they partake of them. Sufferers from kidney troubles are often very fond of ham, salt pork, and other salt meats, and salt fish, in spite of the fact that the salt contained in this food is very injurious to the delicate structure of the kidneys, and that they will be much better off not to eat meat of any kind. The fact that the kidneys, the liver, or some other organ, may have become degenerated or in some way diseased does not change the desire engendered by the life habit of eating certain foods. The appetite, the desire, remains even when those particular foods have become inimical to some diseased organ, or to some abnormal condition of the body.

In other words, the appetite, which, in longing for things under normal conditions, would probably indicate the healthfulness of the par-

ticular food desired, is a very different thing under the modified conditions which a complete change in the general habits of life, physical weakness, or disease may bring about.

When certain organs are diseased it is necessary sometimes to reduce food almost to the point of starvation of the individual, so that he may barely continue to exist until Nature has had an opportunity to make amends, which she cannot do unless the factory is shut down during repairs.

One may have an ulcer in the stomach, for example, which might never heal if he continued to eat his regular meals in the usual way. In order to give Nature a chance to heal it, it might be necessary for him to take to his bed and to swallow as little liquid nutriment as possible, and to have this passed through and beyond the stomach by a tube, thus giving the diseased organ a chance to rest and heal the ulcer; whereas, if he should insist upon having his usual food, it might cost him his life. Further, there are some tissues which must be starved at times in order to stamp out a disease developing somewhere else. If they are constantly fed such diseases may continue to

increase. In serious liver troubles it is sometimes necessary to cut off from some other part of the body nutriment which would be imperatively needed there but for the harm it might do to the diseased organ.

The most intelligent knowledge of the system and the greatest wisdom are required to maintain the physiological balance as far as possible, through wise feeding. Yet it is a curious fact that, when men are working hardest, when their lives are the most strenuous, when they are extremely methodical about their business and professional affairs, and when they should be most careful and methodical about their foods, they follow the most helter-skelter eating habits. They treat their body and brain, the very sources of their achievement, any way which is convenient to them,—without method, system, or the most ordinary common sense. There are thousands in this country who would give fabulous sums if they could be insured a few years of extension to their lives, who are taking a short cut to their graves, not alone by their imprudent eating habits, but also by their manner of living; their grinding, rasping, wearing business methods

and habits. They would give anything for the assurance of a little more life, and yet they actually throw away years of their lives by the constant violation of the fundamental laws of their being.

The world is full of people who are not getting one-fourth of their ability into their life work because of bad habits, especially bad eating habits, which neutralize and vitiate their efforts. Many are paying forfeit with their lives. More people are killed by imprudent diet, by the overeating habit, the habit of eating too rich and too great a variety of foods at the same time, and by other vicious eating habits, than by famine, war, or any other cause.

The food-bolting habit, for instance, so common among Americans, especially American men, is fatal to digestion, health, and longevity. There is nothing that will discourage digestion more. The stomach was not intended by Nature to perform the office of the teeth. Its linings are too delicate to do the work of a crushing machine. The food should be very finely masticated before it enters the stomach. The man who made Fletcherizing a cult says that we really digest only what we taste. The

food that we bolt is never properly tasted, and is very imperfectly digested. Consequently, it leaves poison all along its trail. We do not taste bread or other food in the mouth until it is moistened and dissolved with saliva. Then a chemical change takes place; the starches begin to turn to sugar, and the food tastes sweet and delicious. It is also in a fit condition for the action of the digestive juices when it passes into the stomach.

Some people think that the softer kinds of food, like bread and cooked cereals, don't require so much chewing as the more solid, like meat. This is a great mistake, for the opposite is the case. It is not nearly as essential for meats to be thoroughly masticated as the others, because their digestion does not begin in the mouth as in the case of the starchy foods. It is, therefore, infinitely safer to swallow great chunks of beefsteak than to bolt a dish of oatmeal and cream or any food of a starchy nature.

Inasmuch as the digestion of all starchy foods begins in the mouth, it is of the utmost importance that they be perfectly masticated. As soon as the starch comes in contact with the

saliva in the mouth it begins to change into sugar. If, however, the food is bolted, there is time for the secretion of but very little saliva. There is, therefore, no opportunity for the food to become thoroughly mixed with this digestive fluid before it passes into the stomach, and consequently we get all the ills attendant upon imperfect digestion.

Improper food habits often cause certain parts of the body to be abnormally developed from too much nourishment, while other parts may be dwarfed from the habitual lack of the elements calculated to build up their specific cells. Physicians tell us that some persons gradually and unknowingly keep themselves in a semi-starved condition, perhaps from some food fad, some idea that they should only eat certain kinds of food; and the result is that, while some of their tissues may be fed, others remain in a state of semi-starvation. People who are carried away with food fads, almost invariably overemphasize the value of some particular food or foods which nourish only certain tissues of the body, while they altogether lose sight of the fact that others may be deteriorating for lack of nourishment.

I know a man who not only refuses to eat flesh of any kind, but who excludes from his diet all animal products, like milk, eggs, butter, cheese, etc. The result is that his brain-power has deteriorated very materially. He is not the forceful, brainy man he used to be; he does not carry the same weight in his community as he did formerly. Everybody knows that his efforts are feeble and that he has failed mentally and physically. There is evident starvation going on in many of the tissues in his body, perhaps because they do not get sufficient albumen, one of the great tissue-builders.

People who from force of habit eat the same thing year in and year out, who have a great lack of variety in their food, do not realize that the physical balance which comes from the perfect nutrition of all the tissues is imperative, and that it is largely dependent on eating the right kinds of food. A one-sided diet throws the whole system out of balance and very greatly cuts down the protective resistance of the body against disease.

Take, for example, a strict vegetarian who has incipient tuberculosis, where the lung tis-

sue is breaking down rapidly. This condition calls for a great deal of food rich in albumen and other body-building material, which is not sufficiently supplied by the customary vegetable diet. Vegetarians in this state often pick up wonderfully when fed upon a sufficient variety of food, including meat, eggs, milk, and other substances which are rich in easily digested albumen. There is not enough of this building material in the usual strictly vegetarian diet to compensate for the rapid destruction of the lung tissue in tuberculosis, a disease which is comparatively rare in properly nourished people who lead moral lives.

There is always a serious lack somewhere in the system from a one-sided diet, a lack which is often fatal to physical balance, mental symmetry, and the health of the body as a whole. For instance, if nutritive salts are lacking, we often get serious nervous and other troubles. We have illustrations of this in some of the great famines of the world, especially the Irish famines. When the potato crops failed the Irish people, who were largely dependent upon this vegetable for their food, were obliged to substitute salt meat,

without vegetables, and they were soon cursed with scurvy. The result of the lack of the necessary blood salts, such as potash and lime found in vegetables, was the weakening of the tiny blood vessels of the body so that they broke and the blood ran into the flesh, making the muscles very painful and stiff. The gums became badly swollen and turned black; the teeth loosened and fell out, the breath became poisoned, and the poor sufferers became so weak that they fainted at the least exertion and great numbers died.

Most people are so constituted that they run their fads into the ground. They carry everything to extremes. Since Mr. Fletcher made his famous claim that the majority of us eat two or three times as much as nature requires and that we would be infinitely better off, more efficient, healthier, and happier on a much more limited quantity, many people have carried the principle very much too far and are not eating nearly enough. Now, extremes are nearly always dangerous. As a rule, the middle of the road is the best course. The amount of food necessary depends upon the individual and the nature of his work. Many a full-grown, hard-

working person can live comfortably and be well nourished on an amount on which another would starve. Some of the greatest achievers in the world's history have been large eaters. Take Theodore Roosevelt, for example. He often takes from six to eight glasses of milk at a single meal, in addition to eating freely of other foods. William Jennings Bryan, our Secretary of State, is also a liberal eater. Yet both of these men are temperate in their habits, and never overstep the line of good sense or good taste in eating or drinking. Mr. Bryan takes no alcoholic drinks of any kind. His substitution of grape juice for wines at state dinners after he became Secretary of State exposed him to a great deal of ridicule, but he sturdily stuck to his principle.

Undereaters and extremists generally seem to forget that we can accustom the body by habit to do without many things which are necessary. After a while these habits become so strong that the body ceases to call for what it really needs. It is possible to go without drinking water long enough to accustom the tissues to worry along without it, but this is no sign that it is good for us. A handful of

dates often makes a satisfying meal for a Bedouin Arab. So trained is he to abstemiousness by the rigors of his desert life that, if he is invited to have a drink of water, he will probably say: "Thank you, but I drank yesterday."

Habit, as we all know, is a good servant, but a poor master. I know a man who lives upon nuts, grapes, and some other fruits and light vegetables who says he does not desire anything else. But he is anemic, thin as a rail, and does not look at all like a healthy man. He always has some food fad, which, strangely enough, is usually lacking in albumen, the great body-builder.

There is only one article of diet, milk, which can furnish anything like the variety of substances necessary to maintain the integrity of the body with physical and mental poise. But even this well-nigh perfect food is not alone sufficient for any healthy adult, nor should it be taken in unlimited quantities, at any and all times.

"Each of my brothers had a calf as a present, when I was a boy," said Dio Lewis; "my little sister had one, and so had I. The others were

satisfied with our hired man's assurance that twice a day was often enough to feed them; but I knew better, and made such a fuss about their cruel starvation of my poor little Samuel that 'the powers that be' ordained that he should be fed just as I should direct. I determined to show them what's what, and to make sure I took personal charge of the feeding, giving Sam all he wanted about once in two hours.

"But at the end of six weeks how the rest of 'em did crow over me! It was true, as they said, that at the beginning of my sausage-stuffing system, as they called it, Samuel was the biggest calf in the lot; but, at the end of the six weeks, what a fall was there, my countrymen! Even my smallest brother's little Fan could give Samuel odds. To cap the climax, when we untied and turned them all out together, little spotted Fan went at my Sam, upon whom my hopes had centered as the bully of the yard, and walloped him in just no time. For a long while they wouldn't stop plaguing me about that good-for-nothing calf. My little sister, who could hardly speak plain, asked me one morning at the table, "How's 'e p'opphet Sam'el 'is mornin'?"

Many people, from force of habit like things which produce poor and impure blood, whereas the production of the purest possible blood, regardless of our likes and dislikes, should guide us in the choice of foods. It is easy to form habits while one is growing up which become permanent and which some think necessary to their well-being; but it does not follow, because a certain thing has become habitual, that it is good for us. A man might as well say that smoking is good for him because he has indulged in it from boyhood and because he likes it. It is as easy to form habits which are injurious as the opposite. The celebrated Casper Hauser, who was incarcerated in a dungeon when a boy, became so accustomed to the darkness and stillness of his dungeon that when, at the end of many years, he was freed, the noise of the upper world almost distracted him. The light pained his eyes, the beautiful things which made others happy, the food and luxuries which gave pleasure to his fellow-men, all gave him pain. Long habit had so accustomed all his faculties to the gloom of prison life, to his crust and water, that he begged to be taken back to his dungeon.

No one should allow his earlier habits to govern him in mature life. When a person is able to think for himself he should think intelligently. He should learn what elements in food are best suited to the work he is doing and to his manner of living. He should apply the same care in the choice of his food that he does in the choice of a career, or in any of the other important things in life.

There is no need to go to extremes. It is not necessary to weigh everything we eat, or to restrict ourselves to grains, fruits, nuts, and vegetables, to the exclusion of other kinds of food. All we need do is to use our reason in selecting the quantity and quality of what we consume. The palate, be it remembered, is not a reliable or intelligent guide. Those who allow it to dictate their choice frequently eat indigestible, innutritious dishes, and often eat to a surfeit. Eat rationally. Vary your food. Keep in view the object of eating, the repair of waste tissues, the nourishment of the body in all its parts. It is a waste of time and effort, an abuse of the stomach, to partake of dishes that "taste good" but which give the body little or no aliment after the labor of digestion.

