

NERVES IN ORDER

OR THE

MAINTENANCE OF HEALTH

BY

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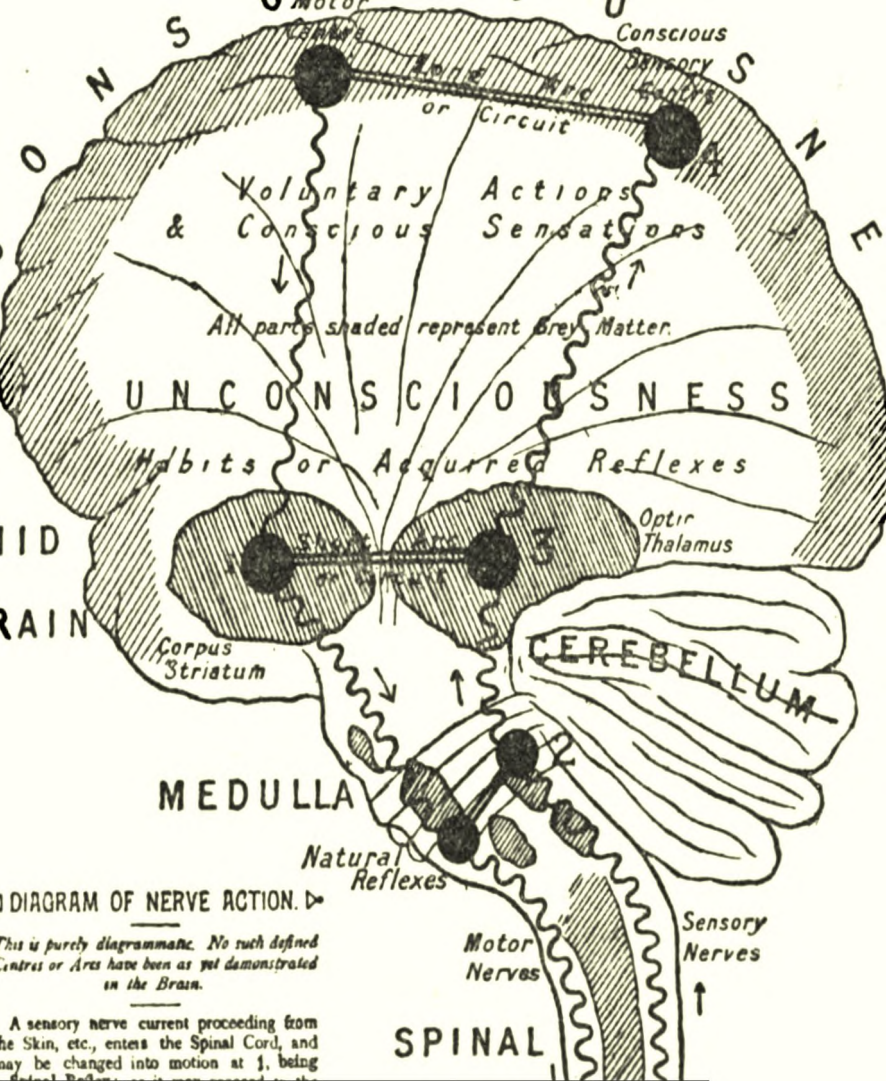


DIAGRAM OF NERVE ACTION. ▷

This is purely diagrammatic. No such defined centres or arcs have been as yet demonstrated in the Brain.

A sensory nerve current proceeding from the Skin, etc., enters the Spinal Cord, and may be changed into motion at 1, being

*Nerves in order, or,
The maintenance of health*
A T Schofield

Spinal reflexes



LANE

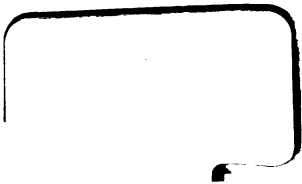
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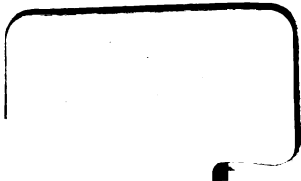
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**"Joy, Contentment, and Repose
Slam the door on the doctor's nose."**

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TO THE
NATIONAL HEALTH SOCIETY
AS A TRIBUTE TO ITS NOBLE WORK
IN THE CAUSE OF
HYGIENE
THIS BOOK IS DEDICATED BY
THE AUTHOR

W. H. WELLS

YASRI 1941

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INTRODUCTION

MY last popular work, "Nerves in Disorder," seems to require a companion work on "Nerves in Order" so that the science of prevention may be placed on the same footing as that of cure.

And although, singularly enough, prevention has never had the interest with the public that the question of cure possesses, it is undoubtedly the higher science of the two.

"A plea for rational treatment" is the less needed the more "the maintenance of health" is studied, and the true knowledge of personal and domestic hygiene renders that of therapeutics much less necessary.

It is many years since I first began the study of hygiene on its personal and practical side, and since then its range and scope have immensely widened and increased, and

every year more diseases are found to be preventable.

I have endeavoured in the present little work to present my subjects in a fresh light, so as to interest a wide circle of readers, and in this instance have no apology to offer to the medical profession, for this is distinctly not a medical work, and the subject is pre-eminently one with which the public should be made familiar.

And yet there is a difficulty in writing such a book which I have endeavoured to meet. Many are so prone to put themselves in what I must call "health chains" and become slaves of various fads and fancies, that I have here striven all through to lay down principles rather than to make laws, and to indicate general lines of conduct instead of giving tables of diet and rules of life.

My desire throughout has been to give real help rather than to write anything novel or brilliant.

I know I have certainly avoided the latter, and sincerely hope that I have in some measure succeeded in the former; and I have great hope that this book, simple as it is, will, if carefully read, help many to

avoid needless disease, and enable them to keep in the path of health.

I have repeated myself a good deal; but though this is a literary fault, when one is writing on important subjects the repetition of the same point two or three times is often of great use in impressing it on the mind.

I send "Nerves in Order" forth, therefore, in the hope it may lessen the demand for "Nerves in Disorder," and thus prevention be proved better than cure.

ALFRED T. SCHOFIELD, M.D.

6, HARLEY STREET,
Christmas, 1904.

*

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Health and Ill-health

CHAPTER I

HEALTH AND ILL-HEALTH

THE title of this book clearly announces ^{Greatest} my belief that the greatest single ^{factor in} factor in the maintenance of health is that ^{health.} the "nerves" should be in order. The word "nerves," I may remark, is obviously used here not in a mere physiological sense, but comprehensively as embracing the entire nervous system.

Doubtless, when one is engaged in the special study of one part of the human organism, the tendency is to become myopic (or short-sighted) with regard to the rest, and unduly clear-sighted as to the one; and "nerves" being my especial hobby in medicine, I may be thought in my title to have been guilty of some exaggeration with regard to the part they play in health. But, setting aside specialism, it is not so; for from an

entirely impartial standpoint, if the subject be fairly considered, it will be found that not so much perhaps directly, but indirectly, in one way or another, "nerves in disorder" are the most prolific source of ill-health, while "nerves in order" are the best foundation for good health. Without further apology, therefore, for my title, and leaving my assertion to be proved in the course of this book, let us proceed to take a brief general survey of health and ill-health.

Health,
holiness,
and
wholeness.

Health, holiness, and wholeness come from the same root, and serve to emphasise the point of view from which this book is written, which is an essentially broad and comprehensive one ; treating health and ill-health in relation to the entire man as man, and not, as is invariably the case in so-called "Health Manuals," in relation to his body alone.

