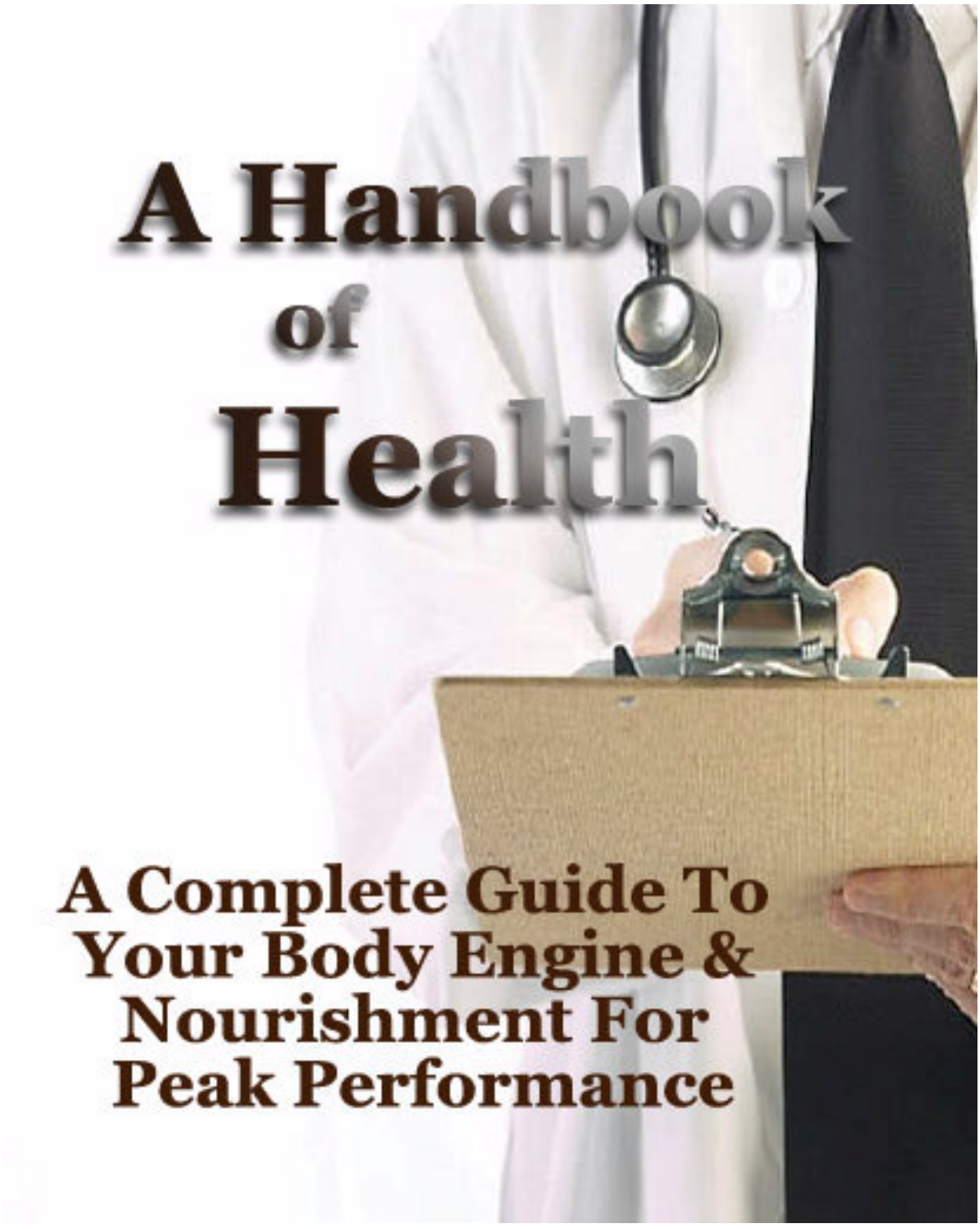

A Handbook of Health

A Complete Guide To Your Body Engine & Nourishment For Peak Performance

A Handbook of Health

Author: Woods Hutchinson

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Transcriber's Note: This tract on health, like many published last century, is essentially an advertisement of a particular form of treatment invented and sold by the author. While it is of interest in historical terms, it should not be relied upon as medical advice.

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“A Handbook of Health”

By Woods Hutchinson

Release Date: January 5, 2007

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PREFACE

Looking upon the human body from the physical point of view as the most perfect, most ingeniously economical, and most beautiful of living machines, the author has attempted to write a little handbook of practical instruction for the running of it.

And seeing that, like other machines, it derives the whole of its energy from its fuel, the subject of foods their properties, uses, and methods of preparation--has been gone into with unusual care.

An adequate supply of clean-burning food-fuel for the human engine is so absolutely fundamental both for health and for efficiency. We are so literally what we have eaten that to be well fed is in very fact two-thirds of the battle of life from a physiological point of view.

The whole discussion is in accord with the aim, kept in view throughout the book, of making its suggestion and advice positive instead of negative, pointing out that, in the language of the old swordsman, "attack is the best defense."

If we actively do those things that make for health and efficiency, and which, for the most part, are attractive and agreeable to our natural instincts and unspoiled tastes, such as exercising in the open air, eating three square meals a day of real food, getting nine or ten hours of undisturbed sleep, taking plenty of fresh air and coldwater both inside and out.

This will of itself carry us safely past all the forbidden side paths without the need of so much as a glance at the” Don’t" and "Must not" with which it has been the custom to border and fence in the path of right living.

On the other hand, while fully alive to the undesirability, and indeed wickedness, of putting ideas of dread and suffering into children's minds unnecessarily.

Yet so much of the misery in the world is due to ignorance, and could have been avoided if knowledge of the simplest character had been given at the proper time, that it has been thought best to set forth the facts as to the causation and nature of the commonest diseases, and the methods by which they may be avoided.

This is peculiarly necessary from the fact that most of the gravest enemies of mankind have come into existence within a comparatively recent period of the history of life, only since the beginning of civilization, in fact, so that we have as yet developed no natural instincts for their avoidance.

Nor do we admit that we are adding anything to the stock of fears in the minds of children the nurse-maid and the bad boys in the next alley have been ahead of us in this respect.

