



A Handbook of Health

WOODS HUTCHINSON

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BOOK

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THE WOODS HUTCHINSON HEALTH SERIES

A HANDBOOK OF HEALTH

BY

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TENTH IMPRESSION

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 cold water 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.

THE AUTHOR.



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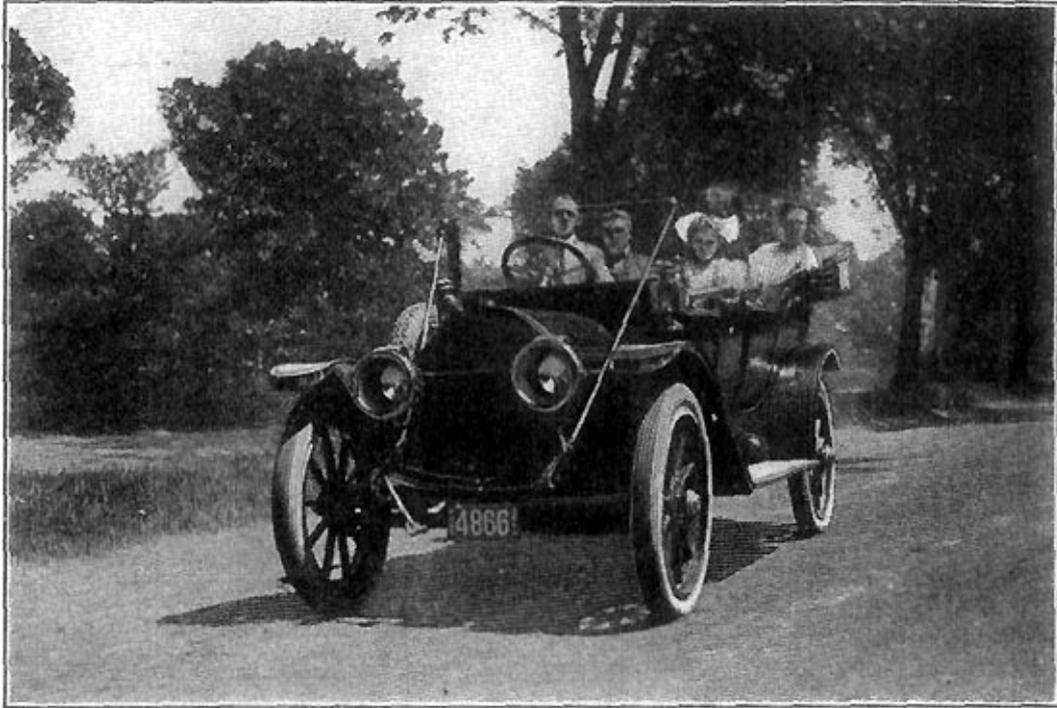
CHAPTER I

RUNNING THE HUMAN AUTOMOBILE

The Body-Automobile. If you were to start to-morrow morning on a long-distance ride in an automobile, the first thing that you would do would 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.



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 so 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, where to 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 II

WHY WE HAVE A STOMACH

WHAT KEEPS 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. But 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 grow 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^[1] 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.



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 all over 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.

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.