To say that a man is in perfect health who has a distorted mind or a distracted soul is absurd, for illness is to the body as sin is to the spirit, therefore disease may be called sin of the body, and error or misery sickness of the soul ; the man being in neither case in a state of health or wholeness.

No book perhaps has put this more clearly

in modern days than the Gifford Lectures, by Professor James,* where he insists, in other words, that the health of the man consists essentially in the harmony of body, soul, and spirit, in their relations with one another and with their environment. Herbert Spencer, again, has given us the same thought when he says that health is perfect correspondence with our environment, ill-health is imperfect correspondence, while death is the result of the failure of all correspondence. Health, then, is the "wholeness of life."

Prof. James
on the
harmony of
the man.

Martial indeed says, "Life is not to live—but to be well."

Health itself is a word which is intelligible to every one, and yet well-nigh defies definition; for it does not mean the same thing to any two people. There are no two "healths" absolutely alike, any more than there are any two faces alike. Health, moreover, is no arbitrary standard of well-being, it is entirely a relative term, and not a fixed abstraction. A cottage piano may be in perfect tune (*i.e.*, in health), but it is not a grand, nor ever will be; and it is for want of seeing this and recognising one's personal

No two
"healths"
are alike.

* W. James, "Varieties of Religious Experience."

limitations that some healths are destroyed, and lives frittered in attempting the impossible, and in trying to make the health standard of a "cottage" that of a "grand."

Physical
uncon-
sciousness.

One great and little understood sign of health is physical unconsciousness. I do not like to turn sacred phrases to secular uses, but perhaps I may be permitted to say that the sentence which appears to me most expressive of perfect health is "Whether in the body or out of the body, I cannot tell." That is, in perfect health every bodily function is performed with such entire ease that the man is unconscious of it; just as one might imagine a six-cylinder motor car so perfect that it flies along without the slightest movement or vibration of the engines being felt by the passengers.

Seldom
attained.

Much, however, that does not attain to this perfect standard is still called health, and many consider themselves quite healthy when some wheel is always creaking or some vibration ever felt; for the ideal is seldom completely realised. When it is, however, it is delightful. To move absolutely unconscious of any of the mechanism within you, to think and live entirely without

effort, are rare experiences that at times illuminate our chequered lives, and are treasured up as blissful memories. Even natural fatigue at the end of a perfect day falls short of ideal health, in that one is then painfully conscious of tired limbs, but this may be termed a healthful ill-health, in that perfect sleep entirely dissipates it, and each morning becomes a resurrection when a new and untired body rises to obey through another day the lightest caprice of its owner. Health, therefore, is ease, and ill-health is dis-ease.

Let us now look at the subject from a fresh point of view. Life, and by this we mean healthy life, has been described as a condition of dynamic equilibrium—that is, a balance of the two opposing forces of destruction and repair; or, in other words, a condition of incessant change. When either of these two forces outweighs the other, the balance is lost and (in adult life at any rate) the condition becomes one of ill-health.

Life as a balance.

The force of repair is called anabolic, or building up, and that of destruction katabolic, or throwing down, and details of these forces will be given later on, a general survey being all that is needed now.

Vegetable
and animal
life.

All life, vegetable and animal, is balanced by these two forces ; vegetable life, however, is mainly *anabolic*, or building up, while animal life is more *katabolic*, or throwing down ; so that although in human life the forces appear to be balanced, they are not really so, for the vegetable does most of the building up, while the animal does all the throwing down.

This may be made clear by the somewhat crude diagram on the opposite page.

The life
cycle.

Here we see the four main elements, oxygen, nitrogen, hydrogen, and carbon, built up by inorganic nature into air, water, and earth. Then further built up by the vegetable world into starch and albumen, and then lastly by the animal, one step more, into flesh and blood. In destruction, however, on the other hand, we find a sudden fall of two steps down to carbonic acid gas, water, and ammonia—compounds again of the four elements with which we started of oxygen, nitrogen, hydrogen, and carbon, and thus the cycle of all life is complete.

Perhaps in the form of a cycle the idea may be seen more clearly, as I have tried to show on page 10.

This again shows the cycle of all life in

ANABOLIC

KATABOLIC

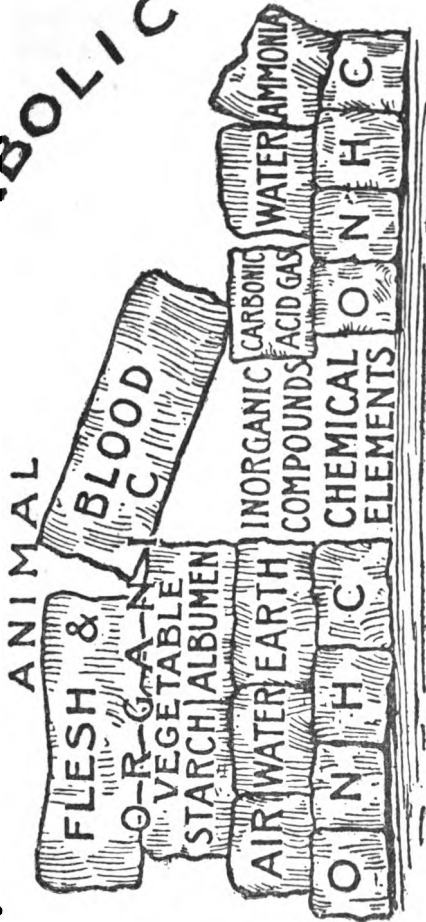
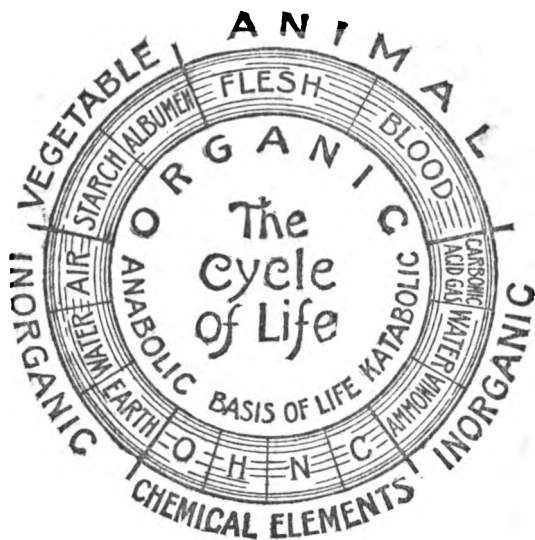


DIAGRAM OF THE ANABOLIC (BUILDING UP) AND KATABOLIC (THROWING DOWN) PROCESSES OF LIFE.



THE CYCLE OF LIFE—ANIMAL AND VEGETABLE.

another form. A comparison of the two will make the process clear.

From these two diagrams we plainly see that animal life is founded and depends on the vegetable. Take that away and no life is possible, for animal life cannot form flesh and blood from air, water, and earth without the intervention of the vegetable kingdom. Man, in short, cannot exist without the cabbage (as a typical vegetable), and all our vital powers are after all due to the silent and disinterested labour of the vegetable world.

I so strongly insisted on this view of the question some years ago, in a lecture I delivered to a body of London clergy, in the library of Lambeth Palace, that a reverend poet present penned the following effusion, which may serve a useful purpose now in lightening the somewhat heavy pages of this dry treatise :—

THE CABBAGE.

“The Cabbage at the bottom of it all.”

A. T. SCHOFIELD.

You think your body very much alive
 While it's all the time a victim to decay,
 And it's all that we can manage to contrive
 To keep our flames from wasting quite away.