Perfect health comes from a perfect balance of nutriment in the system, which just supplies the demand, which gives neither too much nor too little, and which feeds all the tissues and starves none. This perfect balance is never attained by the faddist or the one whose choice of food is governed by habit.

Against diseases known, the strongest fence
Is the defensive virtue, abstinence.

—BENJAMIN FRANKLIN.

This is the excellent foppery of the world that, when we are sick in fortune,—often the surfeit of our own behavior,—we make guilty of our disasters the sun, the moon, and the stars; as if we were villains by necessity, fools by heavenly compulsion; knaves, thieves, and teachers, by spherical predominance; drunkards, liars, and adulterers, by an enforced obedience of planetary influence; and all that we are evil in, by a divine thrusting on: an admirable evasion of man, to lay his goatish disposition to the charge of a star.—SHAKESPEARE.

XII

FATIGUE POISON

Bone and Skin, two millers thin,
Would starve us all, or near it;
But be it known to Skin and Bone
That Flesh and Blood can't bear it.

—JOHN BYRON.

A worm is in the bud of youth,
And at the root of age.—WILLIAM COWPER.

“Candidly, Doctor,” said a patient just beginning to recover from a severe attack of jaundice, “do you think that life is really worth living?”

“W-e-l-l,” replied the physician, “that depends a great deal upon the liver.”

It has been well said that a man's creed or view of life depends largely upon his bile duct. If that is in good condition, he is an optimist; otherwise, he is a pessimist.

It is equally true that, if the man as a whole is well nourished and well rested, he is an optimistic giant to the full limit of his ability; while if he is poorly fed and insufficiently refreshed by sound sleep, he is, at least for the time, a more or less pessimistic weakling.

NERVE specialists say that a great many suicides are the direct result of exhausting the brain cells.

Not long ago a boy in New York was driven to suicide by overtaxing his brain in an effort to pass difficult examinations in school. He was ambitious and was obliged to do errands before and after school in order to buy his clothing, and then he would sit up and study half the night. When the examinations came around he was in no physical condition to take them. His mentality was utterly depleted. He became despondent, melancholy, and several times tried to blow out his brains with a revolver; a last desperate attempt succeeded.

Many cases of this kind might be cited where boys and girls all over the country are driven to suicide, or permanently injure their health by overstudy, excessive brain stimulation.

Who can estimate the tragedies which have resulted from exhausted brain and nerve cells, —from the poison of fatigue?

How often one picks up a newspaper and reads of horrible accidents due most frequently to overtaxed nerves and overworked faculties! Quite recently a terrible railroad disaster, in which many lives were lost, was traced to the fact that the engineer had been compelled to work continuously for some thirty-six hours

under great tension. He had previously earned a high reputation for carefulness and strict attention to duty; and yet, on this occasion, the poison of fatigue had so stupefied his faculties that he disregarded the danger signal, thus causing the loss of many precious lives.

We all know that our ability deteriorates, that our efficiency is cut down when we are mentally exhausted. Our courage, our initiative, our perceptions, our power of fine discrimination and appreciation, as well as our observation and our hearing are impaired, because the blood and other secretions are loaded with poison which benumbs the faculties.

No man can do his best work when he is obliged to spur on his jaded faculties; when he feels his mentality lagging and is compelled to force it to yield by pressure. There must be spontaneity in the thought or there will be no vividness of imagination, no certainty of memory.

I know a business man who has tremendous brain power, but much of his work is exceedingly ordinary and tame, because he does it when his brain is jaded and fagged. He is constantly working under a great strain. The

result is that his judgment, which is very remarkable when he is rested, is much of the time poor; and he is frequently irritated because he makes foolish, unaccountable blunders.

We have probably all noticed that when we are very brain-weary our judgment is not as good as usual; our ability to discriminate is lessened, our sensibilities are dulled, and the mind, generally, loses its grip. We cannot think so clearly and we say our brains are muddled. In other words, the brain is not so sharp when we are exhausted after a day's hard work as in the morning, when we are rested after a good night's sleep.

We feel fresh and vigorous in the morning, because during the long rest of the night nature has been repairing the different tissues in the body, and the poisons generated in the system throughout the day have been gradually eliminated during sleep. The blood is purer in the morning, the brain clearer.

The ordinary breathing of the day-time is not sufficient to cleanse the blood of the accumulation of effete matter which the tissues have thrown off into the circulation—the poison generated by the thinking, planning,

worrying, and anxiety of the average daily routine. But at night Nature puts us under her beneficent anesthetic in order to get rid of the *débris*, the poisons, which have accumulated in the system during the hours of activity. If we have been working very hard, been under great worry, strain, or pressure, this dead matter poisons the blood to an unusual degree with carbonic acid, which is the principal poison of the body. A large amount of this carbonic acid so vitiates the blood that the brain becomes dazed and cannot act normally.

Now, the function of sleep is to throw off the body's poisons through its sewers, the veins, and by way of the pores, the lungs, kidneys, etc. The heart pumps the body's sewage up to the twelve or fourteen hundred square feet of lung surface with great force, and the blood is purified when we breathe in fresh air surcharged with oxygen upon the other side of this relatively immense lung surface.

During inhalation and exhalation a quick change takes place, the poison going out of the system through the tiny openings in this great lung membrane and the lifegiving oxygen rushing through it into the circulation.

When the blood goes out from one side of the heart into the arteries, it is bright red; and it is forced all over the system, even to the extremities. When it comes back it gathers enough broken-down cells, ashes from tissue combustion, and other effete matter to make it blue and foul in the veins. After this sewage is pumped to the lungs, it becomes pure; we might say it becomes bright red blood in the arteries, and is forced all over the system, giving new life to the different tissues in the body,—the brain tissue, the nerve tissue, the bone tissue, and the tissues of the different secretive organs.

Each of the different kinds of cell life is bathed in this stream, and absorbs from it what it needs. The brain cells draw out the phosphates and other nourishment for their food, the nerves that which feeds the nerves; the bone, the phosphate of lime, or whatever else it wants to build itself up. Each of the tissues absorbs what will best feed and renew it.

Many people close their doors and windows before going to sleep, lest they take cold, and if it were not for the cracks under the doors and windows, that allow the escape of the

poison which they have been exhaling, they would be dead in the morning. One will throw off poison enough in a night to kill a dozen men. Yet most people are absolutely ignorant of this real danger and go to sleep nightly in a room without fresh air.

Many business men have noticed in their employees what they call a mid-afternoon let-up in effort, a loss of energy and a tendency to take things easy. Recent investigation in the study of efficiency has shown that this is due to vitiated air which poisons the blood and the brain and brings about that dazed, sleepy feeling which seems to overcome effort, even in the most industrious and conscientious workers.

Several large New York concerns have entirely eliminated this trouble by new and better ventilating systems. One of them has made a report, showing that the improved ventilation has increased the efficiency of their entire working force from two o'clock on through the remainder of the afternoon by about twenty-five per cent.

The school laws in most of the states not only demand a certain number of cubic feet of air for every pupil, but also demand that this

air shall be continually renewed with fresh air from the outside.

Life is in the oxygen of the air, and few of us realize how quickly any considerable number of people will vitiate the air, even in large spaces.

I know men who are so active, and who lead such strenuous lives that they are perpetually tired. Their fatigue accumulates. They rarely rest enough to allow the recreative forces to catch up with the destructive processes. Their brain cells are in a constant state of exhaustion, and the result is mediocrity in work instead of great efficiency, of which they are really capable.

There must be a freshness, a vigor, a buoyancy in the physical life, or the brain will not give up its secret.

Students and brain workers often resort to all sorts of expedients to force good work out of jaded brains,—such as drinking strong coffee or other stimulants,—but they do this at a cost which endangers health, and which, if persisted in, is likely to cause insanity or paresis.

We cannot cheat Nature without paying the

penalty. We may force the brain to do a little extra work one day, but we get the protest in reaction the next day. The brain will always do its maximum of work during the year if it is only required to give out each day the force which is generated in that day, without drawing upon its reserve. Who overdraws from this daily supply faces mental bankruptcy.

In his laboratory, the physiologist stimulates a bit of muscle, which has been removed from the body, and it will continue to contract for some time, until finally there is no response. Bathe this same exhausted muscle in a warm solution, and it will react with considerable force, thus indicating that what caused the fatigue was the presence of poison resulting from chemical change. When this was removed, the muscle responded, the cause of the fatigue being removed. When the muscle reaches a point where it will respond no longer, we have absolute muscular exhaustion.

“Fatigue is a chemical fact. An exhausted person is literally and actually a poisoned person, poisoned by the body’s waste products. Fatigue is the signal which gives warning that the limit of capacity is approaching. Exhaust-

tion follows when the signal is disregarded and the organism is pushed to further exertions.”

The brain is capable of great efficiency when all the physical standards are up, when all the tissues are wholesomely nourished; but, the moment there is an accumulation of poisonous material in the blood, efficiency is immediately lowered. This explains why the greatest creative work should be done in the early hours of the day.

Some people think they can do better work at night than in the daytime, but if they do so it is probably the result of perverted habit,—except, possibly, in cases of people who are suffering from chronic insomnia and those who rest a great deal of the time during the day, as in the case of writers, who think they can write best late at night. But the principle is always the same. The brain is at its highest efficiency point when completely rested, recreated and properly nourished.

Thousands have formed fatal drug habits while trying to work at night, after having worked all day, so determined are they to squeeze a little more work out of their already exhausted brains.

Some time ago Dr. Crowthers of Walnut Lodge, Massachusetts, read before the American Medical Editors' Association a paper on "Sundown Journalism," in the course of which he said that very often he can designate the special character of dope used by the writer who tries to whip his exhausted brain to action, just as a widely informed reader can pick out the dyspepsia or gout by which a production is marred.

By "Sundown Journalism" Dr. Crowthers means the writing of those who attempt to do journalistic work at night. The name is borrowed from the evening schools for the benefit of those who work during the day. In many sections these institutions are called sundown colleges.

Of course there are various kinds of work that have to be done at night. We could not have our daily newspapers, for instance, with the latest world news, on our breakfast tables every morning, if there were not a small army of men at work nightly in the offices of every great newspaper. But these men must get sufficient sleep in the daytime to keep brain and body in repair. Night work with them is

a necessity and they must make up for its wear and tear as best they can.

Many, however, work at night because they are too mean and stingy to give themselves proper rest and recreation. They grind their brains just as they grind their employees. They look upon every bit of work done outside of their regular hours as so much saved. They think they are so much ahead, when in reality they are usually so much behind.

I know men who actually abuse themselves by night work, Sunday work, holiday work, and lunch-hour work, under the guise of duty, when in reality they are led by their cupidity, their selfish, grasping desire to let nothing get away from them.

There is, perhaps, nothing else which responds so quickly to lowered mentality as the memory, and this is often impaired by the poison of fatigue from overwork. A good memory implies a certain plus quality in the physique, lots of vital energy. The memory will not respond freshly in a tired, fatigued brain. If you begin to run down physically, you will find it is more difficult for you to remember facts, figures, dates, and names. This

is often a sort of a thermometer to indicate a lowering of vitality. The memory faculties must have a certain grasp and bite in order to seize and hold facts, to retain and reproduce them. When you feel your memory flagging, it is time to replenish your vitality.

Sometimes orators temporarily paralyze their memories by physical exhaustion. A noted lecturer in England said: "When traveling expenses were the only thing I received for my lectures, I used to walk to the places of their delivery. On my walk from Birmingham to Worcester, a distance of twenty-six miles, it was my custom to recite on the way portions of my intended address. In the first part of my walk my voice was clear and my memory good, but toward the end I could scarcely articulate or remember the thread of my discourse. If I lectured the same evening, as sometimes happened, I spoke without connection, and produced little effect upon my audience. The reason was that I had exhausted my strength and paralyzed my memory. One Saturday I walked from Sheffield to Huddersfield to deliver two lectures. It was my first appearance there, and I was anx-

ious to make a good impression; but in the morning I was unable to do more than talk half-audibly and incoherently. In the evening I was tolerable, but my voice and memory were weak. My annoyance was excessive. I was a paradox to myself. My power seemed to come and go by some eccentric vagary of its own. I did not find out until years afterward that exhaustion of my strength had exhausted voice and memory.”