The child-mind is too often already filled with fears and superstitions of every sort, passed down from antiquity. Modern sanitarians have been accused of merely substituting one fear for another in the mind of the child bacilli instead of bogies. But, even if this be true, there are profound and practical differences between the two terrors.

One is real, and the other imaginary. A child cannot avoid meeting a bacillus; he will never actually make the acquaintance of a bogie.

Children, like savages and ignorant adults, believe and invent and retail among themselves the most extraordinary and grotesque theories about the structure

and functions of their bodies, the nature and causation of their illnesses and aches and pains.

A plain and straightforward statement of the actual facts about these things not only will not shock or repel them, or make them old before their time.

But, on the contrary, will interest them greatly, relieve their minds of many unfounded dreads, and save them from the commonest and most hurtful mistakes of humanity those that are committed through ignorance.

Chapter One

Running The Human Automobile

The Body Automobile if you were to start to morrow morning on along-distance ride in an automobile, the first thing that you would do be to find out just how that automobile was built.

How often it must have fresh gasoline? How its different speed gears were worked? What its tires were made of; how to mend them; and how to cure engine troubles?

To attempt to run an automobile, for even a ten-mile ride, with less information than this, would be regarded as foolhardy.

Yet most of us are willing to set out upon the journey of life in the most complicated, most ingenious, and most delicate machine ever made our body with no more knowledge of its structure than can be gained from gazing in the looking-glass, or of its needs, than a preference for filling up its fuel tank three times a day.

More knowledge than this is often regarded as both unnecessary and unpleasant.

Yet there are few things more important, more vital to our health, our happiness, and our success in life, than to know how to steer and how to road-repair our body-automobile. This we can learn only from physiology and hygiene.

The General Plan of the Human Automobile is Simple. Complicated as our body-automobile looks to be, there are certain things about the plan and general build of it which are plain enough.

It has a head end, where fuel supplies are taken in and where its lamps and other look-out apparatus are carried.

A body in which the fuel is stored and turned into work or speed, and into which air is drawn to help combustion and to cool the engine pipes.

It has a pair of fore-wheels (the arms) and a pair of hind-wheels (the legs), though these have been reduced to only one spoke each, and swing only about a quarter of the way around and back again when running, instead of round and round.

It has a steering gear (the brain), just back of the headlights, and a system of nerve electric wires connecting all parts of it. It gets warm when it runs, and stops if it is not fed.

Chapter Two

To Attempt To Run An Automobile Without Knowing How Would Be Regarded As Foolhardy

There is not an unnecessary part, or unreasonable "cog," anywhere in the whole of our bodies. It is true that there are a few little remnants which are not quite as useful as they once were, and which sometimes cause trouble.

But for the most part, all we have to do is to look long and carefully enough at any organ or part of our bodies, to be able to puzzle out just what it is or was intended to do, and why it has the shape and size it has.

Why the Study of Physiology is Easy? There is one thing that helps to make the study of physiology quite easy.

It is that you already know a good deal about your body, because you have had to live with it for a number of years past, and you can hardly have helped becoming somewhat acquainted with it during this time.

You have, also, another advantage, which will help you in this study. While your ideas of how to take care of your body are rather vague, and some of them wrong, most of them are in the main right, or at least lead you in the right direction.

You all know enough to eat when you are hungry and to drink when you are thirsty, even though you don't always know when to stop, or just what to eat.

You like sunny days better than cloudy ones, and would much rather breathe fresh air than foul. You like to go wading and swimming when you are hot and dusty, and you don't need to be told to go to sleep when you are tired.

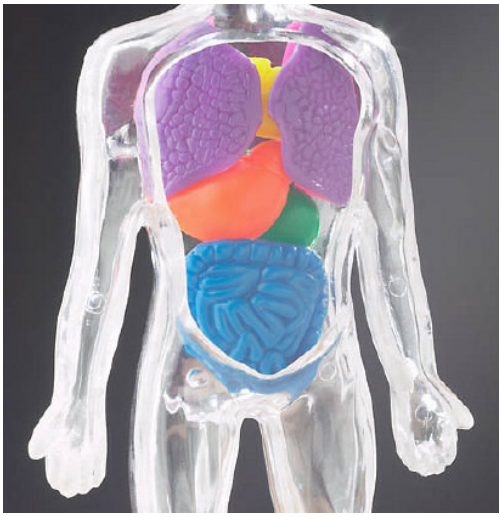
You would much rather have sugar than vinegar, sweet milk than sour milk; and you dislike to eat or drink anything that looks dirty or foul, or smells bad.

These inborn likes and dislikes which we call instincts are the forces which have built up this wonderful body-machine of ours in the past and, if properly understood and trained, can be largely trusted to run it in the future.

How to follow these instincts intelligently, whereto check them, where to encourage them, how to keep the proper balance between them, how to live long and be useful and happy this is what the interesting study of physiology and hygiene will teach you.

Chapter Three

Why We Have A Stomach & What keep Us Alive



The Energy in Food and Fuel. The first question that arises in our mind on looking at an engine or machine of any sort is what makes it go?

If we can succeed in getting an answer to the question, what makes the human automobile go? We shall have the key to half its secrets at once. It is fuel, of course; but what kind of fuel?

How does the body take it in, how does it burn it, and how does it use the energy or power stored up in it to run the body-engine?

Man is a bread and butter motor. The fuel of the automobile is gasoline, and the fuel of the man-motor we call food.

The two kinds of fuel do not taste or smell much alike, but they are alike in that they both have what we call energy , or power, stored up in them, and will, when set fire to, burn, or explode, and give off this power in the shape of heat, or explosions, which will do work.

Food and Fuel are the Result of Life. Fuels and foods are also alike in another respect; and that is, that, no matter how much they may differ in appearance and form, they are practically all the result of life.

This is clear enough as regards our foods, which are usually the seeds, fruits, and leaves of plants, and the flesh of animals. It is also true of the cord-wood and logs that we burn in our stoves and fireplaces.

What of coal and gasoline? They are minerals, and they come, as we know, out of the depths of the earth.