The
cabbage
and the
man

Your heart is busy working as a pump
That the ichor through your body may be whirled,
But the Cabbage sits sedately on its stump,
And accumulates the force that moves the world.

At games you think you're very hard to beat,
When you gaily carry off the final ties ;
Well, you may be pretty nimble on your feet,
But the Cabbage ought of course to have the prize!
You may fancy you can warble like a bird,
In an Adelina Patti sort of style,
It was not *your* rich soprano that you heard,
But the Cabbage that was singing all the while !

You may set yourself your neighbour to improve
And philanthropise in various little ways,
And a vote of thanks the "Chair" will doubtless
move,
But the Cabbage really merits all the praise.
You may spend your life in robbing some one's till,
Or in daring acts of villainy and crime,
And you'll daily find your way to Pentonville,
But the Cabbage is the culprit all the time.

You couldn't keep life going for an hour—
You couldn't hunt or shoot or dance or walk,
If the Cabbage didn't sit and gather power,
On its humble and unenterprising stalk.
It's the dynamo of science and of art,
It's the spring that works the figures great or small,
So we'll drink one hearty toast before we part,
To the Cabbage at the bottom of it all.

C. E. J.

Dying in
life.

The rapidity of the change by which life is
characterised is very great, no less than $\frac{1}{24}$

part of the body dying daily ; indeed we may say that we perish faster in life than in death, the difference being that in the former the change is not seen, owing to there being an equal amount of repair, which is wholly absent in the latter.

The most healthy person must die, but the general object should be to die a natural death, and to live a healthy life ; but here I must explain what I mean by a "natural" death.

I have already alluded to cottage pianos and grands, and to this I may add that men are not only born unequal with regard to the power and capacity of their lives, but also with reference to the length of them.

Both health and length of life are to a great extent a question of heredity.

With regard to the former, Sir B. Ward Richardson makes five classes: 1st, the perfectly healthy ; 2nd, the healthy ; 3rd, the healthy till old ; 4th, the frequently unhealthy ; 5th, the constantly unhealthy ; of this last class he says the average life after 25 is not more than fifteen years.

Five classes
of health.

With regard to hereditary ill-health, however, we must here make one important

No inheri-
tance of
disease.

remark, and that is, we do not inherit diseases, but tendencies to disease, which may be and are successfully overcome. It is a sorry and false fatalism that declares a drunkard's child is necessarily a drunkard. On the contrary, the glorious truth is this : all these tendencies to drink, gout, consumption, and the like, can not only be successfully guarded against and prevented if the tendency be known, but that if thus resisted through three generations the very tendency disappears in the fourth, and the weakened lung tissue or digestive apparatus, with morbid craving, is absolutely and finally stamped out.

A glorious
truth!

I call this a "glorious truth," and the language is not exaggerated, for it not only delivers the individual from the "dead hand" of heredity, but it shows that by improving his own health he must benefit the future generation with a cumulative force.

Heredity, however, shows itself not only in health but in length of life, and it is in this that the secret of longevity mainly lies, and although this can be altered by the habits of the individual, the power to add to his days is very slight compared to the ease with which they are shortened.

Each person is born into this world with a certain amount of life-force, and is constructed to go for a certain number of years—like a clock. The length of time any individual may expect to live may be roughly calculated by dividing the sum of the lives of his six ancestors by six and adding or subtracting one year for every five that the result exceeds or is less than sixty, thus—

Paternal Grandfather died at	67
„ Grandmother „	82
Maternal Grandfather „	90
„ Grandmother „	45
Father „	72
Mother „	63

Sum of 6 is $419 \div 6 = 69$ years
and 2 months.

To this two years may be added, as it is about 10 years in excess of 60, showing that the individual roughly is constructed to live for 71 years and 2 months; and if he does, he then dies a natural death—that is, a death from failure of life power, and not from being cut off prematurely by disease or accident. And yet only one in nine in this country thus die, and this book

is written for the other eight, who die premature and unnatural deaths. The number that attain to 70 years of age is in Norway one-third of the population, in England one-fourth, in France one-eighth, and in Ireland one-eleventh.

It is computed that, apart from disease, the ordinary span of life is five times that of growth; and fixing this latter at 21 years in the human race, men should die between 100 to 105 years. When we remember that the average duration of life here, with every advantage of sanitation, is still but 43 years (men 42, women 44), that within my memory it was only 36, that in the eighteenth century it was but 20, we see what a mighty work still remains to be accomplished in perfecting the science of hygiene, or prevention, as distinguished from that of medicine or cure.

Seven years
added by
sanitation.

It is encouraging in this connection to see what sanitation has already done. As I have said, within my memory the span of life in this country has been increased from 36 to 43 years, which means that every child now born has seven years (on an average) added to its life!

In mediæval days the average span of life,

instead of being 43, was in the seventeenth century as low as 13. No wonder then men were considered very old before they were 60, which nowadays is but advanced middle age. Admiral Coligny, with his hoary hairs, was but 53 when killed, and old John of Gaunt but 59 when he died. Sanitation has lowered the death-rate in old cities one-third, in new towns one-half. All this is encouraging and leads us to expect still greater results.

The science of hygiene differs essentially from that of medicine, in that in the former a little knowledge is not a dangerous thing, whereas in the latter it is. It is so simple to prevent an accident compared to the difficulty of repairing the damage when done. To kick a piece of orange-peel off the pavement and so prevent a fractured femur is a simple act; to set the bone perfectly when broken takes at least four years to learn.

There are but five laws of health for the body, half the number of the commandments of the law for the soul. And they insist that food shall be wholesome, air pure, clothing sufficient, cleanliness practised, and exercise and rest used when needed.

Too constant thought, however, even about these simple laws, is not, curiously enough, the way to preserve health ; for it is perfectly true that many keep well simply by being too busy to think about themselves at all. Well-meant efforts to prolong life may simply end in shortening it ; by using up the nerve force in worrying instead of living.

Danger of
this book

Dr. Norman Kerr used to say that a great danger lurks "in the very thinking of health," a remark which makes one rather anxious as to the lurking danger of reading this very book ; and, indeed, this danger is a real one. It is quite possible to read this work, though I shall take every possible safeguard against introspection, in a morbid spirit ; and thus this manual, sincerely intended by its writer for the good of its readers, may be so mis-used by them as to turn to evil. The way to prevent this is to take heed to its warnings. "The pursuit of health," says some cynical wit, "is good, if it be not our own."

Don't make
health your
object.

If you would be healthy never make health your object. Egotism always defeats itself, and whether it pursues health and happiness as an end in life it never reaches it.

It seems singular counsel in a treatise on

health to advocate a wise carelessness, but it is profoundly true, from a reason that those who are acquainted with my earlier works * and the wonders of the unconscious mind well know.

No engineer could afford for one moment to be in such ignorance of his engine as we are of our bodies, though the engine is a much simpler machine than the body; and yet I shall take care to teach no physiology here; for the essence of health consists in knowing our duty and doing it, and not in interfering with the work of others. The fact is, I (the ego) am not the engineer down below, looking after the machinery, but the captain on deck directing and navigating the vessel. In other words, the conscious mind uses and directs the life that the unconscious mind maintains and produces.

Not an
engineer
but a
captain.

Our organism, indeed, is largely self-protective, even against external injuries, though not so perfectly as in animals, for we have reason as well as instinct, and are expected to use it.

* "The Unconscious Mind" (Hodder and Stoughton), "Elementary Physiology" (Cassell), "Force of Mind" (Churchill).

Uncon-
scious mind
governs
body

As a rule we may safely trust the unconscious mind to govern the body aright, and may generally follow our healthy instincts as to food, clothing, surroundings, &c.