Fatigue is caused by the presence of actual poison in the brain cells, nerve cells, also in the tissues and the muscles and other organs, due to chemical changes from the presence of broken-down cells and other débris thrown into the circulation as ash-products of our various activities.

Experiments have shown that the muscles of guinea-pigs which have been put into a miniature treadmill and forced to run until they drop from sheer exhaustion will develop a poisonous substance which, when inserted into a healthy guinea-pig, will produce all the symptoms of extreme fatigue and in a short time will cause death.

Similar results are experienced when human

beings are exhausted from overwork, mental depression, worry, or great anxiety. Habitual worriers and those who suffer from constant brain strain are in a dangerous condition.

Few over strenuous workers realize the danger of working when the nerve cells have exhausted their vitality. No good engineer would think of running a delicate piece of complicated machinery without keeping it well lubricated. He would know that the moment the bearings begin to chafe and become heated the harmony of the mechanism will be destroyed and the friction and discord will soon ruin the delicate adjustment of the machine. Therefore, he keeps every bearing, every minutist part constantly oiled and in perfect repair. But hundreds of men, level-headed in other respects, who are engineers of the most marvelous pieces of machinery ever devised, even by the great Creator-machinist,—machines so fearfully and wonderfully wrought,—so delicate that a particle of dust or friction anywhere may throw the whole mechanism out of harmony for days or weeks—run their engines, their throbbing human organizations, without proper cleaning or lubrication.

Plenty of sleep and abundant recreation out of doors, especially in the country, are man's great lubricants; Nature's great restorers, refresheners, without which long-continued good work is impossible.

The creative power of the brain depends also very largely upon the bodily nourishment. You may feel like a giant in the morning, equal to any undertaking; and yet, if you eat nothing for twelve hours, the giant becomes a pygmy; your courage is down; your originality, your resourcefulness have oozed out. Here again the energy and the quality of our thinking power is affected by the poison of fatigue, when the blood and the other secretions are surcharged with the broken-down tissues, the débris and all the poisons which have come from the day's run of the human machine.

Ambition is life's thermometer. When it drops from any cause,—from physical depletion, from vitality sappers, from loss of sleep, or from dissipation of any other kind,—our standards are down and everything suffers all along the line. Every mental quality drops with the dropping of the physical standard. The poison of fatigue takes the edge off one's

ambition, puts a film over his ideals. No man can do as big a thing when he is weary as when he is fresh. Every faculty and function suffers from the poison of fatigue.

As a rule people have much more courage and are more optimistic early in the day than at night when the broken-down tissues and the fatigue caused by the day's run of the mental and physical machine have loaded the blood and other secretions with poison. Then the natural resisting power of the body is greatly reduced, and you are conscious that you do not have the same mental power, the same mental grip or grasp of ideas; you cannot concentrate your mind with the same vigor; you cannot plan so well; you cannot make as good a program as you did in the morning; nor can you execute it as effectively. You have lost much of your ambition, and life does not look so rosy. You should go to the sleep garage for repairs. Nature will take you into her marvelous laboratory, put you under the ether of sleep, and overhaul, repair, refresh, and rejuvenate, make over anew the entire machine, and to-morrow morning you will be a new creature with new

ambitions, with fresh courage to undertake, fresh power to execute.

People who habitually undersleep or who are very irregular in their sleeping habits suffer from chronic poisoning from the non-eliminated débris, from the broken-down tissues, the burned-out cells. Because they feel stupid and heavy and unnatural, they often try to remedy the loss of sleep and get rid of the poison of fatigue by stimulants or drugs, which not only do not remedy matters, but, on the contrary, mislead the user with a false sense of stimulation, the reaction from which leaves him in a worse condition than he was before.

If we feel heavy, tired, weary for any length of time after rising, it is a sign that the poisonous products have not been entirely eliminated from the body during sleep. Many people who habitually rob themselves of sleep suffer greatly from chronic poisoning of the brain, nerves, and other tissues. They never feel quite normal and their health and efficiency are materially impaired.

Animals which have been kept continuously without sleep not only die in a short time, but

the number of their red blood corpuscles diminishes often from two to five millions per cubic millimeter. Important changes in the brain have also been noted in animals which have died from lack of sleep.

When overfatigued, many people make the mistake of sleeping just their regular time, seven, eight, or nine hours,—when, as a matter of fact, they should sleep until they feel absolutely refreshed and renewed. It is only then that the débris, the broken-down tissues, all the poisons from the previous day's run, have been eliminated.

We have all had the experience of retiring at night completely discouraged over something we were trying to accomplish, and waking in the morning with an entirely changed mental attitude,—new hope and a new resolve. This is due to the fact that the poisons have been eliminated during our sleep, which has also increased the resisting power of the body and filled the blood with new building material, new courage, new energy, new life. In fact, after a refreshing sleep we wake into a new world, a world of hope and expectation. This is why we should make it a life rule not to de-

cide important things at night, when tired and discouraged. We are apt to do things then which we will regret in the morning, after the poisons have been burned out of the system and we are made over into new creatures.

Sleep—rest, complete relaxation,—is simply the antidote for brain poison.

XIII

HOW NATURE MOTHERS US

Let us a little permit Nature to take her own way; she better understands her own affairs than we.—MONTAIGNE.

Bone is twice as strong as oak. It would require a weight of five thousand pounds to crush a cubic inch.—MAPOTHER.

Nature never did betray
The heart that loved her.

—WILLIAM WORDSWORTH.

Such blessings Nature pours,
O'erstocked mankind enjoy but half her stores.

—EDWARD YOUNG.

YEARS ago an epidemic of smallpox broke out in the town of Blandford, England. There were one hundred and fifty patients suffering from the disease in the hospital when a fire started. The townspeople being afraid to harbor the terror-stricken sufferers, they were forced out into the fields, and were obliged to seek shelter under hedges, trees, and fences for three days and three nights during inclement weather. Everybody thought that they would

die from exposure, if not from the disease, but all recovered except one little girl; probably a very much greater percentage than would have recovered but for the calamity.

Such is the marvelous healing power of Nature that when left to herself she often does infinitely more for us than the most skillful physicians and their most potent remedies. Our most celebrated physicians of the dominant school admit that about all they can really do, even in desperate cases, is to keep the patient in the most favorable condition for Nature's healing. As a rule, the greater the physician the less he depends upon drugs and the more he relies upon Nature to effect a cure.

The healing potencies in pure air and sunshine, with nourishing food, are now the great remedies for tuberculosis. Even in the coldest weather tubercular patients are kept outdoors most of the time, day and night. Years ago night air was considered a great enemy of people in delicate health, especially consumptives. Windows were kept closed day and night. Now we are finding that pure air is one of the best friends of the sick and of the well.

Nature is our great mother. What do we not owe to her! What would become of us if she were not more kind to us than we are to ourselves; if she did not try in all sorts of ways to neutralize our violation of health laws? No matter how we abuse or lacerate ourselves, break our bones, poison our blood with vicious moods and killing emotions; no matter how we disobey her laws, she is always trying to mother us back to health, to restore us to normality. In all sorts of ways she is continually striving to counteract our folly, to compensate for the injuries caused by our ignorance or carelessness. As soon as the harm is done she gets to work to mend our wounds, our hurts. She brings material to heal our broken bones, to repair all damages and to give us back our health and wholeness.

How patient Mother Nature is with us when through ignorance or lack of self-control we pile upon the digestive organs, which are extremely delicate and were made to perform only simple tasks, all kinds of complicated work! How she bears with us when we bolt our food and eat all sorts of things which antagonize one another and cause serious damage

by overloading and clogging the different tissues of the body and by the poisons caused by bad digestion and mal-assimilation! How she bears with us when we abuse all her laws in regard to eating, sleeping, and exercise! How kind and forgiving she is, always doing her level best to repair our injured tissues, to atone for the insults we continually offer to our health and wholeness!

Nature is not a moralist or a respecter of persons, but the common watchful, sympathetic mother of us all. She takes no note of our color, our standing, or our social condition. Rich and poor are alike to her. We may abuse ourselves by all sorts of dissipation; we may even wallow in vice and crime; still, if we give her the least opportunity, she will do everything in her power to repair the wrong, to build us up again, to bring us back to self-respect and to a healthy condition, and to give us another chance to live in accordance with her laws.

Many people cannot understand why we should be afflicted with pain. They think Nature, in causing physical suffering, is a cruel tyrant. But pain is her wonderful danger

signal, without which, perhaps, no child would ever live to reach maturity. Were it not for the warnings which pain gives, how many would grow up without losing their fingers, eyes, or noses,—without having their bodies in some way disfigured? A small child's judgment, his common sense and caution, are not yet developed. He is often fearless, and his only protection from danger is really his dread of pain, as when he cuts or burns himself. If there were no pain warning of danger through the sensitive nerves, it is doubtful whether any child would grow to maturity without some fearful mutilation.

Most grown people would seriously if not fatally injure their health but for Nature's premonition somewhere in the injured organs, which warns them to look out, to stop, to slow down for repairs, to seek advice of a physician. These pains are often the means of saving our lives. But for them many of us would probably ruin our bodies by vicious habits and indulgences, by careless handling of our tools or of fire; by overwork, by excesses in eating or drinking, or by some other phase of foolish living.

These premonitory pains or danger signals say to us, "Look out! Look out sharply there! Dangerous passing! You are overspeeding your human machine; you are running too fast. Go slow! Go very slow!" Nature is constantly giving us these warnings. She is a wise as well as tender mother, and often inflicts pain to save us from ourselves; from the fatal consequences of our ignorance; from our continued violation of her laws.

In addition to the warning of the nerves, the body is policed in every nook and corner where the blood can penetrate by protective cells, called leucocytes, which attack the enemies of our health, the disease germs, and do their best to strangle and destroy them, to render them harmless to life.

Mother Nature has also placed as sentinels in different parts of the body protective glands which are always on duty, such as the liver, the kidneys, the thyroid gland, the pancreas, etc. These serve also as storehouses where some of the most important supplies are put aside for the future use of our organs, such as iron, arsenic, phosphorus, sugar, etc. These glands are constantly on guard to protect us from the

poisons in our food, which but for them would often prove fatal to life. The gormandizing of some people at a single banquet would kill them but for the protective glands which eliminate the poisonous combinations from foods which do not belong together and which antagonize one another.

When the system is in a perfectly healthy condition and our disease-resisting power is at its maximum, the enemy, or disease germs, cannot get hold of us because there is nothing for them to feed upon; but, when our physical status is run down and our vitality is low, our resisting power is feeble, the blood and other secretions are loaded with the débris of dead cells and broken-down tissues which have not been eliminated, and this filth forms just the food upon which disease germs thrive.

For example, tuberculosis germs can never get hold of us until the thyroid and sexual glands begin to deteriorate from abuse or lowered vitality; consequently, in our choice of food, our manner of partaking of it, our digestion of it,—in short, in the whole care of our health, we should keep this one thing in mind,—to maintain the absolute integrity of

the glands, which contribute their various products to the blood and regulate the distribution of all of the nutritive salts, such as iron, arsenic, lime, phosphorus, and the different building materials of the body and the different energy, force-forming, heat-producing foods which are consumed in the combustion of the body.

The best food for the building and maintaining of the integrity of the protective glands is undoubtedly found in a diet largely composed of milk, eggs, vegetables, and fruit. We also require fats in the form of cream, bacon, and butter, or starch from such carbohydrates as rice, sago, tapioca, macaroni, etc. If these substances are lacking, the body will very quickly become emaciated and the cell life will deteriorate.

In its body-building properties milk is the most comprehensive of all natural products. In it Nature has made a wonderful provision for assisting the life processes and building up the body of the infant when it is absolutely unable to help itself, and when the parent's ignorance of food balances would undoubtedly result in its early death.