Yet they too are the product of life; for the layers of coal, which lie sixty, eighty, one hundred and fifty feet below the surface of the earth, are the fossilized remains of great forests and jungles, which were buried millions of years ago, and whose leaves and branches and trunks have been pressed and baked into coal.

Gasoline comes from coal oil, or petroleum, and is simply the "juice" which was squeezed out of these layers of trees and ferns while they were being crushed and pressed into coal.

How the Sun is Turned into Energy by Plants and Animals. Where did the flowers and fruits and leaves that we now see, and the trees and ferns that grew millions of years ago, get this power, part of which made them grow and part of which was stored away in their leaves and branches and seeds?

From the one place that is the source of all the force and energy and power in this world, the sun.

That is why plants will, as you know, flourish and grows strong and green only in the sunlight, and why they wilt and turn pale in the dark. When the plant grows, it is simply sucking up through the green stuff (chlorophyll) in its leaves the heat and light of the sun and turning it to its own uses.

Then this sunlight, which has been absorbed by plants and built up into their leaves, branches, and fruits, and stored away in them as energy or power, is eaten by animals; and they in turn use it to grow and move about with.

Plants can use this sun-power only to grow with and to carry out a few very limited movements, such as turning to face the sun, reaching over toward the light, and so on.

But animals, taking this power at second-hand from plants by eating their leaves or fruits, can use it not merely to grow with, but also to run, to fight, to climb, to cry out, and to carry out all those movements and processes which we call life.

Plants, on the other hand, are quite independent of animals; for they can take up, or drink, this sun-power directly, with the addition of water from the soil sucked up through their roots, and certain salts melted in it. Plants can live, as we say, upon non-living foods.

But animals must take their supply of sun-power at second-hand by eating the leaves and the fruits and the seeds of plants; or at third-hand by eating other animals.

Chapter Four

Where Sun Power Is Made Into Food For Us

All living things, including ourselves, are simply bundles of sunlight, done up in the form of cabbages, cows, and kings; and so it is quite right to say that a healthy, happy child has a "sunny" disposition.

Plants and Animals Differ in their Way of Taking Food. As plants take in their sun-food and their air directly through their leaves, and their drink of salty water through their roots, they need no special opening for the purpose of eating and drinking, like a mouth; or place for storing food, like a stomach.

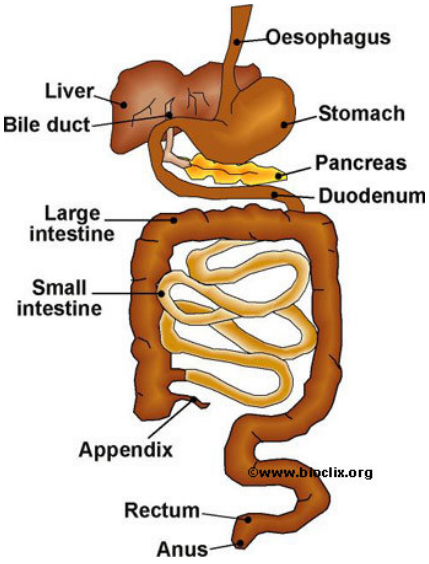
They have mouths and stomachs all over them, in the form of tiny pores on their leaves, and hair-like tubes sticking out from their roots. They can eat with every inch of their growing surface.

But animals, that have to take their sun-food or nourishment at second-hand, in the form of solid pieces of seeds, fruits, or leaves of plants, and must take their drink in gulps, instead of soaking it up allover their surface, must have some sort of intake opening, or mouth, somewhere on the surface, and some sort of pouch, or stomach, inside the body, in which their food can be stored and digested, or melted down.

By this means they also get rid of the necessity of staying rooted in one place, to suck up moisture and food from the soil. One of the chief and most striking differences between plants and animals is that animals have mouths and stomachs, while plants have not.

Chapter Five

The Digestive System



How the Food Reaches the Stomach. Our body, then, has an opening, which we call the mouth, through which our food-fuel can be taken in.

A straight delivery tube, called the gullet, or esophagus, runs down from the mouth to a bag, or pouch, called the stomach, in which the food is stored until it can be used to give energy to the body, just as the gasoline is stored in the automobile tank until it can be burned.

The mouth opening is furnished with lips to open and close it and assist in picking up our food and in sucking up our drink; and, as much of our food is in solid form, and as the stomach can take care only of fluid and pulpy materials, nature has provided a mill in the mouth in the form of two arches, of semicircles, of teeth, which grind against each other and crush the food into a pulp.

In the bottom or floor of the mouth, there has grown up a movable bundle of muscles, called the tongue, which acts as a sort of waiter, handing the food about the mouth, pushing it between the teeth, licking it out of the pouches of the cheeks to bring it back into the teeth-mill again.

Finally, after it has been reduced to a pulp, gathering it up into a little ball, or bolus, and shooting it back down the throat, through the gullet, into the stomach.

The intestines when the food has been sufficiently melted and partially digested in the stomach, it is pushed on into a long tube called the intestine, or bowel.

During its passage through this part of the food tube, it is taken up into the veins, and carried to the heart.

From here it is pumped all over the body to feed and nourish the millions of little cells of which the body is built. This bowel tube, or intestine, which, on account of its length, is arranged in coils, finally delivers the undigested remains of the food into a somewhat larger tube called the large intestine.

In the lower and back part of the body, where its remaining moisture is sucked out of it, and its solid waste material passed out of the body through the rectum in the form of the feces.

The journey Down The Food Tube

The flow of saliva and "Appetite Juice." We are now ready to start some food fuel, say a piece of bread, on its journey down our food tube, or alimentary canal.

One would naturally suppose that the process of digestion would not begin until the food got well between our teeth, but, as a matter of fact, it begins before it enters our lips, or even before it leaves the table.

If bread be toasted or freshly baked, the mere smell of it will start our mouths to watering; nay, even the mere sight of food, as in a pastry cook's window, with the glass between us and it, will start up this preparation for the feast.

This flow of saliva in the mouth is of great assistance in moistening the bread while we are chewing it; but it goes farther than this.

Some of the saliva is swallowed before we begin to eat, and this goes down into the stomach and brings word to the juices there to be ready, for something is coming.