Interference by the conscious mind in personal health, if frequent, tends to hinder it, not to promote it. I shall point out in detail when to interfere and when not—at present I only say that the policy of non-interference is the path of health.

In saying this, even in general terms, it must be understood that there is a wise inspection of oneself and a wise carefulness as well as carelessness. To know one's weak points, whether of heredity or habit, and to act accordingly, marks a strong man, not a weak one.

Let us now turn to a brief and general view of ill-health.

Ill-health
is loss of
balance.

Ill-health is when the balance, the equilibrium of destruction and repair, is lost, and the weight in the scale of life is greater on one side than the other, generally on the side of destruction. When it is entirely on this side and repair has ceased altogether, the result is death. But that, to return to our

former metaphor, is when both captain and engineer have left the ship; and life, which in this sense is mind, is gone.

There are, I believe, some 1,100 varieties ^{1,100 varieties of} of ill-health or diseases, though there are ^{disease.} only three ultimate varieties of death: through failure of the nervous system, or coma; through failure of breath, or asphyxia; and through failure of the heart, or syncope.

Ill-health is preventable or not preventable. Forty years ago a great many diseases were thought to be not preventable that are now constantly prevented. Amongst them we may mention the whole circle of the infectious fevers, including typhoid and cholera, as well as consumption and sometimes cancer.

Indeed, it is now difficult, if not impossible, to point to one absolutely non-preventable disease.

Why, then, do eight out of nine people still fail to live out their days (see p. 15), and die before their time? Why is the average expectation of life to-day 43, instead of 75 or 100?

There are at least three great reasons— ^{Three reasons for needless ill-health:} ignorance, carelessness, and wilful neglect in general; and especially of the five laws of health.

Ignorance,
careless-
ness, and
wilful
neglect.

Ignorance of these simple laws in their application to the individual is still very common amongst the educated (?) classes, as well as among all other members of the community.

Carelessness, to which, besides many diseases, nearly all accidents and infectious fevers are due, is found everywhere; and is of a very different type from the wise carelessness I have advocated elsewhere.

Wilful neglect is, of course, the most sinful of all, and amounts morally to suicide, or even to manslaughter when it results in death, and takes on its most repulsive form as the cause of infanticide.

It is said the most fatal of the three is wilful neglect, carelessness being less so, and ignorance, with which is allied superstition and quackery, being least fatal of all.

200,000
needless
deaths.

It is unspeakably sad to think that some 200,000 die needlessly and prematurely every year in this country from these three wretched and preventable causes, and that some seven million are needlessly ill. What a loss this is to a nation's wealth may be computed when we remember the average value of a man is £158 1s. 6d.; and perhaps this argu-

ment is not without force "with a nation of shopkeepers." And yet instead of shame being felt, too often the attitude is one of resigned complacency, the premature death being ascribed to Divine interposition! To my mind nothing can be more impious than to say these miserable fruits of our own folly are the "will of God."

So terrible indeed are the results of our neglect that I venture to assert that there is no single reader of these lines but can easily recall in his own family some lost member who (but for this) might still be alive and well. The other day I got the following letter from a well-known lady—member of a large Scotch house:—

"How sadly I could have added my testimony to what you said to-day! For the dear ones whom I have lost in my own family *might have been saved*—all were lost to me through preventable illnesses; and how many a mother has gone through the same agony which might have been prevented had true knowledge been given her! Would that we could open the eyes of those who are careless on these subjects to the mistake they are making, and to the importance and necessity

Pathetic
letter on
needless
death

of instruction in these matters! Were people thoroughly aroused and convinced that their ignorance on this subject is positively culpable, I believe they would flock anywhere and everywhere to learn all they could."

We have alluded to the five laws of health—good food, good air, cleanliness, suitable dress, and proper exercise and rest.

Two causes
of disease.

Disease comes from two causes—predisposing and exciting. The former lays the train, the latter fires the spark and lights it. The principal predisposing causes of disease are sex, age, heredity, environment, and previous disease, while the exciting causes arise from breaking one of the five laws of health.

For example, *bad food* kills most of any, I think, being responsible for three-fourths of all infant deaths; while in adult life drink kills most, so that between the two bad food and drink certainly take the lead.

Bad air is responsible for most lung diseases, which include three of the five most fatal diseases in this kingdom.

Dirt is the cause of all infectious diseases, and many others.

Unsuitable diets may not cause so many

deaths, but is a most fertile source of ill-health of various kinds, while *want of exercise and rest* keep the whole body in an unhealthy condition, and leave it a ready prey to disease.

Age has a good deal to say to health, as ^{Age and health.} the following remarkable total shows :—

DEATHS PER 1,000 OF THE POPULATION PER ANNUM.

	GENERAL AVERAGE AT ALL AGES.	YEARS 0—4	YEARS 4—12	YEARS 12—20	YEARS 20—34	YEARS 34—54	YEARS 54—70	YEARS 74—90
Male ...	23	71	6	5	8	18	49	229
Female ...	21	62	6	7	8	13	43	210

This table is really worth a moment's thought, dry as all figures are, when we consider that it applies more or less all over the world, affecting millions of lives ; for 67 are born and 70 die on this globe in each minute as it passes. It will be observed the deaths during the first four years of life nearly equal those during the next 70 years ; in other words, that one year before the fourth year of life is as dangerous as seventeen years after.

Dangers of
the nursery.

If a child can live till it leaves the nursery it has a chance of growing up; a mortality of 70 under 4, dropping at once to 6 when over 4. A human being never again enters such a fatal period as the nursery, until he is over 74 years of age! And why? Because in infancy, when the child can do nothing in the way of self-preservation, ignorance, carelessness, and wilful neglect reign supreme, and the results are awful!

Baby's life
like a
candle.

A young baby's life is as easy to snuff out as a candle, and twelve of them under 4 are snuffed out each year for every one over 4; for by this time the organism is hardier and better able to resist the carelessness with which it is still surrounded. (See Appendix, p. 263.)

I have no space here or I could prove these bitter words to the hilt, both among rich and poor.

Two heirs
nearly
killed.

Two baby heirs to large properties, to my knowledge, only just escaped with their lives—the one through having its first bath in a draught with the nursery door left open in February, the other by being fed on starch food when born. The poor are of course killed off wholesale, and all by the infernal

trio (ignorance, carelessness, and wilful neglect) I have spoken of.

But I must proceed. There is no doubt that from the time growth ends till old age begins—a time of some thirty years or so—should be a period of special good health, the organism being then free from disease of growth in degeneration. The two changes in life at about 15 and 50 are times when some special care is often needed with regard to health. But, if during the thirty years I spoke of, health is firmly established as a habit, the latter period need not be feared. Habit is much in health, and when all the organs of the body have worked well together for years, they become hardy like a seasoned veteran, and can go anywhere and do anything.

During growth, however, not only the body but the character is being formed, and if under 4 the dangers are chiefly due to the indiscretion of parents or nurse, after that age they become increasingly due to one's own, a constant source of danger. Finally, then, our endeavour should be—first, to live out our days and die a natural death, and secondly to keep our health while we live.

Thirty
years of
good
health.

Life and
health not
to be
objects.

Not, be it understood, that either life or health are ever to be the object of our lives. At best they are but means to higher and worthier ends; and any one short-sighted enough to make them the goal of life will lose one if not both of them. No man is in health who lives to preserve his health, but that man is in the best health to whom his God is first, his neighbour second, and himself last. These are they who eventually shall be first.