While a young infant could not partake of solid food without choking itself, Nature has so provided, in the marvelous construction of milk, that it forms solid food in the stomach. The gastric juice separates the milk into whey and curd. The latter forms the solid tissues of the body, without which life would be impossible. Cream is the carbon which furnishes the fuel, supporting the combustion of the body and maintaining the proper heat.

When we realize that milk contains forty different food elements, every constituent that enters into the human body, and those in proper proportion for maintaining the balance and harmony of all its forty different physical organs, we have some idea of what a wonderful substance it is. There is no other thing which more certainly indicates the divine wisdom of our Father-Mother God, than the construction of milk and its marvelous adaptation to the needs of the body.

In our ignorance we have considered that there are certain organs in the body which do not cut much of a figure in the physical economy. In fact, some of them we have regarded as useless, but now science is finding that even

those are not only useful but very important. Take, for example, the tonsils, which have been removed innumerable times by surgeons who have considered them of no account. Science is showing us to-day that they are sentinels intended to guard one of the most important entrances in the body,—where the air goes to the lungs and the food to the stomach. The very fact that these glands become so much inflamed in certain infectious diseases—such as measles and scarlet fever,—and the other fact that, when they are entirely removed, a general eruption often breaks out all over the body,—show that these sentinels, in their anatomical position on both sides of the entrance to the passage of the air and food, must perform some important function with which science is not yet familiar.

What are the probabilities that the Almighty put into the marvelous human structure organs which are useless? It is an easy thing to say that in man's evolution from the ape certain organs or tissues, such as the appendix, which were once useful, in centuries of development have become useless, as many physicians and surgeons believe. But we are

beginning to find that there is a real, sympathetic connection between the appendix and the tonsils. The appendix, like the tonsils, is a lymphatic structure. Some authorities call it the intestinal tonsil. Appendicitis often follows the removal of the tonsils. I do not believe that there is any useless or meaningless organ or tissue in the body, for Nature is a strict economist, working up every scrap into new formations just as soon as it becomes useless where it is.

We can easily test this. If we put pieces of meat in an artificial gastric juice by placing a little pepsin in water containing five per cent. of hydrochloric acid, which is about the proportion of the constituents forming the gastric juice, we find that it remains, even in a warm temperature, without developing the slightest odor of decomposition. What a marvelous forethought of Nature in this wonderful provision!

In numberless ways the great Mother tries to shield us from the vicious effects of our own ignorance or folly. In case we abuse the stomach so that it cannot perform its functions, the digestive glands in the intestines perform them.

If we allow the pores of the skin to become closed by lack of bathing Nature assists us by two alternatives,—the lungs and the kidneys perform their function.

The liver is one of the most powerful organs for the elimination and neutralization of poisons. Before the food is allowed to go to the various tissues at all it is sent to the liver to be inspected and overhauled, and to have many injurious substances extracted. All sorts of poisonous or dangerous substances which have been taken up by the blood vessels in the intestinal tract and carried to the liver through the portal vein are here destroyed or neutralized. It is here that poisons which would cause speedy death, if taken through a wound in the skin, are rendered harmless,—such as the venom of snakes. People can live without food for forty or fifty days; they can even live without a stomach indefinitely; but they could not live twenty-four hours without a liver.

If some of our various organs were not better to us than we are to ourselves, if they were not wiser than we are, we should poison ourselves with our food in a very short time. No

human being would live a week but for the fact that, stationed all through his body, there are organs which neutralize poisons. The saliva has an antiseptic function. We all know how dogs constantly lick their wounds and how quickly they heal. It is well known that these wounds never become infected if they are where the dogs can get at them; otherwise they very quickly do so. The gastric juice, with its hydrochloric acid and pepsin, is a great protector against many of the poisons which gain access to the stomach. If it were not for this protective power, we should very often suffer seriously. This would be even more true of dogs, which often eat all sorts of decayed food and are only saved by the disinfecting gastric juice.

A rich diet, especially an excessive meat diet, imposes an enormous amount of work upon the protective glands and thus greatly increases the danger to health. Many people so abuse their livers by an overabundance of meat that they are never normal, and constantly resort to drugs to correct their chronic biliousness, which is really a chronic poisoning of the body. Great smokers could not live a month if the

liver did not stop the nicotine of the tobacco and counteract much of its poisonous effects. If this organ is greatly overworked,—as it so often is through our foolishness,—in trying to counteract the effects of the poisons of fatigue, coffee, alcohol, and foods which antagonize one another and leave a noxious residue in the system, it may be seriously injured.

The liver is the first clearing-house along the digestive tract. As most of the food we eat is taken into the stomach in a solid mass, it must be liquefied or digested before its nutriment can be absorbed into the blood.

After the gastric juice in the stomach has cut, dissolved, softened, churned together and partially liquefied the food, it passes farther along the digestive tract and it gets its first digestive fluid (after its treatment by the gastric juice) from the liver in the shape of the bile. This fluid is not only an important factor in the digestive process but it is also a great lubricant of the food mass. Were it not for the aid which it gives, the peristaltic motion of the intestine alone would not be able to move this mass along and there would be serious and fatal stagnation.

After the food mass has received the pancreatic secretion and all the other digestive fluids in its passage, the nutriment is absorbed through the delicate lining of the intestines, then it goes to the liver, where it is overhauled, dissected, and the injurious substances removed. The liver also extracts the sugar which it stores up for the future use of the body, after which the liquid food is pumped to the upper part of the heart, dropped into the lower ventricle, and then forcibly pumped to the under surface of the lungs, on the other side of which is the inbreathed air.

Through these twelve hundred or more square feet of lung surface there instantly takes place a marvelous operation. The oxygen of the inbreathed air rushes through the membrane into the impure blood which has been pumped from the heart, instantly forming millions of red blood globules, and the poisons and impurities of the blood are forced through this lung membrane and immediately out with the exhaled breath.

Each one of the protective glands of the body has its part in the purification and modification, in some way, of the nutriment digested.

How few people realize that practically all they eat must pass through the kidneys. Not only every drop of liquid but more than nine-tenths of all solid foods first pass into the great blood stream to be ultimately eliminated by the kidneys; and unless these delicate organs are in perfect condition, serious results to health are likely to follow.

The kidneys take out of the blood many of the poisons which have been thrown into the veins, the great sewage system of the body. This venous blood contains all the débris and ashes from the workings and the grindings, the wear and tear, in all of the tissues of the body; the broken-down brain cells, nerve cells, muscle cells, and the used-up cells from the exercise of the various functions of the body, or from the activity of any diseased condition. The heart pumps this poisonous mass to the under surface of the lungs, there to exchange many of its poisons for the life-giving oxygen which is breathed in against the opposite surface of the lungs. All the poisons not eliminated by the lungs, or through the pores of the skin in skin respiration, the kidneys are obliged to take care of. When the blood is particularly foul

with poisons from overeating or half digested or partly assimilated food, or the vicious effects of alcohol or of coffee or tobacco, all the tissues are affected.

When these poisons accumulate to an unbearable degree, as in acute Bright's Disease, because the delicate structure of the kidneys is so impaired that they cannot take the impurities out of the blood, the patient dies; for, although the lungs and skin eliminate much of the poison, there is no way of getting all of it out of the system without the aid of the kidneys.

Nearly all Americans seriously overwork this delicate mechanism. Our complex living accounts for the great prevalence of kidney troubles in America, especially among the well-to-do classes. Poor people, those who are compelled to live simply, are not troubled nearly so much in this way.

In our wise Mother Nature's wonderful provision against accident or disease, she has arranged vicarious functions; so that in case a man in his ignorance or through lack of self-control of his appetites brings diseased conditions upon the kidneys, for example, so that

they cannot completely perform their functions, or they are overworked, a safety valve is supplied by the skin and lungs for the elimination of the poisonous products from the decomposition in the body. In pneumonia, the skin and the kidneys have to do about all the work of expelling the poisons from the body. Turkish baths, or long hot baths, or other means of bringing about a very profuse perspiration, greatly assist the kidneys by the ejection through the pores of a great deal of poisonous matter which the kidneys would otherwise have to eliminate.

How little people realize the importance of keeping open and absolutely clear the many millions of pores in the human skin, through which breathing is just as necessary to the elimination of the poisons of the body as is breathing through the lungs! Death often follows cases of very extensive burns, more because of the stopping of the skin breathing, especially when the burned portions are swathed with bandages, than anything else. In such cases all the rest of the body is exposed to the air in order to prevent death from skin suffocation.

It is estimated that a quart of water, carrying all sorts of poisonous matters, is often exhaled from the skin in a single day. Experiments show that as much as six grams of common salt alone and from one to two grams of nitrogenous substances are often contained in the exhalation from the skin in twenty-four hours. Because the moisture evaporated from the skin is invisible people do not realize the importance of letting it escape freely. If they could only see the poisonous vapors which are constantly being given out by the skin and which lodge in the clothing, and if they could only understand the bad effects of reabsorbing these poisons through the pores, they would not so often be indifferent to the daily bath and their manner of dressing.

Every one should take a daily bath, either in warm, tepid, or cold water. It is a great health promoter, and tends to preserve one's youthful appearance. When a full bath is impossible, one should take a sitz bath,—at all events a sponge-bath every day. A cold foot-bath with a brisk rubbing with a rough towel afterward is especially beneficial to those who have cold feet. It helps the circulation wonder-

fully. Very old and feeble people should take a warm or tepid bath, after which a cold douche is good for closing the pores in cold weather.

Many people dress much too warmly, because they think that heavy woolen underwear not only protects them from cold, but keeps them from taking cold. As a matter of fact, people who wear heavy underclothing are much more subject to colds, because the perspiration, even when an insensible amount, leaves the pores open, so that when they go out in the cold they get a much greater shock than those who wear lighter, more porous underwear, like cotton or linen. Porous linen is splendid, but it does not give up the skin exhalation as readily as cotton. Woolen is good, but it should be porous, although it is not so easily cleansed, as the wool becomes matted after being washed many times and retains the poisons from the skin longer than linen or cotton.

Years ago, many people, especially those living in the country, would wear the heaviest underwear they could get, but they are now discovering that it is much better to wear lighter and more porous undergarments and

compensate for it by heavier overcoats or ulsters when out of doors.

The skin should have pure air, which many people seldom give it, especially in cold weather, when they wear close-fitting and tight-meshed underwear, which does not permit (and this is of the greatest importance) a layer of warm air between the clothing and the body. This layer of air being a poor conductor of heat, the normal heat is not too rapidly radiated from the body. Cotton retains the warmth of the body and at the same time allows a free exit for the exhalations of the skin. No one can be really healthy who does not wear *loose and porous underwear*, because there are eliminated through perspiration many poisons like urea, uric acid, acetic acid, lactic acid, common salt, and a number of fatty acids.

Very few dress their feet in a sanitary way, especially in winter, when they wear high, close, non-porous shoes, thus giving the feet, which have large pores and large sweat-glands, no opportunity to breathe and get rid of the exhaled poisons, which are reabsorbed when the air is excluded.

The only thing that is respectably sanitary for people who wear high cloth or leather boots is to change their stockings every day. When removed at night they are saturated with poisonous exhalations. Everybody should wear porous shoes, preferably low shoes; and, if necessary, with the latter wear porous gaiters in winter. In other words, fresh air should have free access to the feet. It is a good thing, whenever possible, to remove the shoes during the day and give the feet an air bath. Rubber boots, which many men in the country wear a great deal of the time in winter are very injurious. When it is absolutely necessary to wear them the socks should be changed every day and the boots removed several times a day to give the skin an opportunity to breathe.

Fur coats should be prohibited by every board of health as very unsanitary. Many people wear rubber coats and raincoats even in pleasant weather, and rubbers on their feet. These things should only be indulged in in very wet weather, and then just as little as possible, for they retain the poisonous exhalation from the skin. A great many Scotchmen and Englishmen never wear overcoats, and they take a

great deal of outdoor exercise and are very strong and vigorous. Americans, who bundle up in the winter and wear heavy and non-porous clothing, should profit by their example.