As the food approaches the mouth, a message also is telegraphed down the nerves to the stomach, which at once actively sets to work pouring out a digestive juice in readiness, called the "appetite juice."

These shows how important are, not merely a good appetite, but also attractive appearance and flavor in our food; for if this appetite juice is not secreted, the food may lie in the stomach for hours before the proper process of digestion, or melting, begins.

The Salivary Glands. Now, where does this saliva in the mouth come from? It is poured out from the pouches of the cheeks, and from under the tongue, by some little living sponges, or juice factories, known as salivary glands

The Salivary Glands

All the juices poured out by these glands, indeed nearly all the fluids or juices in our bodies, are either acid or alkaline.

By acid we mean sour, or sharp, like vinegar, lemon juice, vitriol (sulphuric acid), and carbonic acid (which forms the bubbles in and gives the sharp taste to plain soda-water).

By alkaline we mean "soap-like" or flat, like soda, lye, lime, and soaps of all sorts. If you pour an acid and an alkali together like vinegar and soda they will "fizz" or effervesce, and at the same time neutralize or "kill" each other.

The Use of the Saliva. As the chief purpose of digestion is to prepare the food so that it will dissolve in water, and then be taken up by the cells lining the food-tube, the saliva, like the rest of the body juices, consists chiefly of water.

Nothing is more disagreeable than to try to chew some dry food like a large, crisp soda cracker, for instance which takes more moisture than the salivary glands are able to pour out on such short notice. You soon begin to feel as if you would choke unless you could get a drink of water.

But it is not altogether advisable to take this short cut to relief, because the salivary juice contains what the drink of water does not a ferment, or digestive substance (ptyalin), which possesses the power of turning the starch in our food into sugar.

As starch is only very slowly soluble, or "meltable," in water, while sugar is very readily so, the saliva is of great assistance in the process of melting, known as digestion. The changing of the starch to sugar is the reason why bread or cracker, after it has been well chewed, begins to taste sweetish.

These change in the mouth, however, is not of such great importance as we at one time thought, because even with careful mastication, a certain amount of starch will be swallowed unchanged.

Nature has provided for this by causing another gland farther down the canal, just beyond the stomach, called the pancreas, to pour into the food tube a juice which is far stronger in sugar-making power than the saliva, and this will readily deal with any starch which may have escaped this change in the mouth.

Moreover, this "sugaring" of starch goes on in the stomach for twenty to forty minutes after the food has been swallowed.

Starchy foods, like bread, biscuit, crackers, cake, and pastry, are really the only ones which require such thorough and elaborate chewing as we sometimes hear urged.

Other kinds of food, like meat and eggs which contain no starch and consequently are not acted upon by the saliva need be chewed only sufficiently long and thoroughly to break them up and reduce them to a coarse pulp, so that they can be readily acted upon by the acid juice of the stomach.

Down the Gullet. When the food has been thoroughly moistened and crushed in the mouth and rolled into a lump, or bolus, at the back of the tongue, it is started down the elevator shaft which we call the gullet, or esophagus.

It does not fall of its own weight, like coal down a chute, but each separate swallow is carried down the whole nine inches of the gullet by a wave of muscular action.

So powerful and closely applied is this muscular pressure that jugglers can train themselves, with practice, to swallow standing on their heads and even to drink a glass of water in that position; while a horse or a cow always drinks" up hill."

This driving power of the food tube extends throughout its entire length; it is carried out by a series of circular rings of muscles, which are bound together by other threads of muscle running lengthwise, together forming the so-called muscular coat of the tube.

By contracting, or squeezing down in rapid succession, one after another, they move the food along through the tube. The failure of these little muscles to act properly is one of the causes of constipation and biliousness.

Sometimes the action of the muscles is reversed, and then we get a gush of acid or bitter, half digested food up into the mouth, which we call "heart-burn" or "water-brash."

The Stomach its Shape, Position, and Size. By means of muscular contraction, then, the gullet-elevator carries the food into the stomach.

This is a comparatively simple affair, merely a ballooning out, or swelling, of the food tube, like the bulb of a syringe, making a pouch, where the food can be stored between meals, and where it can undergo a certain kind of melting or dissolving.

This pouch is about the shape of a pear, with its larger end upward and pointing to the left, and its smaller end tapering down into the intestine, or bowel, on the right, just under the liver.

The middle part of the stomach lies almost directly under what we call the "pit of the stomach," though far the larger part of it lies above and to the left of this point, going right up under the ribs until it almost touches the heart, the diaphragm only coming between.

This is one of the reasons why, when we have an attack of indigestion, and the stomach is distended with gas, we are quite likely to have palpitation and shortness of breath as well, because the gas-swollen left end of the stomach is pressing upward against the diaphragm and thus upon the heart and the lungs. Most cases of imagined heart trouble are really due to indigestion.

The Lining Surface of the Stomach. Now let us look more carefully at the lining surface of the stomach, for it is very wonderful. Like all other living surfaces, it

consists of tiny, living units, or "body bricks" called cells, packed closely side by side like bricks in a pavement.

We speak of the mucous membrane, or lining, of our food tube, as if it were one continuous sheet, like a piece of calico or silk; but we must never forget that it is made up of living ranks of millions of tiny cells standing shoulder to shoulder.

These cells are always actively at work picking out the substances they need, and manufacturing out of them the ferments and acids, or alkalizes, needed for acting upon the food in their particular part of the tube, whether it be the mouth, the stomach, or the small intestine.

A Section Of the Lining Surface Of The Stomach

The Peptic Juice. The cells of the stomach glands manufacture and pour out a slightly sour, or acid, juice containing a ferment called pepsin.

The acid, which is known as hydrochloric acid, and the pepsin together are able to melt down pieces of meat, egg, or curds of milk, and dissolve them into a clear, jelly-like fluid, or thin soup, which can readily be absorbed by the cells lining the intestine.

You can see now why you shouldn't take large doses of soda or other alkalizes, just because you feel a little uncomfortable after eating. They will make your stomach less acid and perhaps relieve the discomfort, but they stop or slow down digestion.

Neither is it well to swallow large quantities of ice-water, or other very cold drinks, at meal times, or during the process of digestion.