The Finance of Hygiene

CHAPTER II

THE FINANCE OF HYGIENE

I HAVE alluded already to our beloved ^{Nation of shop-keepers.} country as composed of a "nation of shop-keepers," though I fail to see in what way we specially deserve this title, for surely the commercial spirit is at least as rife in Germany and America. Still it forms an excuse for approaching my subject in this chapter from its commercial side rather than from its medical aspect; and I think, too, that looking at health from the familiar standpoint of the market-place and counting-house may give some of us a clearer idea of our responsibilities than we ever had before.

No doubt when we observe multitudes suffering from the results of ignorance, carelessness, and wilful neglect (the infernal trio of our first chapter), our sympathies lie mostly with the ignorant; and to me it is truly

Health
bankrupts.

pathetic to see the numbers that become health bankrupts, solely and entirely from their ignorance of the merest elements of finance.

It is this piteous spectacle indeed of seeing not only the poor but the educated classes in midnight darkness respecting the most elementary health questions, simply because their boasted education left off at this most vital point, that moved me for some years largely to neglect my profession for the cause of health teaching, and to seek so to extend the curriculum—especially in girls' schools and women's classes—so as to include the vital subject of hygiene.

Hygiene
now
recognised.

I rejoice to know that, aided by most valued friends, and with the help of the Sanitary Institute and the National Health Society, the effort has been successful, and the subject is now included both by Oxford and Cambridge, and some other lesser centres of learning, in their examinations.

What, then, is meant by the strange phrase, "the finance of hygiene," that heads this chapter? It is the application of commercial language and principles to health. It is to write of the Common health in terms of

Common wealth. It is to understand that wealth consists rather of health than money, even for the rich, while it is the sole wealth of the poor. Common health, and common wealth.

It is, indeed, in this class that the pathos of ignorance culminates. No child plays with money more foolishly than many play with health; no spendthrift is more reckless with his dollars than many are with their life-force; and while with the rich the resulting ill-health may have its terrors mitigated and compensated for by material wealth, with the poor it means veritable and literal bankruptcy; for the ill-health which proclaims the hygienic failure is also, in the breadwinner, the cutting off of all power of earning money. Our language, to some extent, expresses the parallel between health and wealth, for when we talk of a poor creature we as often mean one in bad health as in great poverty. The phrase denotes equally well a deficiency of health or of wealth.

The "finance of hygiene" embraces a knowledge of what in life constitutes capital and income and expenditure, and some idea of the current rates of living. It brings home to us our extravagance in various

ways, while it also shows the folly of some sorts of saving.

Health
prigs.

Of course the difficulty that haunts me all through in writing on this subject is to avoid transforming some of my readers into what I may call "health prigs" or valetudinarians.

Hypochon-
driacs.

Just as a person is intolerable, and is rightly disliked, who is ever talking of how carefully he lives within his income, and how particular he is about every penny he spends, so is a man equally objectionable who won't do this or that because he is full of ideas that he is spending too much life-force, and thus becomes a veritable hypochondriac. I feel desperately afraid that in spite of my efforts I may transform against my will some happy, artless reader into a wretched self-conscious invalid, and therefore I solemnly protest thus early in the book that such can only be the result of a rank abuse, and not of a wholesome use, of this book. For I must write it, because this knowledge is so needed; and though health manuals abound, the truth from a rather fresh standpoint often comes as a novelty (like the Bible in the Revised Version). And, moreover, as I have said, the manuals already published one and all treat of

This book
speaks of
the whole
man.

the body only, while I desire to speak of the man as a whole, meaning thereby, of course, principally "woman," as these are, after all, those principally interested in personal hygiene. Let the wise student, then, carefully read and assimilate the facts here presented to him, and make up his mind whether he is going to live on a sound financial basis or no.

Some of our greatest men and women deliberately say "No," and lay their health and even their lives down at the foot of the Cross for the glory of God. To such be all honour. But for the bulk it is wisest to answer "Yes," and having done so, and found out in general terms how to apply the principles and facts to their own individual lives, let them then cease to think or worry, and live with that wise carelessness of which I have already spoken—the outcome of a healthy soul and the pledge of a healthy body. A carelessness springing from knowledge differs *toto cælo* from that which results from ignorance.

Let us first of all, then, consider "capital." Health capital. Capital is the reserve force that constitutes

sound health. A hand-to-mouth existence without capital is not consistent with a healthy life. Such a person is absolutely dependent from hour to hour on the food he takes, without which he would utterly collapse. This is not health ; for while a strong man requires food he is not dependent upon it in the same way at all. On this reserve force or capital, then, rests our happiness and health. The next point is to understand a little more about this life reserve force. As regards its duration, this depends, as we have seen, upon heredity, and can be roughly calculated, but its amount depends upon ourselves.

Storage in youth.

Childhood and youth are the real times when it is being stored, for although force at this period is largely spent in growth, it is produced so rapidly that capital is quickly accumulated. During adult life it can also be more slowly stored up until forty-five or fifty, and from that time it is slowly spent, and gradually goes in old age as income, until when a person dies a natural death hardly a shilling is left in the bank. Those who die prematurely die with much unspent capital, which is wholly wasted. Of course

the need for storing up capital in youth shows as nothing else does the importance of avoiding drains on our resources at this time by youthful excesses; for there is no doubt what-
 ever that a fast life is a short life and an unhealthy one, and not only can the store we accumulate thus be quickly dissipated, but the life itself ends in a premature bankruptcy. Our stock of vitality in relation to length of life is strictly limited, and though we can slightly prolong it by care we can much more easily shorten it by excess. Avoid
excesses.

Although we have given a table to calculate roughly the duration of life-force, we know no way of computing its amount during life. We can of course tell practically when it is running short, because our cheques are not honoured, but returned marked "No assets."

But it is time now to touch on another point as to capital, and for this we must cease to regard our personality as one, and look at ourselves as a collection of seven or eight systems—nervous, muscular, digestive, circulatory, secretive, respiratory, reproductive, &c.—each with its own banking account and its own separate capital, which, more- Systems of
the body.

over, cannot be transferred, save quite exceptionally, from one account to another.

One system
cannot
replace
another.

Thus if a man has spent all his digestive force he cannot really make it up from any other system. If his nerve capital has run out, it is little consolation that his muscles' account shows a strong credit balance. He cannot transfer his reserves of respiratory food to his exhausted digestion, nor can the bankruptcy of a worn-out heart be averted because the secretory system is solvent.

The health of the individual is of course made up of the reserve forces in capital of the different systems, but the bankruptcy of the system may mean the death of the man, or, if only partial, his ill-health at least.

I shall point out the respective values of the various capital funds, and, above all, the pre-eminent importance of nerve reserves, which, as I have said already, justifies the "maintenance of health" in our title being taken as almost synonymous with "nerves in order."

Nerve-
force all
important.

Health, and even strength of body, is really valueless if there be no nerve force to spend it, and while on the one hand we must fail if our nerve capital be all spent, we can often

carry on a long time if this system be solvent, though many other systems be well-nigh bankrupt.

Of course capital has a different importance at different times. The reserves in the vaults of the Bank of England might almost as well not be there in specie for perhaps fifty-one weeks of the year; it is on the fifty-second, when the run on the Bank comes, that they have all their value.

And so it is with thousands around us. ^{The} Numbers are what Sir. B. Ward Richardson ^{"morituri."} used to call the "*morituri*," or those liable at any time to death, simply because theirs is a hand-to-mouth existence. Others are doing very well, because the times are quiet and healthy; but let a sudden run on the bank come in the shape of typhoid or pneumonia and the bank breaks at once; whereas, on the other hand, where the reserves are strong the drain of minor diseases is hardly felt at all, or they pass us by as too strong even to attack.