Tight-fitting hats are bad, particularly for men who wear them most of the time. Hats ought to be porous and should be frequently removed in order to give free exhalation to the scalp. The growing custom of going bare-headed is a most healthful one; the only bad effect is the possible injury of the sunlight to the eyes.

The most important thing in dressing is to wear loose clothing and to provide for free skin breathing both day and night. People who suffer from cold and feel that they must sleep under a great deal of clothing would derive much benefit by jumping out of bed whenever they wake up in the night and standing a minute in the open air, or else throwing the bedclothes off for a moment or two, thus giving an opportunity for the poisoned air to escape from the clothing.

In bed the great majority of people do not give the skin a fair opportunity to breathe, be-

cause of finely woven cotton sheets and a great abundance of bedclothing. This is very bad, because if the poisonous exhalations from the body cannot escape they are reabsorbed through the pores; this is especially true of people who perspire much. Then, again, many people sleep under quilts covered with cotton batting, which is very non-porous. Coarsely woven linen sheets and woolen blankets are much better. Many men make a point of wearing in winter long tight nightshirts, made of heavy woolen which prevents free skin breathing. Some are greatly benefited by wearing no nightshirt at all, thus giving the body a continuous air bath.

If people would only take an air bath lasting five or ten minutes every day, with all of their clothing removed, they would get wonderful benefit, especially if these air baths could be taken in the sun. When undressing at night and before dressing in the morning, it is very beneficial to take a skin bath, rubbing oneself vigorously with a coarse towel, or with a flesh brush when cold. This will accustom the skin to bearing the cold air, and the person will be much less likely to take cold. I know people

who do this even in the coldest weather and they very rarely take cold, especially when they take a quick cold bath,—not a plunge, but a quick sponge bath with vigorous friction afterward. This sets the skin all aglow and wonderfully improves the skin circulation. Those who do this are much less likely to suffer from the cold, and after a while they will find that they will not require so much clothing day or night.

A multitude of people go through life with poor or indifferent health who might enjoy robust health but for their ignorance of all these matters, such as the miracle of the bath and of provision for easy skin breathing. If they would only take good care of their skin alone, they would have more vital power and would look much fresher and live much longer. This would also very much lessen the risk of kidney diseases, for it is possible for the skin to relieve the kidneys wonderfully by eliminating many of the poisons from the body. Much extra work is thrown upon the kidneys when the skin is neglected. We get some idea of the great importance of this when we remember that kidney diseases form a very considerable

percentage of the maladies that prove fatal. If people only realized the importance of the skin in the human economy, and treated it in a perfectly hygienic manner, it would revolutionize the health of multitudes and contribute greatly to their longevity.

We could produce a race of giants in half a century if we obeyed the laws of health. The trouble is, we do not give our Mother Nature even half a chance. She tries in all sorts of ways to compensate for our ignorance and our vicious customs, supplying us with organs designed especially to protect us from self-destruction; neutralizing the poisons we wilfully absorb; offsetting, as best she can, the killing pace of modern life; struggling to counteract dissipation and disease, but she cannot accomplish the miracle of health without our cooperation.

It is a curious fact that people should be so ignorant of the location and functions of the thyroid gland, which, perhaps, has more to do in maintaining physical harmony and balance, than any other organ, except the heart. This gland, situated in the lower part of the front of the neck, is the great heat regulator, the

thermometer, of the body. Without its influence, the temperature would fall so far below the ninety-eight and one half degrees required by perfect health that life would soon become extinct. It also performs the wonderful function of presiding over the transformation of the nutriment from our food into the various tissues of the body.

When this organ becomes enlarged, as it sometimes (but not always) does when diseased, we have what is known as goitre. Many people injure it by wearing high, tight collars. They do not realize its great importance, especially in women. It is extremely sensitive in its sympathetic relations to many of the other organs in the body.

Some people are constantly depressed and suffer from chronic melancholy because of the deterioration of the thyroid gland, and it is useless to try to change their mental state until its condition has been corrected. Diabetes is largely due to the overactivity of this gland and the degeneration of the pancreas; these organs not being able to regulate properly the transformation of food into the various tissues of the body.

A scientific knowledge of the functions and the uses of the various glands of the body is of the utmost importance in the treatment of diseases, especially of mental troubles, and their integrity is essential to health and a high order of efficiency.

As a rule, the internal glands which guard the health, eliminate the poisons and change the nourishment into tissues, are in a healthy condition in men of fearless courage, of commanding, dominating mentality and unusual initiative. The great achievements of the world are due to men in whom these organs were practically in perfect condition, while their deterioration has always been followed by a lessening of their mental power, a weakening of their mental grip, and deterioration of their courage and initiative.

“Thus Nature dwells within our reach;
But, though we stand so near her,
We still interpret half her speech
With ears too dull to hear her.”

XIV

WHAT TO EAT AFTER FIFTY

They are as sick that surfeit with too much as they that starve with nothing.—SHAKESPEARE.

Whosoever wishes to eat much must eat little,—which means simply that eating little lengthens a man's life, and by living a long time he is enabled to eat a great deal.

—LOUIS COMARO.

Is your fat, good-natured old grandfather living on fat beef and pork, white bread and butter, buckwheat cakes and molasses, rice and sugar, till he has lost all mental and physical energy, and desires to sit from morning till night in the chimney-corner or at the register, saying nothing and caring for nothing?—Change his diet, give him fish, beefsteak, potatoes, and unbolted wheat bread, or rye and Indian, with one-half or three-quarters of the carboniferous articles of his former diet, and in one week he will cheer you again with his old jokes and call for his hat and cane.—DR. ALBERT J. BELLOWS.

AFTER experimenting for many years upon the influence of foods upon his health and efficiency, Thomas A. Edison, the greatest living inventor, has adopted a diet of ten ounces of food a day, instead of eighteen or twenty ounces as formerly, as decidedly the best suited to yield the maximum of health and efficiency. He says experience has shown him that a man

of keen intellect and many ideas loses ground by overworking his digestive apparatus. Although just past sixty-seven, he says that this change of diet is making a new man of him.

The health of many people would be infinitely improved, their efficiency would be doubled, and the years of their life would be greatly increased, by a diet suited to their age, temperament, constitution, occupation, and life habits. There is no doubt that many elderly people who feel their powers declining could largely banish the symptoms of decrepitude and freshen and rejuvenate themselves by adopting a scientific diet and regulating the quantity to suit their needs.

After fifty people do not require nearly as much food as when the body was growing. The life processes are more sluggish and changes are fewer. The balance of atrophy and repair is about equal throughout the physical system, and as a natural consequence there is a diminishing power of assimilation. The demand is for repair, for maintenance, and not for growth as in earlier years, and for this reason but little food is needed.

Some elderly people have an abnormal crav-

ing for food which is not necessary. They acquire this craving just as others acquire a craving for intoxicating liquor or for various drugs. We often see people along in years who are inactive and yet who are prodigious eaters, because they have slowly acquired the overeating habit. They will eat four or five times as much food as they need, and they are often inefficient and indolent, because of the deteriorating effects which inevitably follow such excess. Their energies are largely used up in taking care of the useless and injurious food with which they overload their stomachs.

There is nothing else for which many women will pay so much in money or physical suffering as to get rid of the evidences of age. They have a perfect horror of growing fat, or of losing their symmetry of figure, yet thousands eat their good looks and their graceful figures away,—make themselves coarse, unsightly, and animal-like by their overeating habits.

It is bad enough for men to gorge themselves, but a habit of overeating often destroys the delicacy and refinement which form so great a charm in women. It is pathetic to see

these women who cannot restrain their appetites crowding our beauty parlors, trying to get back their youth by all sorts of devices, and appliances, such as cosmetics and massage, while all the time they are doing the very things which tend to hasten old age.

Mrs. Edison, who followed the example of her distinguished husband in reducing the quantity of his food, says of her first experiences, "Gracious, how I did want to eat one of those old-fashioned, sleep-producing feasts! There were times when I am quite sure I could have eaten nine or ten pounds of food. But I did not. . . ."

"If I had gone back to the old three meals-a-day, eat-all-you-wish plan, I am sure by this time I would weigh at least three hundred and fifty pounds; I stuck to the ten-ounce diet and felt better, slept better, thought more clearly, and was twice as active."

If some of those ladies who are seeking youth in beauty parlors would adopt Mrs. Edison's regimen, they would be astonished at the results. Of course the ten-ounce limit would have to be varied according to individual needs; but the plan of choosing one's food according

to its nourishing properties and the requirements of the body should be a life rule, adhered to in youth as well as in advancing years.

Such a rule is most imperative in the case of elderly people, for their digestive organs are not quite so capable as when younger of taking care of large quantities or many kinds of food. They do not assimilate so readily as in youth, because of the diminishing vigor of their cell life generally and of their less active habits. The danger they run is further greatly increased because their systems are not able to recuperate as quickly as formerly. The chemical changes in the body are not quite so active or vigorous in advanced years, and unless one lives scientifically more poisons are generated in the tissues than can be thrown off, and the presence of these poisons is liable to cause all sorts of trouble, such as rheumatism and gout.

Where the life habits are not regular and healthful there is more or less chronic poisoning in the tissues due to the less effective eliminating processes. The kidneys, which are the great poison eliminators, become a little more

sluggish; a little more toxic waste is retained in the system, which circulates throughout the body, leaving its deteriorating effects in all of the tissues that it visits.

Those who wish to carry their vigor and youthfulness beyond the old-time boundary of threescore and ten years should make a study of physiology. They will then realize that they cannot take the same risks in overeating, over-exertion, or other forms of irregular living, as when in their prime. They will know that they do not have quite their earlier resisting power and are not as capable of protecting themselves from the results of bad habits; that, in case disease should attack them, they would not have the same chance of throwing it off, as when they were younger and more robust. They will realize that they incur greater risk when they violate Nature's laws because they have less reserve with which to parry attacks, to resist their physical enemies; that the disease germs, which were powerless to get hold of them when they had more resisting power, become more dangerous as they advance in years and have not the same reparative, recuperative, building-up power.

They will also realize the power of damaging mental influences, such as fear, worry, anger, jealousy, etc. In other words, they will learn to avoid the mental and physical enemies which hasten the degenerative processes all through the system, and rob both body and mind of their God-given power and usefulness. Many people who are afflicted with the settled dependency of mental depression are simply poisoned by intestinal putrefaction. Chronic headaches often accompany such mental depression, and there is no doubt that it is largely due to absorption of microbial poisons which affect the cell life of the tissues.

The greatest scientists now think that these poisons lessen the resistance of the cells and tend to hasten senility. They regard them as the greatest enemies of health and longevity, and the cause of many human ills.

The main thing in retarding aging processes is to keep the body as supple and pliant as possible. Nothing else, not even recreation or exercise, is so important in attaining this object as the food we eat. Its nature, quantity, and quality have everything to do with hastening or postponing old age.

The older we grow the simpler should be our diet. A great medical authority states that the more nearly it is reduced to bread and milk and fruits the longer will a person live and enjoy good health.

Professor Metchnikoff, who has made startling discoveries regarding the causes of old age and how to retard its approach, says that he limits his own diet practically to bread, milk, chocolate, and vegetables. He thinks that buttermilk and other sour milk products are great aids in retarding age-hastening processes, because they lessen intestinal putrefaction, which poisons the system, especially after the life processes begin to slow down and the resisting power of the cells is diminished. He claims that multitudes of people are gradually poisoned and their lives thus greatly shortened by the presence of bacteria in the alimentary canal; that, if the blood could be kept free from these old-age germs, we would live much longer; and that they can be very materially lessened by including in the diet some form of sour milk. He highly recommends fresh buttermilk.

There is a conflict of opinion among food

authorities as to the value of a milk diet for people in advancing years. Some claim that it contains too much fatty matter; that it is a weak brain food, and that it also has too much bone-building material. Milk, as a food, has many advocates and many opponents, yet it is the most natural nutriment for up-building and maintaining all the different kinds of tissues in the body; and, in spite of the fact that it contains much bony material which is necessary in the skeleton-building of the young, yet it is such a simple article of diet that in most cases it agrees perfectly with elderly people.