As digestion is largely getting the food dissolved in water, the drinking of moderate quantities of water, or other fluids, at meals is not only no hindrance, but rather a help in the process.

The danger comes only when the drink is taken so cold as to check digestion, or when it is used to wash down the food in chunks, before it has been properly ground by the teeth.

A Longitudinal Section Of Stomach, Or Peptic, Glands

Digestion in the Stomach. Although usually a single, pear-shaped pouch, the stomach, during digestion, is practically divided into two parts by the shortening, or closing down, of a ring of circular muscle fibers about four inches from the lower end, throwing it into a large, rounded pouch on the left, and a small, cone-shaped one on the right.

The gullet, of course, opens into the large left-hand pouch; and here the food is stored as it is swallowed until it has become sufficiently melted and acidified (mixed with acid juice) to be ready to pass on into the smaller pouch.

Here more acid juice is poured out into it, and it is churned by the muscles in the walls of the stomach until it is changed to a jelly-like substance.

Digestion in the Small Intestine. The food-pulp now passes on into the small intestine, where it is acted upon by two other digestive juices the bile, which comes from the liver, and the pancreatic juic, which is secreted by the pancreas.

The liver and the pancreas are a pair of large glands which have budded out, one on each side of the food tube, about six inches below where the food enters the small intestine from the stomach.

The liver weighs nearly three pounds, and the pancreas about a quarter of a pound.

Of these two glands, the pancreas, though the smaller, is far more important in digestion. In fact, it is the most powerful digestive gland in the body. Its juice, the pancreatic juice, can do everything that any other digestive juice can, and does it better.

It contains a ferment for turning starch into sugar, which is far more powerful than that of the saliva; also another (trypsin), which will dissolve meat-stuffs nearly twice as fast as the pepsin of the stomach can; and still another, not possessed by either mouth or stomach glands, which will melt fat, so that it can be sucked up by the lining cells of the intestine.

What does this great combination of powers in the pancreas mean? It means that we have now reached the real centre and chief seat of digestion, namely, the small intestine, or upper bowel.

This is where the food is really absorbed, taken up into the blood, and distributed to the body. All changes before this have been merely preparatory; all after it are simply a picking up of the pieces that remain.

In general appearance, this division of the food tube is very simple merely a tube about twenty feet long and an inch in diameter, thrown into coils, so as to pack into small space, and slung up to the backbone by broad loops of a delicate tissue (mesentery). It looks not unlike twenty feet of pink garden hose.

The intestine also is provided with glands that pour out a juice known as the intestinal juice, which, although not very active in digestion, helps to melt down

still further some of the sugars, and helps to prevent putrefaction, or decay, of the food from the bacteria which swarm in this part of the tube.

By the time the food has gone a third of the way down the small intestine, a good share of the starches in it have been turned into sugar and absorbed by the blood vessels in its wall; and the meats, milk, eggs, and similar foods have been digested in the same way.

There still remain the bulk of the fats to be disposed of. These fats are attacked by the pancreatic juice and the bile, and made ready for digestion.

Like other foods, they are then eaten by the cells of the intestinal wall, but instead of going directly into the blood vessels, as the sugars and other food substances do, they are passed on into another set of little tubes or vessels, called the lymphatic.

In these they are carried through the lymph glands of the abdomen into the great lymph duct, which finally pours them into one of the great veins not far from the heart.

Tiny, branching lymphatic tubes are found all over the body, picking up what the cells leave of the fluid which has seeped out of the arteries for their use and returning it to the veins through the great lymph duct.

All these different food substances, in the process of digestion, do not simply soak through the lining cells of the food tube, as through a blotting paper or straining cloth.

Actually eaten by the cells and very much changed in the process, and are then passed through the other side of the cells, either into the blood vessels of the

wall of the intestine or into the lymph vessels, practically ready for use by the living tissues of the body.

It is in the cells then that our food is turned into blood, and it is there that what we have eaten becomes really a part of us. It may even be said that we are living upon the leavings of the little cell citizens that line our food tube.

But they are wonderfully decent, devoted little comrades of the rest of our body cells, and generous in the amount of food they pass on to the blood vessels.

As the food-pulp is squeezed on from one coil to another through the intestine, it naturally has more and more of its nourishing matter sucked out of it; until, by the time it reaches the last loop of the twenty feet of the small intestine, it has lost over two-thirds of its food value.

The Final Stage the Journey through the Large Intestine. From the small intestine what remains of the food-pulp is poured into the last section of the food tube, which enlarges to from two to three inches in diameter. It is known as the large intestine, or large bowel.

This section is only about five feet long. The first three-fourths of it is called the colon; the last or lowest quarter, the rectum, the discharge-pipe of the food tube.

The principal use of the colon is to suck out the remaining traces of nourishing matter from the food and the water in which it is dissolved, thus gradually drying the food-pulp down to a solid or pasty form, in which condition it collects in a large "S" shaped loop of the bowel just above the rectum, until discharged.

The Waste Materials. By the time that the remains of the food-pulp have reached the middle of the large intestine, they have lost all their nutritive value and most of their water.

All the way down from the upper part of the small intestine they have been receiving solid waste substances poured out by the glands of the intestines; indeed, the bulk of the feces is made up of these intestinal secretions, not, as is generally supposed, of the undigested remains of the food.

Ninety-five per cent of our food is absorbed; the body-engine burns up its fuel very clean.

The next largest part of the feces is bacteria, or germs; and the third and smallest, the indigestible fragments and remainders of food, such as vegetable fibers, bran, fruit skins, pits, seeds, etc.

Hence the feces are not only worthless from a food point of view, but full of allsorts of possibilities for harm; and the principal interest of the bodylines in getting rid of them as promptly and regularly as possible.

It can easily be seen how important it is that a habit should be formed, which nothing should be allowed to break, of promptly and regularly getting rid of these waste materials.

For most persons, once in twenty-four hours is normal; for some, twice or even three times in the day. Whatever interval is natural, it should be attended to, beginning at a fixed hour every morning.