Bank-notes owe all their value to the solid ^{No health} reserve of specie in the vaults, and are worth- ^{without} less without it; and *that* health is only like ^{reserves.} so much paper that does not rest on a solid

reserve of force in each of the various systems of the body.

One last thought before we leave this general survey of capital. It is of the utmost importance in any run on the bank, in sickness of any sort, not only that it should be promptly met, but that the excess of capital paid out should as soon as possible be replaced; in short, that the man should not be content with the sickness being stopped, he must have his full health and strength restored—hence the supreme importance of convalescence.

Spend-
thrifts,
moderates,
and misers.

There are in health as in wealth three classes of people—those who live beyond their income, those who live up to it, and those who do not spend it. Before considering these classes let us look for a moment at what in life represents income as opposed to capital.

Gross
income.

The average amount of food consumed by the average man at average work produces in or about 3,400 foot-tons of force daily. There is no need here for any greater accuracy, for what we want to understand is the principle on which we live, and not the exact details in figures.

Now what is meant by the above? Let me briefly explain. To lift a ton, or 2,240 pounds, one foot off the ground requires a considerable amount of force, and this amount of force is called a foot-ton. Now the combustion of the daily food combined with the oxygen we inhale sets free from the service of the body daily 3,400 of such "foot-tons." This force may be used as motion, heat, or in other ways.

As a matter of fact it is found that about ^{Nine-tenths used unconsciously.} nine-tenths of it is used unconsciously for the warming of the body and for the maintenance of life, making good the wear and tear of the body, and manufacturing the various complicated products necessary for its existence—as, for example, a gallon of gastric juice and a quart of saliva daily.

This leaves us some 300 foot-tons of force ^{Nett income.} still available for use consciously in any way that the will of the person pleases—in moving the body about (including the tongue) as much or as little as we please, also in thoughts and emotions which are expensive—in short, in living.

So that it appears that an average man in perfect health has a large income, of which,

however, he can consciously control the expenditure of only about one-tenth part.

Our pocket-money.

Regarding this world for a moment as a school, we may say an all-wise Creator puts into the hands of His creatures 300 foot-tons of force each morning as pocket-money (He meets all the school bills), and the way we spend it, wisely or foolishly, or hoard it, do good or evil with it, displays our character, and is that of which we shall all have to give an account when the school-days are over.

The income, then, of which we principally speak here is that tithe that is at our own disposal ; and as I have said we may exceed it, live up to it, or live below it.

Spend-thrifts.

The first class are in the way of death, because to exceed income means to trench on capital ; for in life there is no credit given, no getting into debt with others. We must pay our way, and if we get into debt it can only be with ourselves, by spending our principal, which is the way that leads to ill-health and death or bankruptcy.

Moderates.

Those who live up to their income and leave their capital untouched are the wise,

the happy, those in perfect health; while those who live below and try to save it find that health cannot be hoarded, and that unspent income soon leads to ill-health, not through starvation, but plethora.

We must, then, be neither misers nor ^{Misers.} spendthrifts if we would be healthy, but spend wisely and well what is given us to spend, be it much or little, and while looking on health as on wealth as a good gift of God, never regard its accumulation as an end of life.

To spend one's life in acquiring health and strength, and die without using the one or the other for any wise or useful purpose, is like amassing riches and having to leave them unspent and unused.

But if living up to and not beyond our income, here set down at an average of 300 foot-tons, be such an advantage, is it not of the first importance to have some means of knowing whether we are doing so or not?

Undoubtedly it is; but inasmuch as we cannot count our foot-tons as we can sovereigns in our pockets, we can only estimate our expenditure approximately.

How to
count our
money.

If we daily spend what mental and physical force we have without strain, so as to produce a healthy fatigue of mind and body, that entirely disappears in sleep, so that we rise fresh and well ; if we are conscious of no running down in weight or in our powers, especially of nerve force ; if we have not to use any stimulants of any sort, we may justly believe we are spending our income and not our capital.

The man who habitually exceeds his income needs stimulants, which indeed are but drafts upon his capital or reserve force.

But why do any thus run into extravagance which can only bring disaster upon themselves?

Three
causes of ex-
travagance.

Mainly from three causes. In the first place there are a large class who are in a distressing position through poverty, which obliges them to spend all their income in earning it ; and even then, with all their efforts, they cannot quite earn what they are obliged to spend, and hence are perpetually overstepping their limits through hard necessity.

The poor
cannot
help it.

These form our large army of toilers for their daily bread, who find great difficulty

in providing what are called the necessities of life, *i.e.*, the 3,400 foot-tons the body requires for its maintenance. Indeed, their lot is peculiarly hard, for the work they have to do is so arduous that they require far more foot-tons of force than the average man, and thus they fall short through insufficient food. We can hardly call such people extravagant; they call for our sympathy and help, which can be best given in showing them how to economise force and how most easily to generate it. Many thousands are in poor health, and many thousands die in consequence, because they are in such circumstances that good health cannot be maintained. They are obliged to become health paupers.

But here we write for no such deserving The rich can. class, but for those who with a good income, often entirely provided for them without effort of their own, are free to spend it all, or nearly all, in any direction they please, and are under no necessity at any time to exceed it.

Why, then, should such ever do so?

The motive, indeed, differs widely, though the result is the same. But although it is

true that nature takes no account of motives and considers only the "what" and not the "why," and visits all extravagances with the same penalties, there is no reason why we should not consider them.

Emulation. There are those who exceed their daily health income from a spirit of emulation or pride. They wish to show they are as rich and strong as others, and to such an extent will some go in keeping up deceptive appearances—of being "grands" when they were never made for anything but "cottage" pianos—that like the "soldier who lived on his pay"—

"They spend half-a-crown upon sixpence a day."

The folly of it.

You will see a girl, with perhaps but 100 foot-tons of force for her daily pocket-money, emulating in all things her brothers who have 250 or more to spend.

Imagine an engineer driving his engine to double its power. The result would be the same as with a human being who spends double his health income—a complete breakdown.

Such, however, sin mostly through ignorance. They live as if their capital were

inexhaustible, simply because they know nothing whatever about either capital or income. They cannot any longer plead such ignorance after reading this book.

Another class are extravagant simply because their tastes and wants are expensive and far beyond their income. Where fashion is concerned, for instance, all questions of finance, if they ever existed, go to the winds; and if its votaries are required to live at full speed through a London season they are very near bankruptcy at the end; hence the almost universal custom of a "cure" at some foreign spa in the autumn.

Many through love of fashion, pleasure, or sport, or even restlessness of disposition, are living at this extravagant rate and make a great display of energy and health; all their goods, as it were, in the shop window and no reserve behind. Society shams, balancing on the verge of bankruptcy, sometimes, as we have said, making little efforts to recoup their health at Homburg or in the Highlands, but ever in mortal danger, with the shadow of death walking not far from any one of them.

Extrava-
gance
from high
motives.

Others again are extravagant from some fixed high purpose for God or man. They set out quite prepared to suffer in health, even, if need be, to lay down their lives, in fulfilment of their call or mission.

As we have said, the reason for extravagance differs immensely morally, but physically the result is the same. To God the motive is everything, to nature nothing. The vicious man of pleasure and the overworked missionary both pay the same penalty if they make reckless drafts on capital.

Result is all
the same.

It is indeed to be questioned if God always demands such sacrifices as are made in His name, and whether a wise acquaintance with health finance, and a remembrance of a fact that we often forget, but He never does, "that we are but dust," might not lead some of us to a longer service at a less expense rather than to a short, mad rush, and then all is over.