If meats are eaten by people getting along in years, they should choose the flesh of young animals, like chickens, lambs, or calves, for that is not so rich in nitrogenous substances as the red meats, such as beef, which contain not only more nitrogen, but also more earthy salts. As a rule, elderly people should eat sparingly of red meats. They should not eat foods which contain a large amount of the hardening earthy salts, which not only stiffen the tissues but also make them brittle. They also very materially weaken the walls of the arteries.

Anything which tends to make the muscles

rigid, which makes one's body tense and heavy, hastens the coming of old age.

An aging body does not grow stiff and hard, does not lose its elasticity and its suppleness so rapidly when nourished by milk, eggs, fruit, and vegetables, especially if well masticated and well digested, as on a nitrogenous diet. Meats in excess, particularly the red meats, and other foods which cause the greatest amount of intestinal putrefaction, are especially injurious to people past middle life. Too much meat, particularly red meat, causes an excess of uric acid in the system.

There is great food value in eggs for people over fifty. Sara Bernhardt attributes much of her youthfulness to the fact that she eats about a dozen or more every day.

Milk puddings, broth and dairy foods are also good. So are Indian meal products, either in porridge, corn bread, or brown bread. Fruit is a most excellent diet for people past fifty, because the fruit juices are great solvents of the excess of bony material which has been absorbed by the various tissues from food and water, especially from water which has a large amount of lime and other earthy salts. Lemons

are very beneficial when eaten with meat, vegetables, etc. They are especially good for the liver, and are cleansing to the blood. I know people getting along in years who eat one or two every day and receive great benefit from them.

Condiments which are more or less irritating, like pepper, salt, ginger, mustard, also rich sauces should be used sparingly. People who use an excessive amount of pepper are likely to have liver trouble. Too much vinegar is also bad for elderly people.

Graham bread and whole wheat products disturb the digestion less than white flour products, and are not so great a tax upon the system. Starchy foods make the muscles and joints stiff in advancing years, and, therefore, should be used as little as possible.

The great point for people getting along in years is to avoid foods which tend to harden and stiffen the tissues. They should eat the softer, simpler foods. Much of that hardening, stiffening, wrinkled appearance in elderly people is caused by overeating, eating the wrong kinds of food, or other vicious table habits.

One of the great dangers of overeating is that it tends to produce too great blood pressure, which is liable to rupture the smaller arteries, especially in the brain, the walls of which have become brittle from the effects of the gradual deposits of earthy salts from the food and drink. The walls of the arteries in elderly people are often much weakened by such deposits. Many cases which have passed as heart failures were really due to the rupturing of arterial walls thus weakened.

This is one reason why it is so important that drinking-water should be as nearly absolutely pure as possible, because pure water is of great help in dissolving and washing out of the system the excess of all earthy deposits which come from food and which are not required after the skeleton is completely matured.

Some people do better on two meals a day as they advance in years, while others find they do better to eat less at a meal, but oftener. Their digestive apparatus is disturbed less by eating several times daily, but not much at a time.

The individual constitution, occupation, and

general habits of life play a large part in deciding how much, how often, and what kind of food to eat late in life.

The famous Venetian nobleman, Louis Cornaro, who lived to the age of one hundred and three, when at Mr. Edison's present age (sixty-seven), took twelve ounces of solid and fourteen ounces of liquid food each day. At ninety-five he wrote, "I eat very little because my stomach is delicate, and abstain from certain dishes because they do not agree with me."

From bitter experience Cornaro had learned the great importance of a proper diet (especially a very simple one), in keeping the body young and healthy. Before forty he had become so diseased because of excesses that his life was despaired of. He recovered, however; and, although he was constitutionally weak and had poor digestive powers, by strict attention to his diet and regular habits he reached a cheerful old age and maintained his usefulness and youthful spirits to the last. When nearly one hundred he wrote: "Great age may be so useful and agreeable that I believe I would have been wanting in charity had I not taken pains to point out by what means men may

prolong their days; and, as each can boast a happiness all his own, I shall not cease to say, *Live, live long.*"

Elderly people should be careful not to put an unnecessary work on their digestive organs. They should eat slowly and take pains to masticate their food thoroughly in order to assist as much as possible its rapid assimilation and digestion.

Horace Fletcher, who introduced the new cult in eating known as "fletcherizing," claims that by properly masticating our food both young and old can greatly reduce the amount they eat and be all the better and stronger for it.

Mr. Fletcher was refused life insurance at fifty on account of the condition of his health. He had been an active business man up to that age and had not thought much about diet or health. But then he was obliged to study methods by which to regain the latter. He found that his run-down condition was due to poor assimilation and digestion; that he ate too rapidly, and did not properly masticate his food. He began to chew every mouthful slowly and thoroughly. He found that his food tasted

better, and that he did not require nearly so much as before. His health improved steadily. He kept on fletcherizing, and within a comparatively few years he had cut his weight down sixty pounds and had doubled his capacity for work. It was found that he could outdo young trained college athletes in lifting and throwing heavy weights. He was a perfectly well man. Eight years after the insurance companies had refused to take any risks on his life, he was enjoying robust health and was more vigorous than he had ever been before.

Certain colleges took up fletcherizing and made scientific experiments. Classes of young men at Yale, Harvard, and West Point were taken under observation. They were not restricted in their diet but were simply told to fletcherize. Instead of taking twenty minutes to a meal as formerly, they took forty. In a very short time it was found that the quantity they ate was much reduced, while in every case both their mental and physical powers were increased. At the close of three days of fletcherizing those young men refused meat at breakfast, then eggs. A dish of some kind of cereal, with berries, or other fruit, a little dry toast,

and one small cup of coffee fully satisfied their appetites.

It is certainly worth while for those past fifty, if they have not taken it up before, to give fletcherizing a trial. If they do they will be in no danger of overloading the stomach, or of eating too many kinds of food at once, especially rich foods, which are so injurious in advancing years.

If there is any one thing that a person getting on in years should learn it is how to retard the aging processes,—not only how to prolong his years, but how to do so with the least possible mental or physical deterioration.

One reason why it is so difficult for people past fifty to get positions is their senile appearance. Many of them are hard and dried up, and employers naturally take it for granted that their ideas, also, are dried up and antiquated or even petrified. Bad dietetic habits are responsible for much of the unfortunate conditions which gray hairs seeking a job have to meet to-day.

Professor Metchnikoff, perhaps the world's greatest authority on the subject, believes that the most distressing symptoms of old age, de-

crepitude and feebleness are caused by poisons from the fermentation and putrefaction of excessive food, from that which is imperfectly digested because of mental disturbance, such as worry, fear, anxiety, jealousy, or from that which is not adapted to the requirements of the various tissues. He also claims that old age is very materially hastened, in perhaps the majority of cases, by overeating; not only because of the consequent poisoning of the system, but also on account of the tremendous waste of energy and vitality in trying to dispose of this dangerous excess of nutriment, a waste which the body can ill afford because of its lessened power to generate new life force.

Longevity is largely dependent upon the scientific choice and eating of food and upon scientific health habits,—temperance in all things,—and yet every day of our lives most of us violate all of these principles. We eat foods which poison us, or do not nourish us, but which we happen to have been “brought up” on. In other words, we violate every health law, every scientific health principle, and yet we cling to life with all the desperation of a drowning man grasping a bit of driftwood.

While it is absolutely essential to health and long life to obey the laws of nature and take proper care of our bodies, yet here again the effect of one's state of mind is preeminent. If you have constantly held the idea or mental picture that you will begin to show the marks of age at about fifty, that at sixty you will lose the power of your faculties and most of your interest in life, and that then you will become practically useless and have to retire from your business or profession, and thereafter continue to decline until you are cut off entirely, there is no system of diet or exercise, no matter how scientific, no rules of life, however healthful, that can keep the old-age processes and signs from developing in you.

Old age begins in the mind. The expression of age in the body is the harvest of old-age ideas which have been planted in the mind. We see others about our age beginning to decline and show marks of decrepitude, and we imagine it is about time for us to show the same signs. Ultimately we do show them, because we think they are inevitable. But they are only inevitable because of our old-age mental attitude and race-habit beliefs.

If we actually refuse to grow old; if we insist on retaining youthful ideas and thinking young, hopeful, buoyant thoughts, the marks of senility will not show themselves nearly so early.

No other scientific problem is attracting more attention to-day than the achievement of long life, with continued activity and usefulness to the end. A new set of specialists, who might be called life prolongers, is springing up in all parts of the world—specialists who believe that man not only ought to live from a quarter to a third longer than he now does, but also that decrepit old age, as now known, is unnecessary. They are unanimous, too, in their belief in the overwhelming influence of the mind on the body, of the power of mind over matter.

“Let thine heart keep my commandments: for length of days, and long life, and peace shall they add to thee,” says Solomon.

The Bible is full of such promises of long life and peace, or happiness to those who obey God’s laws, which are also Nature’s laws.

In fact, the whole spirit of the Bible is to encourage long life through sane and health-

ful living. It points to the duty of living a useful and noble life and of making as much of ourselves as possible, all of which tends to prolong our years on earth.

At your age
The hey-day in the blood is tame, it's humble,
And waits upon the judgment.—SHAKESPEARE.

But an old age, serenely bright,
And lovely as a Lapland night
Shall lead thee to thy grave.

—WILLIAM WORDSWORTH.

XV

MASTERFULNESS AND THE GREAT OUT OF DOORS

Make good thy standing-ground and move the world.

—GOETHE.

O what a glory doth this world put on
To him who, with a fervent heart, goes forth
Under the bright and glorious sky, and looks
On duties well performed, and days well spent!

—H. W. LONGFELLOW.

“I WOULD rank exercise and outdoor life far above any known remedies for the cure of disease,” says Dr. Austin Flint.

I would go further and say that rational exercise and outdoor life are the *best conservers of health and prevention of disease*.

The polar bear “Peary” died recently in the Bronx Zoological Garden, New York, from heart disease. Imprisoned wild animals frequently die of fatty degeneration of the heart, due to lack of exercise in their captivity.

The more wild and savage they are, the more they struggle against this fate. Watch a newly caged lion, or even the average lion

of a menagerie, as he paces restlessly and, in his waking hours, ceaselessly to and fro, frequently lashing his tail. He is instinctively seeking, not merely to be free, but even more to find relief from a feeling of oppression that tugs at his throat and lungs and heart, from lack of the customary strong, full aeration of his blood through the 600,000,000 cells of his lungs. But for this protective restlessness he would die much more quickly. Note how persistently a squirrel fights against this oppression, if given a revolving wheel in which to exercise. He is not working so hard purely from love of sport. Activity is part and parcel of his natural life; and, when he is confined, the instinct which prompts to activity becomes almost a mania with him as he urges the frenzied whirl of his so-called "merry-go-round," which is really but a prisoner's treadmill to him. Monkeys are incessantly active when first captured and confined; but, as they grow "tamer," they become more "quiet," and soon die of tuberculosis. The monkey of the hand organ, with the partial liberty of a string and his consequently more extensive and more varied pranks, outlives the monkey of the cage,

if both are fed alike. Sluggish, cold-blooded animals suffer least from lack of opportunity to exercise in captivity, and as a rule survive it best. But man is not by nature either sluggish or cold-blooded, and so suffers greatly from much confinement.

How often we hear of the death of business and professional men from similar causes. The trouble with many of them is that they do not get enough exercise to eliminate the worn-out, dead cells and other refuse matter flowing in the blood, and the fat cells which accumulate in heavy eaters and in people of sedentary habits.