Constipation, and how to Prevent It. Constipation should not be treated by the all too common method of swallowing salts, which will cause a flood of watery

matters to be poured through the food tube and sluice it clean of both poisons and melting food at the same time, leaving it in an exhausted and disturbed condition afterwards, nor by taking some irritating vegetable cathartic.

Generally in the form of pills, which sets up a violent action of the muscles of the food tube, driving its contents through at headlong speed, nor by washing out the lower two or three feet of the bowel with injections of water; although any or all of these may be resorted to occasionally for temporary relief.

A very large portion of the food eaten is sucked out of the food tube into the blood vessels, passes through a large area of the body, and is poured out again as waste through the glands of the lining of the lower third of the bowel.

Constipation, therefore, is caused by disturbances which interfere with these processes all over the body, not only in the stomach and bowels. Its only real and permanent cure is through exercise in the open air, sleep, and proper ventilation of bedrooms, with abundance of nourishing food, including plenty of green vegetables and fresh fruits.

The Appendix and Appendicitis. The beginning of the large bowel, where the small bowel empties into it, is the largest part of it, and forms a curious pouch called the cecum, or "blind" pouch.

From one side of this projects a little wormlike tube, twisted and coiled upon itself, from three to six inches long and of about the size of a slate pencil. This is the famous appendix vermiform is (meaning, "wormlike tag"), which is such a frequent source of trouble.

It is the shrunken and shriveled remains of a large pouch of the intestine which once opened into the cecum, and was used originally as a sort of second stomach for delaying and digesting the remains of the food.

The reason why it gives rise to so much trouble is that it is so small scarcely larger than will admit a knitting-needle and so twisted upon itself that germs or other poisonous substances swallowed with the food may get into it.

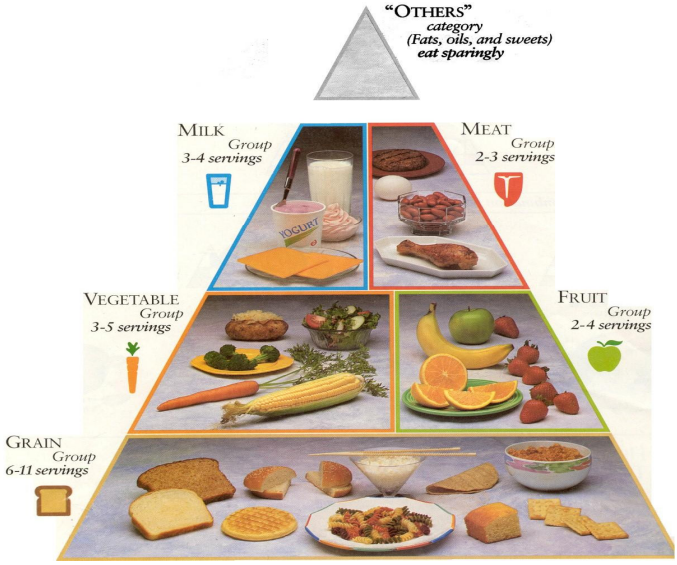
Start a swelling or inflammation, get trapped in there by the closing of the narrow mouth of the tube, and form an abscess, which leaks through, or bursts into, the cavity of the body, called the peritoneum. This causes a very serious and often fatal blood poisoning.

Fortunately, appendicitis, or inflammation of the appendix, is not a very common disease, causing only one in one hundred of all deaths that occur; and these are mostly cases that were not treated promptly.

Yet, if you have a severe, constant pain, rather low down in the right-hand corner of your abdomen, and if, when you press your hand firmly down in that corner, it hurts, or you feel a lump, it is decidedly safest to call a doctor and let him see what the condition really is, and advise you what to do.

Chapter Six

The Food Fuel Of The Body Engine & What Kind Of Food Should We Eat?



Generally speaking, our Appetites will Guide us. Our whole body is an ingenious machine for catching food, digesting it, and turning the energy, or fuel value, which it contains, into life, movement, and growth.

Naturally, two things follow: first, that the kind and amount of food which we eat is of great importance; and second, that from the millions of years of experience that the human body has had in trying all sorts of foods.

It has adapted itself to certain kinds of food and developed certain likes and dislikes which we call appetites.

Those who happened to like unhealthy and unwholesome foods were poisoned, or grew thin and weak and died off, so that we are descended solely from people who had sound and reliable food appetites; and, in the main, what our instincts and appetites tell us about food is to be depended upon.

The main questions which we have to consider are: How much of the different kinds of food it is best for us to eat, and in what proportions we should use them.

Both men and animals, since the world began, have been trying to eat and digest almost everything that they could get into their mouths.

And what we now like and prepare as foods are the things which have stood the test, and proved themselves able to yield strength and nourishment to the body.

So practically every food that comes upon our tables has some kind of real food value, or it wouldn't appear there.

The most careful study and analysis have shown that almost every known food has some peculiar advantage, such as digestibility, or cheapness, or pleasant taste as flavoring for other more nutritious, but less interesting, foods.

But some foods have much higher degrees of nutritiousness or digestibility or wholesomeness than others; so that our problem is to pick out from a number of foods that "taste good" tous, those which are the most nutritious, the most digestible, and the most wholesome, and to see that we get plenty of them.

It is not that certain foods, or classes of food, are "good," and should be eaten to the exclusion of all others; nor that certain foods, or classes of food, are "bad," and should be excluded from our tables entirely; but that certain foods are more

nutritious, or more wholesome, than others; and that it is best to see that we get plenty of the former before indulging our appetites upon the latter.

Beware of Tainted Food. The most dangerous fault that any food can have is that it shall be tainted, or spoiled, or smell bad. Spoiling, or tainting, means that the food has become infected by some germs of putrefaction, generally bacteria or moulds.

It is the poisons called ptomaines, or toxins produced by these germs which cause the serious disturbances in the stomach, and not either the amount or the kind of food itself.

Even a regular "gorge" upon early apples or watermelon or cake or ice cream will not give you half so bad, nor so dangerous, colic as one little piece of tainted meat or fish or egg, or one cupful of dirty milk, or a single helping of cabbage or tomatoes that have begun to spoil, or of jam made out of spoiled berries or other fruit.