However, in this, as in much else, the individual must be the judge; we can but raise queries and make suggestions.

Threatened
bankruptcy

We now pass on to questions of bankruptcy. When it is threatened, and capital

runs low, and the individual is conscious that his stock of reserve force in any particular system is dwindling, he generally seeks first of all to stave off ruin by stimulants of various sorts, according to the part most drained.

If the nervous system is giving out he tries to recuperate it by powerful nerve tonics; if the circulatory, by strong heart medicines; if the digestive, by all sorts of patent and digested foods; if the locomotor or muscular, by electricity, massage, and the like, and so on; and in one and all he always tries to make further drafts upon what little capital may be left by alcohol, whose mission is never to add to the reserve force, but slightly to economise the expenditure; while at the same time it makes large drafts upon capital.

When bankruptcy and the breakdown comes it may be in one of the important centres only, such as the nerves or heart. The other systems may still have reserve force to spare, and yet the man as a whole may break down through failure of one of the chief systems. Of course, if the failure be absolute, death ensues; if only partial,

Bankruptcy of one system is enough.

ill-health. It matters not, as I have said, whether we are egoistic or altruistic bankrupts; the result is the same. If only partial, as I have said, we become ill and fall, alas! into the doctor's hands; and if he is wise he does not leave us just when we are able again to meet current expenditure, but insists on our replacing our spent capital and storing up our reserves; and this is very expensive and tiring work. To replace lost muscle costs at present about four or five guineas a pound, while nerve and heart force are at least as costly. When we remember that with the poor, health is their only wealth, it is easy to see of what vital importance it is to them that their reserves be not trenched upon, for their chances of replacing them are small indeed.

Cost of replacing lost capital.

We have already suggested in this connection that we have to do with different sorts of people as well as of expenses. We may now consider these in a little more detail.

Income in the two sexes.

In the first place, there are men and women; and the latter are to the former as, roughly, 5 is to 8. In this ratio, if the income of the former be 320 foot-tons a day, that of

the latter in equal health would be 200—a considerable difference; showing at once that no real general competition with man is either possible or desirable by women.

Then, again, some are materially rich and some poor; and the former have great advantages over the latter, which they may either use or abuse. They have not to use up all their energies in earning their health income, and the result is they are much more free to spend them as they wish. If, then, Health and wealth. the person and his objects be good, this freedom that wealth gives is a benefit; if they be bad, it is an evil: all depends on the man. The disadvantages of the poor we have already spoken of; they are piteous enough, and are there whether the person be good or bad.

Some, again, are very rich in one sort of capital and poor in others. That is, they may have strong hearts and weak heads, or powerful livers and dyspeptic stomachs, and so on. The great object with these should be to know exactly the system which is most likely to become bankrupt and try and make Causes of bankruptcy that system equal in strength to the others; as, for instance, the respiratory system in those born with weak chests with no reserve

force to resist disease. Men and women, again, are made with very different health dispositions, some being born spendthrifts others born financiers ready to make the best use of all they possess.

In the English nation the proportions of some of the leading classes of occupations are as follows, and occupation has a great bearing on the health expense of living.

Different classes in the community.

There is, first, the professional class, numbering some 7,000,000, whose health expenses are great. Second, the domestic class, mostly women, about 6,000,000, whose expenses are less. Third, the commercial class, of some 800,000, who, again, have to spend much. Fourth, the agricultural class, of some 1,600,000, who can live economically. Sixth, a non-productive class of children, women, and idlers, of 7,500,000, whose health expenses should be low. Generally speaking, five-sixths of the community are materially poor and one-sixth are rich.

Brain and heart work are costly.

Not only do people, but their health expenses (as we have seen) vary much. Brain and heart work are both costly, and all unhealthy work involves great expense.

Of course, there are different sorts of expense according to the particular system that has to pay the bill, and an effort should be made by the man who owns all these systems to save the expenses of the poorer and weaker ones and make the richer and stronger ones pay. How to do this we will better see in detail further on.

Not only these special economies can always be exercised, but general economies as well, and hundreds of labour-saving appliances help us to this in the present day.

At any rate, without penuriousness and undue carefulness, a watchful eye should generally be kept on the health expenditure, and any unavoidable runs on the bank through ill-health caused, maybe, not from financial indiscretion, but through some invading horde of microbes, should at once be checked. Practise economy

It is for women more than men to understand these things, not only because their income is smaller, but because they have so much more to do with health than men, not only being mostly born nurses, but having the care of all children.

All women
should
understand
hygiene.

It is therefore of special importance to them that they should have sound, clear views on the finance of hygiene.

I would again point out that while on the one hand nothing can be more selfish and repulsive than to be always anxious in every detail to avoid spending this income, on the other hand nothing can be more sinful and careless than to lose a useful life when there is plenty of money in the bank in the other systems simply through carelessness in allowing one vital part to become bankrupt.

Sir H.
Weber's
address on
old age.

We may now fitly close this chapter with an extract from an editorial on Sir H. Weber's address to the Harveian Society in 1903, giving some hints on saving expenses in old age* :—

“Every ‘grand old man’ is believed to have some secret by which he preserves his life. Whenever a man of any note is thought to be a candidate for centenarian honours he is asked to reveal his method. These methods are curiously diverse in details, though in essentials they are alike.

Regular
habits.

“Moltke, when asked in his 90th year how he had maintained his health and

* *British Medical Journal*, December 5, 1903.

activity, answered, 'By great moderation in all things and by regular outdoor exercise.' Crispi said that 'regularity and abstinence are the secrets of long life.' Sidney Cooper also believed in regularity. Legouvé attributed his long life to regular exercise. An American nonagenarian, the Hon. Neal Dow, of Maine, laid stress on the careful avoidance of fretting, of disturbance of the digestive organs, and of exposure to sudden or protracted cold with insufficient protection against its influence. Cornaro's rule was Moderation in eating. extreme temperance in eating and moderation in drinking; he took anything that agreed with him and nothing that did not. Chevreul was sparing in food, and, like Cornaro, cultivated cheerfulness. The late Sir Isaac Holden believed that he owed his great length of years to his habit of living mainly on fruit and avoiding all starchy articles of diet, including bread. Victor Hugo inscribed the following rule of life on a wall of Hauteville House:—

'Lever à six, dîner à dix
 Souper à six, coucher à dix
 Fait vivre l'homme dix fois dix.'

Jowett told Dr. G. N. Pope, the well-known

Importance
of details.

Tamil scholar, that 'to have a great work in progress is the way to live long.' According to Sir James Sawyer, the secret of longevity consists in 'paying attention to a number of small details.' Among these are the following: (1) Eight hours' sleep; (2) sleep on the right side; (3) keep the bedroom window open all night; (4) have a mat to the bedroom door; (5) do not have the bedstead against the wall; (6) no cold tub in the morning, but a bath at the temperature of the body; (7) exercise before breakfast; (8) eat little meat, and see that it is well cooked; (9) (for adults) drink no milk; (10) eat plenty of fat, to feed the cells which destroy disease germs; (11) avoid intoxicants, which destroy those cells; (12) daily exercise in the open air; (13) allow no pet animals in living rooms—they are apt to carry about disease germs; (14) live in the country if possible; (15) watch the three D's—drinking water, damp, and drains; (16) change of occupation; (17) take frequent and short holidays; (18) limit your ambition; and (19) keep your temper.