It is estimated that a day's work in the temperate zones consumes about 160 grammes of combustible foods. For this burning, three and one-half times as much oxygen is required, some 560 grammes, or nearly twenty ounces. Such an amount of oxygen is furnished by about 5,000 quarts of winter air at zero, the amount of air necessary increasing with the temperature up to ten times 5,000 quarts, or 50,000 on a very hot summer day or in the tropics. We are not equipped to breathe 50,000 quarts of air during a day's work, hence

in very hot weather we must for safety exercise less and so try to consume less carbon; but in ordinary or in low temperatures we have no difficulty in breathing the necessary amount of air. The less air we breathe, the less hydrocarbon we should consume, relying more for nutriment upon fruits and succulent vegetables. But, if we will eat sugar, starches, etc., and most people eat more of them than necessity requires, we must either exercise enough and breathe fresh air enough for their proper combustion, or suffer from the injurious products of their partial combustion. Free burning of wood produces white ashes, while restricted or incomplete burning produces black charcoal. Some of the products, respectively, of complete and incomplete combustion of hydrocarbons in man differ as strikingly in appearance and characteristics.

We have all noticed how much more vivacious, how much more alive and active we are, how much more alert our brains are, and how much clearer and swifter are our thoughts, when we take a great deal of wholesome exercise out of doors.

“If I were seriously ill of consumption,”

says Dr. Marshall Hall, "I would live outdoors day and night, except in rainy weather or mid-winter; then I would sleep in an unplastered log house. Physic has no nutriment, gasping for air cannot cure you, monkey capers in a gymnasium cannot cure you, and stimulants cannot cure you. What consumptives want is pure air, not physic,—pure air, not medicated air,—plenty of meat and plenty of bread."

As a rule, people in moderate circumstances enjoy better health and are stronger than the rich, because they get more and better exercise.

When a man becomes prosperous he begins to ride to his office instead of walking. He is tempted to take the line of least resistance, because he can afford to. As a rule, he not only gets less exercise, but he also eats more and richer food and in greater variety. He becomes a victim of overeating and underexercising, and takes on burdensome flesh from his inactivity and high living.

It is said that the majority of rich men have more or less fatty hearts, weak hearts, because of the changing, through self-indulgence, of the muscle cells to fat cells, so that the heart does not have the power to force the blood

through the millions of capillaries in the system.

While the automobile has been a great boon in a multitude of ways, it has proved a curse to thousands of men who are tempted to ride when they know it would be infinitely better for them to walk. What would be a blessing if rightly used only shortens their lives by depriving them of necessary exercise.

I know a very rich man in New York who says he has been obliged, for the sake of his health, to discharge his chauffeur, and put away his expensive cars, because he found the automobile habit was growing upon him to such an extent that he was getting scarcely any exercise and consequently was putting on flesh so rapidly that he actually became frightened. Instead of walking six or eight miles a day, as he used to do before he had a car, he was scarcely walking at all.

His wife was falling into about the same condition. Having four or five luxurious cars and several chauffeurs constantly at her disposal, if she were only going two or three blocks from her home she would order one of the cars, and so got practically no exercise.

We are constructed for the simple life. Many rich people do not realize this, and seem to think that the way to get the most out of their money is constantly to surfeit themselves with all the good things that they can get hold of. They imagine that happiness consists in the indulgence of their appetites. They are constantly deteriorating physically, mentally, and morally, because they are violating the very laws of their nature; because they do not understand that self-mastery, not self-indulgence, leads to health and happiness.

No one can be vigorous and strong without a great deal of open-air exercise. There are thousands of women invalids or semi-invalids, always ailing, who would be completely revolutionized by a brisk five-mile walk every day. Instead of picking away at meals with no appetite, trying to find some little delicacy they can eat, they would come home from their long walk ravenously hungry, ready to eat anything set before them. A poor appetite often means lack of exercise.

There is no substitute for such exercise as brisk walking in the open air with the accompaniment of cheerful thinking.

Business men who live within a mile or two of their stores or offices would find themselves invigorated for their day's work, and would keep in much better health, if they would walk to these places, at least in the morning, instead of riding.

Many a man comes back to the city from his vacation feeling fresh, strong, and vigorous, but very soon begins to grow languid and sluggish. He mopes about and becomes fractious, irritable, touchy.

While he was in the country he took plenty of exercise, golfing, and tramping over the hills and meadows and mountains, and this vigorous exercise in the open air burned up all the effete matter which had accumulated in the tissues of his body during his previous sedentary life in the city. His blood was of a better quality in the country because it had more oxygen in it, and the constant exercise of his muscles forced out all the poisonous, worn-out cells in the different tissues of the body, so that he was really a new man, fresh, vigorous, and strong.

But when he returned to the city he dropped most of his outdoor exercise, depending upon

his vacation to carry him through the remainder of the year, spending not more than ten or fifteen minutes at his luncheon, going home late and eating a hearty dinner, with very little exercise out of doors afterward, having a troubled sleep and waking up in the morning with the same old heaviness and tired feeling to which he was accustomed before he went away.

In other words, this man does not live normally in the city. He does not take enough outdoor exercise to cause thorough oxygenation of his blood. The poisonous matter remains in the brain cells, nerve cells, and other tissues of the body, and he not only does not feel as well, but his faculties are not as keen and sharp as when he was in the country. He cannot think so well. His ideas are not clean-cut.

There is nothing else to do, my friend, when you begin to mope around, to feel irritable and cross, when your brain becomes sluggish, but to get out of doors. Take good, long walks. Go to a gymnasium. Take a half hour of vigorous exercise, a sponge bath afterward, and a brisk walk home, and you will feel like a new man.

Most men who under-exercise overeat, and the body cannot take care of the food. It is not properly digested or assimilated.

Many a man in middle life wonders why he cannot work with his old-time vigor and freshness, and thinks his faculties must be deteriorating, when all he needs is good, vigorous exercise in the open air. This is where he will find the man he once was.

“As long as we are exposed to the rays of sunlight,” says Julius Hensel, “the life of the nerves strives for action; but, when the sun has disappeared from the vault of heaven, it desires rest. With this arrangement, which requires a change between rest and activity, we have done well for centuries. But now, by means of the electric light, we turn night into day, and during the day our nervous system is moved, not only by what takes place in our nearest surroundings, but the newspapers take care that the calamities from all cities and countries occupy our thoughts. Telegrams and telephonic messages prevent our nervous system from taking rest. Distances of time and space are reduced by the telegraph and the railroads. With such ample resources men desire to accomplish correspondingly more

than in former times, and even against their will they are drawn into the general whirl of restless activity. The surplusage of influencing factors causes a constant vibration of the nerves. Man cannot withdraw from this, so long as he remains wholly within his business sphere. I therefore know of no other radical remedy for nervousness but the peace of nature. Out into the country! Out on the mountains!"

No matter how pressing your business may be, drop everything, get out of doors and exercise in the open air every day, even if only for a short time. You will accomplish a great deal more during the year if you do this than if you give all of your time to business. You will do better work. You will not make so many blunders and mistakes, because your brain will be clearer, your faculties sharper, your thought more vigorous, your power of concentration greater.

Some people are afraid of inclement weather. If it snows, or rains, or freezes, they think they cannot venture out of doors. But if you want to be well and to keep well, live an outdoor life. Never mind the weather.

You would better get wet occasionally than get no outdoor exercise. Bad weather will not hurt you if you get plenty of exercise, because you will have the power of resistance, vigor to throw off the injurious effects which inclement weather might have on the weak man who does not take daily outdoor exercise.

In the matter of exercise, as in everything else, judgment must be used as to its kind and extent. To derive any benefit from it, it must be graded according to one's physical condition. Exercise in excess, instead of strengthening the body, exhausts it. Persons of an excitable temperament, or those who are in delicate health, should never take any exciting exercise after eight o'clock in the evening. Thin, weakly people will increase in weight and strength by taking light exercise daily, and a two-minute tepid sponge bath, followed by a ten-minute rub down with a coarse towel.

Through the increased activity of the skin and the movement of the muscles and deeper respiration, vigorous outdoor exercise increases very materially the oxidation of the tissues and accelerates the elimination of poisons from the body.

Moderate hill climbing, and mountain climbing, especially, not only improves and increases the oxidation but increases the number and depth of our respirations. Among people who live much in the open air, particularly in mountainous countries of sparse population, where the air is peculiarly pure, as in Norway and Switzerland and in parts of Scotland, almost all the girls and young women have fresh rosy cheeks. We all know how quickly these vanish when they come to this country and live in our city slums, and how quickly tuberculosis and other diseases get hold of them.

In vigorous outdoor exercise we are compelled to take much deeper, longer breaths, and we all know how we are invigorated by this exercise. As a matter of fact, in ordinary breathing we bring only a very small part of the lungs into play; the apex of the lungs is not filled with air. The result is, especially in city dwellers, that these unopened and unexercised cells are filled with coal dust or other irritating particles, and a chronic inflammation is set up, especially where there is any tendency to consumption.

In the last analysis, we really live upon air. We can get along without feeding the stomach for thirty or forty days, perhaps more, but we could not live two minutes without feeding our lungs. Hence the vast importance of giving them the purest kind of fresh air.

“Breathing is one of the most important of all features of child training. We should induce children to take long deep breaths; make them take a pride in swelling the upper chest and drawing the abdomen in and out while holding the breath. The breast-bone of a child is divided into eight pieces, and is soft, so that very little training will give a fine full chest to a youngster, who otherwise might grow up flat-chested and weak. Staying power is directly related to the strength of the lungs. There can be but little endurance in a weak-lunged person.”

To breathe properly, the shoulders should not be raised during inhalation; the air should be slowly drawn into every quarter of the lungs and then as slowly exhaled. Try this breathing exercise: Slowly exhale through the nostrils until the lungs are almost emptied. Then slowly inhale until the lungs are full. Hold

the breath a moment and then as slowly exhale. This may cause dizziness at first, but after a little practice you can take eight or ten full breaths with ease. You will find that this exercise will stimulate health as no other physical exercise will do.

Form a habit of taking long deep breaths every time you go out into the fresh air, throwing the shoulders back, holding the head up and chin in, and inhaling slowly until you feel the stomach distend very materially; hold the breath a few seconds, and then exhale gently. This one habit alone would be a great health protection to people who are confined indoors.

These breathing exercises will not only increase vitality, but will prolong life very materially. Yet most people, even though they know the great benefit of deep breathing, are too indolent to practise it.

Many persons are only half alive because they do not know how to breathe. They do not inhale enough oxygen to give that abundant, bounding life which belongs to the man who is thoroughly alive in every atom of his being.

I again refer to the purification of the blood through the lungs, because, next to our food,

our breathing plays the most important part in our physical well-being.

All the venous blood of the body is pumped vigorously and constantly from the heart, against one side of the lung surface; on the other side we breathe in fresh air, and through this delicate membrane of enormous surface (more than twelve hundred square feet in adults), an almost instantaneous exchange of the life-giving properties of the oxygen in the air for poisonous carbonic acid gas takes place, thus transforming blue poisonous venous blood into bright-red arterial blood. This transformation goes on eighteen or twenty times a minute, thus showing the tremendous importance which Nature attaches to the breathing processes.

The slouching, stooping habit, contracted by a majority of those working over desks or in cramped positions, reduces their lung capacity so much that their ordinary breathing is not deep enough, full enough, to take in sufficient oxygen to completely fill the enormous lung surface and to properly aerate the blood.

Try the experiment of compensating for this decreased breathing, if your occupation or

habits tend to cut it off, by straightening up whenever it is possible and expanding the lungs.

When you go outdoors, stand perfectly erect, throw the shoulders back, and inhale the pure air as deeply and fully as possible. While you are doing this, imagine that you are inhaling the great life power upon which all achievement and all action depend. Realize that you are taking in that great mysterious cosmic energy which is the secret of all creative power in the universe, for the breathing has a greater significance than the mere taking in of the chemical elements contained in the air. It is the great intake power-process. There are subtler forces in the air than those we can analyze. There is a creative, a cosmic god power, a divine principle involved at which we are just beginning to guess.

If every one would pay proper attention to his breathing, and would sleep out of doors, the health and achievement standard of civilization would advance by leaps and bounds.

Few realize the health possibilities that inhere in correct breathing, even when the lungs are impaired. Dr. Hiram Thomas, with one

lung gone, so developed the other that he preached and lectured with all the vocal force of a whole man.