This spoiling can be prevented by strict cleanliness in handling foods, especially milk, meat, and fruit; by keeping foods screened from dust and flies; and by keeping them cool with ice in summer time, thus checking the growth of these "spoiling" germs.

The refrigerator in the kitchen prevents colic or diarrhea, ice in hot weather is one of the necessaries of life. Smell every piece of food to be eaten, in the kitchen before it is cooked, if possible; but if not, at the table avoid everything that has an unpleasant odor, or tastes queer, and you will avoid two-thirds of the colic, diarrhea, and bilious attacks which are so often supposed to be due to eating too much.

The Three Great Classes Of Food Fuel

Food is Fuel. Now what is the chief quality which makes one kind of food preferable to another?

As our body machine runs entirely upon the energy or "strength" which it gets out of its food, a good food must have plenty of fuel value; that is to say, it must be capable of burning and giving off heat and steaming-power. Other things being equal, the more it has of this fuel value, the more desirable and valuable it will be as a food.

From this point of view, foods may be roughly classified, after the fashion of the materials needed to build a fire in a grate or stove, as Coal foods, Kindling foods, and Paper foods.

Although coal, kindling, and paper are of very different fuel values, they are all necessary to start the fire in the grate and to keep it burning properly.

Moreover, any one of them would keep a fire going alone, after a fashion, provided that you had a grate or furnace large enough to burn it in, and could shovel it in fast enough; and the same is true, to a certain degree, of the foods in the body.

How to Judge the Fuel Value of Foods? One of the best ways of roughly determining whether a given food belongs in the Coal, the Kindling, or the Paper class, is to take a handful or spoonful of it, dry it thoroughly by some means,--evaporating, or driving off the water, and then throw what is left into a fire and see how it will burn.

A piece of beef, for instance, would shrink a good deal in drying; but about one-third of it would be left, and this dried beef would burn quite briskly and would last for some time in the fire.

A piece of bread of the same size would not shrink so much, but would lose about the same proportion of its weight; and it also would burn with a clear, hot flame, though not quite so long as the beef.

A piece of fat of the same size would shrink very little in drying and would burn with a bright, hot flame, nearly twice as long as either the beef or the bread. These would all be classed as Coal foods.

Then if we were to dry a slice of apple, it would shrink down into a little leathery shaving; and this, when thrown into the fire, would burn with a smudgy kind of flame, give off very little heat, and soon smolder away.

A piece of raw potato of the same size would shrink even more, but would give a hotter and cleaner flame. A leaf of cabbage or apiece of beet-root or four or five large strawberries would shrivel away in the drying almost to nothing and, if thoroughly dried, would disappear in a flash when thrown on the fire.

These, then, accept the potato, we should regard as kindling foods. But it would take a large handful of lettuce leaves, or a big cup of beef-tea, or a good sized bowl of soup, or a big cucumber, or a gallon of tea or coffee, to leave sufficient solid remains when completely dried, to make more than a flash when thrown into the fire. These, then, are Paper foods, with little fuel value.

To learn how to do the raw food diet I recommend: Raw Food Diets For Incredible Health.

Chapter Seven

Kindling & Paper Foods – Fruits And Vegetables

The Special Uses of Fruits and Vegetables. We come now to the very much larger but much less important class of foods the Kindling foods, which help the Coal foods to burn, and supply certain stuffs and elements which the body needs and which the coal foods do not contain. These are the vegetables other than potatoes and dried peas and beans and fruits.

Fruits and vegetables contain certain mineral elements, which are not present in sufficient proportions in the meats, starches, and fats.

Furthermore, the products of their digestion and burning in the body help to neutralize, or render harmless, the waste products from meats, starches, and fats.

Thirdly, they have a very beneficial effect upon the blood, the kidneys, and the skin. In fact, the reputation of fruits and fresh vegetables for "purifying the blood" and “is clearing the complexion” is really well deserved.

The keenness of our liking for fruit at all times, and our special longing for greens and sour things in the spring, after their scarcity in our diet all winter, is a true sign of their wholesomeness.

Not the least of their advantages is that they contain a very large proportion of water; and this, though diminishing their fuel value, supplies the body with a naturally filtered and often distilled supply of this necessary element of life.

One of the best ways of avoiding that burning summer thirst, which leads you to flood your unfortunate stomach with melted icebergs, in the form of ice water, ice cold lemonade, or soda water, is to take an abundance of fresh fruits and green vegetables.

Many of the vegetables contain small amounts of starch, but few of them enough to count upon as fuel, except potatoes, which we have already classed with the Coal foods.

Most fruits contain a certain amount of sugar how much can usually be estimated from their taste, and how little can be gathered from the statement that even the sweetest of fruits, like ripe pears or ripe peaches, contain only about eight percent of sugar.

They are all chiefly useful as flavors for the less interesting staple foods, particularly the starches. In fact, our instinctive use of them to help down bread and butter, or rice, or puddings of various sorts, is a natural and proper one. Like

the vegetables, they contain various salts which are useful in neutralizing certain acid substances formed in the body.

Soldiers in war, or sailors upon long voyages, who are fed upon a diet consisting chiefly of salted or preserved meat, with bread or hard biscuit and sugar, but without either fruits or fresh vegetables, are likely to develop a disease called scurvy.

Little more than a century ago, hundreds of deaths occurred every year in the British and French navies from this disease, and the crews of many a long exploring voyage like Captain Cook's or of searchers for the North Pole, have been completely disabled or even destroyed entirely by scurvy.

It was discovered that by adding to the diet fruit, or fresh vegetables like cabbage or potatoes, scurvy could be entirely prevented, or cured.

Their Low Fuel Value. How little real fuel value fruits and vegetables have, may be easily seen from the following table. In order to get the nourishment contained in a pound loaf of bread, or a pound of roast beef, you would have to eat:

- 12 large apples or pears (5 lbs.)
- 4-1/2 qts. of strawberries
- A dozen bananas (3-1/2 lbs.)
- 7 lbs. of onions
- 2 doz. large cucumbers (18 lbs.)
- 10 lbs. of cabbage; 1/2 bushel of lettuce or celery.

Apples, the most Wholesome Fruit. Head and shoulders above all the other fruits stands that delight of our childhood days, apples. Well ripened, or properly cooked, they are readily digested by the average stomach; though some delicate digestions have difficulty with them.

They contain a fair amount of acids, and from five to seven per cent of sugar. Their general wholesomeness and permanent usefulness may be gathered from the fact that they are one of the few fruits which you can eat almost daily the year round, or at very frequent intervals, without getting tired of them. Food that you don't get tired of is usually food which is good for you.

Dried apples are much inferior to the fresh fruit, because they become toughened in drying, and because growers sometimes smoke them with fumes of sulphur in the process, in order to bleach or whiten them; and this turns them into a sort of vegetable leather.

Other Fruits--their Advantages and Drawbacks. Next in usefulness probably come pears, though these have the disadvantage of containing a woody fiber, which is rather hard to digest, and they are, of course, poorer "keepers" than apples.

Then come peaches, which have one of the most delicious flavors of all fruits, but which tend to set up fermentation and irritation in delicate stomachs, though in the average stomach, when eaten in moderation, they are wholesome and good.

Then come the berries strawberries, raspberries, blackberries, all excellent and wholesome, when fresh in their season, or canned or preserved.

One warning, however, should be given about these most delicious, fragrant berries; and as it happens to apply also to several of our most attractive foods, it is well to mention it here.

While perfectly wholesome and good for the majority of people, strawberries, for instance, are to a few perhaps one in twenty so irritating and indigestible as to be mildly poisonous.

The other foods which may play this kind of trick with the stomachs of certain persons are oranges, bananas, melons, clams, lobsters, oysters, cheese, sage, and parsley, and occasionally, but very rarely, eggs and mutton.

This is a matter which each of you can readily find out by experiment. If strawberries, melons, and other fruits agree with you, then eat freely of them, in due moderation.

But if, after three or four trials, you find that they do not agree with you, but make your stomach burn, and perhaps give you an attack of nettle-rash or hives, or a headache, then let them alone.

The banana is of some food value because it contains not only sugar, but considerable quantities of starch about the same amount as potatoes. But, if bananas are not fully ripe, both their starch and sugar are highly indigestible; while, if over-ripe, they have developed in them irritating substances, which are likely to upset the digestion and cause hives or eczema, especially in children.

Bananas should therefore be regarded rather as a luxury and an agreeable variety than as a substantial part of the diet.

Food Values of the Different Vegetables. The vegetables depend for their value almost solely upon the alkaline salts and the water in them, and upon their flavor, which gives an agreeable variety to the diet.

Parsnips, beets, and carrots are among the most nutritious, as they contain some starch and sugar; but they so quickly pall upon the taste that they can be used only in small amounts.

Turnips and cabbages possess the merit of being cheap and very easily grown. They contain valuable earthy salts, plenty of pure water, and at race of starch.

But these advantages are offset by their large amount of tough, woody vegetable fiber; this is incapable of digestion, and though in moderate amounts it is valuable in helping to regulate the movements of the bowels, in excess it soon becomes irritating.

Both of them, particularly cabbages, contain, also, certain flavoring extracts, very rich in sulphur and exceedingly irritating to the stomach, which cause them to disagree with some persons.

If these are got rid of by brisk boiling in at least two waters, then cabbage is a fairly wholesome and digestible dish for the average stomach.

And because of its cheapness and "keeping" power, it is often the only vegetable that can be secured at a reasonable cost at certain seasons of the year.

Onions, especially the milder and larger ones, are an excellent and wholesome vegetable, containing small amounts of starch, although their pungent flavor, due to aromatic oil, makes them so irritating to some stomachs as to be quite indigestible.

Sweet corn, whether fresh or dried, is wholesome, and has a fair degree of nutritive value, as it contains fair amounts of both starch and sugar.

It should, however, be very thoroughly chewed and eaten moderately, on account of the thick, firm indigestible husk which surrounds the kernel.

Tomatoes are an exceedingly valuable, though rather recent addition to our dietary. Their fresh, pungent acid is, like the fruit acids, wholesome and beneficial; and they can be preserved or canned without losing any of their flavor.

They were at one time denounced as being indigestible, and even as the cause of cancer; but these charges were due to ignorance and distrust of anything new.

Lighter Vegetables or Paper Foods. The lighter vegetables such as lettuce, celery, spinach, cucumbers, and parsley have, in a previous chapter, been classed with the paper foods. They are all agreeable additions to the diet on account of their fresh taste and pleasant flavor, though they contain little or no nutritive matter.

The Advantages of a Vegetable Garden. Notwithstanding their slight fuel value, there are few more valuable and wholesome elements in the diet than an abundant supply of fresh green vegetables.

Everyone who is so situated that he can possibly arrange for it, should have a garden, if only the tiniest patch, and grow them for his own use, both on account of their greater wholesomeness and freshness when so grown, and because of the valuable exercise in the open air, and the enjoyment and interest afforded by their care.

How many times each week do you get home from work, tired and hungry, with no dinner planned? Download the free report of 50 Healthy Snack Ideas

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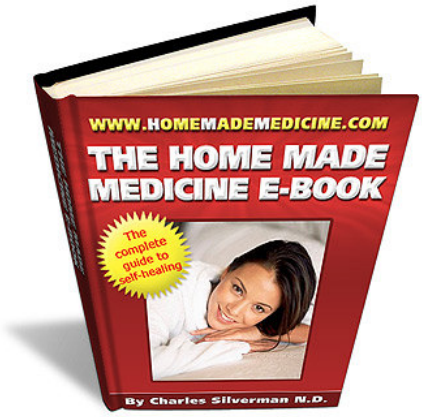

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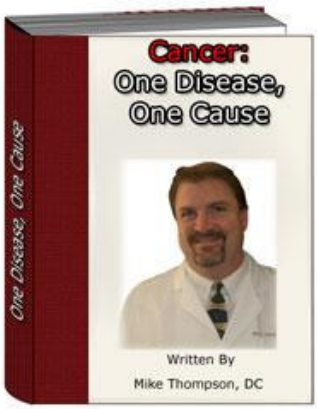

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- Learn why there will NEVER be a so-called cancer cure.
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