While it is very important to breathe through the nostrils when possible, many people who have some obstruction in the nostrils or throat injure themselves seriously by breathing altogether in this way, because they do not draw sufficient air into the lungs to secure proper blood aeration. The importance of getting a large supply of fresh air into the lungs very much overbalances the bad effects of breathing through the mouth. It is true that mouth-breathing dries up the mucous membrane somewhat, but the imperative thing is to get plenty of fresh air into the lungs.

No human being should live in a closed steam-heated or furnace-heated house with little or no outside ventilation. There should be a free circulation of air through our homes day and night, for the moment we enclose air in a house or a room without proper ventilation it begins to deteriorate, to absorb poisons exhaled from the body. The life-giving oxygen passes out of it very quickly unless constantly fed by a current from the outside air.

People who live in close houses, who sleep in close rooms, soon find themselves suffering from poor health and diminished vitality. They have less power of resistance, so that they are much more likely to contract diseases, especially diseases of the respiratory tract, like pneumonia, tonsillitis, tuberculosis. *Every home should have out-door sleeping-rooms.*

Our life, our vitality, is in the air we breathe; and, if this is insufficient or vitiated, we suffer accordingly. It is as bad to breathe vitiated air as it is to drink stagnant water. They both promote dangerous growths. It is in devitalized air that diseases are most active.

Some of our school-houses, our churches, our lecture-rooms, our theaters, our homes even, are death-traps.

The foul odors which we detect in a close sleeping-room are simply the poisonous excretions from the broken-down tissues of the body. These exhalations are rank poison, as can be illustrated by putting a rat, a mouse, a rabbit or a squirrel, or any other small animal, into a jar which would be as large for the animal as an ordinary sleeping-room would be for a human being, and then closing it so as to ex-

clude all outside air. In a short time the animal will begin to pant for breath, and after a while it will lie down exhausted, turn over upon its back, and stop breathing. In fact, in a very little while it will be so poisoned by reinhaling its own breath that it will die.

When Nature places us under the anesthetic of sleep in order to repair, renew, rejuvenate the body, we need the purest air, because the purest material is necessary for the rebuilding of injured parts. When asleep we are very susceptible to poisoned air.

Our beds are usually too low, too near the floor, for the occupants to get the best air, especially when our sleeping-rooms are not flooded with fresh air. The poisoned heavy air seeks the lowest level.

I know a man who cannot be induced to open the windows in his sleeping-room at night in cold weather; he even stops the cracks where the cold air can get in. He does not realize that if it were not for the cracks about the doors and windows, which he cannot entirely close, he would not be likely to live very long. Thus Nature, in her effort to overcome the vicious effects of our ignorance, forces her

healing balm, her life-giving air, through every little crevice, and keeps many of us alive in spite of ourselves.

Some people fear they will take cold when going out on very cold days; whereas, as a matter of fact, pure dry cold is extremely stimulating and preventive of taking cold.

Dr. H. W. Wiley, former chief of the Bureau of Chemistry, Department of Agriculture, at Washington, says, "It is a crime for anybody's child to have a cold. A man once came to me whose children all had colds, and wanted a cough medicine that did not contain alcohol. I told him I could tell him of a remedy that did not contain alcohol,—that was to go home and put the windows of their sleeping-rooms wide open. People don't have colds at the North Pole. But when they get back to civilization they do have colds. One would never have a cold if he did not breathe foul air."

During Nansen's expedition to the North Pole he found that neither himself nor his comrades took cold at all while they were in the polar regions, and it was only when they approached Christiania on their return that they

began to take cold. We all know how robust and strong American Indians were before they became "civilized" and began to live in houses. As long as they lived in the open they were exempt from many of the diseases from which they now suffer as victims of civilization. It would be a great thing for humanity if every one had outdoor sleeping-rooms summer and winter. Our colds come largely from sudden changes, in going out of doors, from overheated, ill-ventilated offices and homes.

Only recently the twelve-year-old boy of a neighbor was low with pneumonia and had been delirious for several days. The inflammation had involved such a large part of the surface of the lungs that there was very little left for breathing or for the circulation of the blood. He was panting for breath, yet every window in the room in which he lay was closed, while his back and chest had been covered with newspapers and a lot of extra clothing piled on him, although he was really burning up with fever.

In view of such ignorance it is no wonder that the rate of child mortality is so high. The wonder is that it is not much higher. When

one is suffering from a fever Nature is trying to burn out the refuse material of the body, to get rid of the excess of poisons from over-nutrition, from food half digested and only partially assimilated, and from the broken-down tissues of the body. It is often a question whether she will ever be able to burn up all this refuse material without so exhausting the patient's vitality that he cannot pull through the crisis. It is really a dangerous thing, then, either to exclude the healing and upbuilding fresh air or to force more nutriment upon the patient. The best thing is to let Nature burn out the broken-down and diseased tissues, and then start anew.

The time will come when the government will compel the inspection of offices, factories, and homes, and will enforce fresh-air laws. People will not always be allowed to vitiate their health and shorten their lives for lack of that which is a free gift to all,—fresh air. The state will not allow such fearful waste of human material.

People who complain so much of disagreeable winds little realize that, but for these, life would be practically impossible in large,

thickly populated centers. When we think of the hundreds of thousands of streams of poisonous gases, smoke, steam, etc.,—all the odors from the cooking in a big city's kitchens, the poisons from its stables, factories, and chemical works, we get a faint idea of the perpetual poison baths in which city people live. In large cities like New York, Chicago, and St. Louis, absolutely pure air is practically unknown, except during high winds, which blow away the polluted air. Those high winds are life preservers. If it were not for them Nature would have no way of preventing the very disastrous results which would come from constantly poisoned air in densely populated regions.

Next in importance to fresh air as a health promoter is sunshine. An Italian proverb says "Where comes no sunshine, the physician is coming." A great many people live only a partial life, because they do not get enough of this invigorator. They live in houses, rooms, or apartments which the direct sunlight seldom, if ever, enters. We do not wonder that they do not enjoy the thrill of health, when we remember that there is poison in air devoid

of sunshine. If it were not for the flood of the sun's rays by day, the night air would soon become too poisonous to sustain life.

We little realize how dependent we are upon this great ball of fire. Our coal, our oil, our wood, our clothing, our food, the life essential in the air we breathe, all are dependent upon it. I have never thought it strange that primitive peoples should have worshiped the sun as the god of all life, of all material blessings.

If people only realized that the sun is the source of all life, energy, brain power, muscle power, efficiency, and health, they would not be content, whenever possible to do otherwise, to live and work in cellars, basements, or other places where the sun rarely, perhaps never, enters.

Notice the difference between a pale, dwarf scrub plant which bears neither flower nor fruit, because it lacks sunlight, and the magnificent beauty of the rose and other flowers, and the delicious, luscious, fruits which are grown and matured in sunshine. People know that plants very quickly die without the sun, yet they seem to think that human beings will thrive where plants will die, although the sun's

rays are more necessary to human life than to the plant. Sunlight means life, growth, beauty; while the absence of sunlight means death, destruction, ugliness.

How quickly we feel the energizing, revivifying power of the sun after days of cloudy, wet, foggy weather. In fact, many people feel depressed even at night when the sun is away only a short time. It has been observed that in heavy weather there is a diminution of the respiratory functions and poisonous products accumulated in the body, while on bright sunny days these functions are increased. The aged are especially dependent for vitality upon sunshine.

Ancient people seemed to appreciate the health-giving power of sunshine more than we do. In Rome nearly everybody took sunbaths. Physicians laid great stress upon their healing power.

Sunshine is especially energizing and healing to the skin. If people only realized its wonderful, magic power they would not, except in tropical heat, try to get away from it.

In higher altitudes the sunshine contains an increased amount of ultra violet and blue

rays, which have a powerful effect upon the red blood corpuscles of the body. We know how we are exhilarated in high altitudes, when even on a cold day we can sit outdoors without wraps and not feel cold. This is not only because of the diminished dampness, but also because we get the full power of the sun's rays, so much of which is lost in passing through the carbonic acid gas, dust, etc., floating in the lower strata of air. Warmth is only a small part of the beneficial influence of the sun. Its chemical action is extremely important. Sunshine has a very healthful effect upon the nerves. Many insects which are torpid during heavy or foggy weather regain their vitality as soon as the sun comes out, largely because of the energizing power of its blue and violet rays.

Sunshine is a great disinfectant, and it gives us a greatly increased disease-resisting power. It is an excellent friend of the kidneys, inasmuch as, by inducing greater activity of the skin, it relieves them of much extra work in straining the poisons out of the system.

Professor Lugeon, of the University of

Lausanne, recently made a study of conditions in some of the great valleys of Switzerland. He found, as one would naturally expect, that three persons out of four make their homes on the sunny side of the valleys. He also found that those who dwell on the sunlit slopes are far superior in intelligence, education, and general prosperity to those whose homes are in the shadow.

We see, in every large city, poor little human plants trying to struggle to manhood and womanhood in dark, unwholesome tenements which have never been vivified by the sun's rays. Many a weak, sickly worker would become vigorous and strong by merely getting into the sunshine. We cannot expect to put power into our work if it is not in our lives; we cannot put vigor into our thoughts unless vigor is first in our blood; and the blood, in order to be pure and active, must be stimulated by the sun. Notice how quickly the red corpuscles of the blood begin to fade and how soon the pale cheek takes the place of the rosy one when a person is robbed for any length of time of the life-giving power of the great orb of day!

The light and warmth of the sun develop strength, energy, ambition, and courage. A man's natural powers are more than doubled by contact with sun and pure air. If we want to be strong, mentally and physically at our best, we must have plenty of exercise, plenty of fresh air, plenty of sunshine.

We have all felt the renewing, energizing, rejuvenating, restorative power which comes to us in sunshiny weather in the great gymnasium of Nature outdoors. Especially is this pronounced when, after months of grinding, wearing work in the city, during which nerve and brain have become exhausted, we go out into the beautiful country, tramp through the lovely valleys, and lie in blissful ease beside the singing brooks. There is a divine something which comes from the flowers, the plants, the trees, and the streams that seems kindred to our nature.

What a strong affinity we feel for all these natural objects; how the healing, restoring, life-giving pulsations emanating from them thrill our natures and revitalize our exhausted brains! We cannot see these life-giving processes; we cannot analyze or explain them; but

we feel them, and somehow we cannot help thinking that in them is the almighty power which created us originally, and which is now repairing, restoring, renewing, rejuvenating our lives.

All life is based upon this healing, restoring force, which comes from communion with the unseen, aided often by the things which we see, as in beautiful objects of nature. Our faith is an open door which lets in the flow of this healing power. Our faith in the cosmic ether of the universe, that has power to renew and restore, keeps all our powers in harmony.

Many have felt the influence of this mysterious cosmic force, when coming into the midst of great natural beauty of scenery, when their esthetic faculties have been thrilled with the beauty which would entrance the angels. Invalids have been healed by such experiences.

Have you never come suddenly upon scenery, like the first views of the Yosemite Valley, when tears of joy would stream down your face, and you would feel the thrill of the beautiful surging through your very soul?

What a revolution the restorative, uplifting

forces of nature work in suffering invalids, in wornout, nerve-racked men and women who go into the country for rest and refreshment! Every natural object seems to turn on a new faucet of power in their languid frames. They feel that they are coming back to their own, as the medicinal renewing forces pulsate, as it were, through their very souls.

There is a mysterious force in Nature which thrills even the blind and the deaf. Helen Keller says that she can feel the marvelous beauty and pulsing life of the fields, the forests, the streams, and the rivers, and that she senses the loveliness of the flowers, the plants, and the sunsets. She feels, as we all do in the country, a thrill of life which she does not feel in the city. It is the magic of this healing, restoring, medicinal force that makes the great difference between life in the country, where one is attuned to the beautiful, the uplifting, the energizing, and life in the city, where one is surrounded by the atmosphere of sordid, greedy, grasping, selfish pursuits.

Get out of doors! Get out of doors! Take deep breaths! Exercise, and be a whole man, a whole woman!

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