Abraham
Lincoln's
maxims,

Abraham Lincoln's maxims were: 'Do not worry; eat three square meals a day; say

your prayers ; think of your wife ; be courteous to your creditors ; keep your digestion good ; steer clear of the biliousness ; exercise ; go slow and easy. Maybe there are other things that your especial case requires to make you happy, but, my friend, these, I reckon, will give you a good life.' Sir Benjamin Ward Richardson said : 'The would-be centenarian should never smoke nor drink—especially the latter, and he should eat very little meat. He should keep early hours and work as little as possible by artificial light. Moreover, he should not make haste to be rich, and he should avoid worry and consuming ambition.' ”

How to live
to 100.

We do not endorse all these precepts ; but give them as the sayings of wise men, and containing a good deal of sound advice.

The Heart and Circulation in Order

CHAPTER III

THE HEART AND CIRCULATION IN ORDER

BEFORE the unwary reader becomes Chapters of most importance bored by the simple commonplaces that follow here it is only fair to explain to him that the most important chapters of this unique work are the first two and the last three.

The menu is obviously thus arranged so that the student, having his appetite aroused by the interest of Chapter I. and fed by the bold and novel similes of Chapter II., may wade uncomplainingly through the next six courses, finishing off with matters of more taste and interest in the closing chapters, so as to leave a fine flavour on his (mental) palate, as he concludes the meal, and rises from the table.

Such were the original tactics, but stricken Two classes which can skip six chapters. with remorse, I prefix this explanation for the benefit of two classes whom I should

advise to skip the next six chapters and pass on to Chapter IX. The first class consists of those people of superior minds who are well acquainted with the commonplaces of physiology, and easily bored with their repetition. The second are those very morbid and sensitive beings who feel ill if they think of their bodies at all, and who, moreover, consider the most discreet references to their interiors as either rude or vulgar.

For the benefit of the residuum I will now proceed.

Dr. Hermann Weber, whose remarkable address to the Harveian Society* (already alluded to) I shall often quote from in the course of this book, says:—

Importance
of a sound
heart.

“I have endeavoured to ascertain what is the principal factor of inherited longevity. There were differences in the various long-lived families; but all of them were endowed, as far as I could learn, with a good heart and good blood-vessels, and I am inclined to ascribe to the circulatory system the greatest share.”

* Dr. H. Weber, *British Medical Journal*, Dec. 5, 1903.

The circulatory system may here be considered in three divisions for the sake of clearness: the heart—the blood—and the circulation and blood-vessels.

The heart itself, when not “in order,” is often a matter of painful interest to its owner, principally for two reasons: first, on account of sharp pain felt in the cardiac region; and, secondly, on account of palpitation.

It is, therefore, a great comfort to be able to assure my readers “right here”—and it is useless to read this book unless you believe what its author says—that both one and the other are of very small importance to health, and neither of any vital significance. The pain experienced is really never in the heart at all* but in its neighbourhood, springing from digestive causes; and the palpitation, if not directly due to disturbance of the nervous system, is due to disturbance of the stomach; in neither case does it arise from the heart itself, or shows that anything is wrong with it.

To understand what is the matter we must picture the heart sitting on the end of the stomach something like—to use a striking

* The only exception being a rare disease, “angina pectoris,” where other symptoms are also present.

illustration—a donkey-boy sits on the hinder end of his ass ; so that when the donkey kicks, the boy begins to palpitate on its back. In like manner, when the stomach kicks or is distended in any way by food, it often sets the heart off palpitating ; and in this way the heart gets the blame while the stomach is the culprit. I do not say the pain and palpitation are not distressing, because they often are : I only say they are not dangerous.

Our subject, however, is the “heart in order,” and we may say that this is the heart’s normal condition ; and if it varies from it, it is generally due to either nervous or digestive causes and not to changes in the heart at all.

Valvular
disease of
the heart.

But what about valvular disease of the heart ? says some indiscreet inquirer. Well, as to this, I will make a bold statement, and that is—that a person may be practically in good health till he dies from some other cause at an advanced age, with valvular disease of the heart all the time. It used not to be thought so, but it is now ; and the following incident was one great cause of the change of attitude in the profession in this

respect, as I shall show. I may premise that the story is true :—

Many years ago the young superintendent of one of our largest London hospitals fell in love with a charming girl, to whom he proposed ; but as his salary was not large, his suit was regarded coldly by the lady's parents. He therefore laid the case before the governors of his hospital, with whom he was in great favour ; and after due consideration they came to the following conclusion : that if he would marry, his salary should be doubled, and he should have a suitable set of apartments in the hospital itself.

A London hospital story.

With this news he went off jubilant to the prudent parents, doubtless after a tender interview with his *inamorata* ; but once again they demurred. They had no personal objection whatever, but after all life is uncertain, and they wanted to be sure, if they gave their precious girl to him, that at least she would be well provided for in case of his death, when, of course, his salary would lapse. In short, they demanded that before they granted his request, he should assure his life. This he at once agreed to do ; and next day went off gaily to the Assurance Office in the

City, whose principal medical officer was also a leading physician at his own hospital.

Insurance
and heart
disease.

Ushered into the consulting-room he was asked to strip, and the doctor, who knew him well, began carefully to examine his chest. He had scarcely, however, reached the region of the heart when he sprang back, and said, "My dear sir!"

"What is it?" said the young man, very pale and much alarmed.

"Why, simply," said the doctor, who was often indiscreet in his utterances, "you have advanced valvular heart disease of a bad type; and we cannot possibly assure your life, save at very special rates."

"Why, I had no idea," said the young man, "I had anything the matter with me."

"That may be," said the doctor; "but it is none the less true; and it is my duty to tell you that you must take the greatest care not to——"

And then he gave him a bit of the precautions needed to preserve his life, though he gave him to understand that even then it could not be much prolonged.

Imagine the young man's feelings as he set

off as best he could to get back and break the sad news to his devoted *fiancée*.

News of it of course also quickly reached the Hospital Board, and they all agreed that a sadder fate had seldom befallen a young man ; and they came to the conclusion that it would be impossible to keep on a man who might drop down dead in the wards, and that during the short time he had to live he should be allowed to retire to some quiet resort, and there end his days in peace. They also resolved, that in consideration of his faithful service to the hospital, he should be retired on his full double salary of £500 a year which they had proposed to give him, so as to free him from all money cares and provide all he might need during his illness. Broken-hearted and yet deeply thankful for their kindness, he bade them farewell and left the hospital for ever.

Over twenty years afterwards a well-known clergyman in a town some miles from London had rather a sharp attack of bronchitis, and as the local doctor seemed unable to subdue it, a chest specialist was called down from town ; and this happened to be the doctor who had examined the

Dismissal
for heart
disease.

The sick
clergyman

young superintendent so many years before. In the clergyman's bedroom he went up to the sick man and began to examine his chest with the stethoscope, when suddenly he raised his head and said with great earnestness—

Heart
disease
again.

“My dear sir, your case is most serious. It is the heart that threatens you.”

“Oh, bother the heart,” the vicar replied testily, “leave that alone; it's my lungs you've come to see.”

“But,” said the doctor, still more gravely, “it is my duty, and I am sure my colleague agrees with me, to warn you of your danger.”

“Why, doctor,” said the clergyman, “don't you remember me? You must have heard my name.”

“No,” said the London man, “I never caught it,” and then it began to dawn upon him. “Why,” he said, “you don't mean to say you are our old hospital superintendent?”

£10,000
through
heart
disease.

“I am,” said the vicar, “or rather I was; and I have to thank you for a very good income that has been regularly paid me ever since, and I can assure you has been no small help with my family for many years.”

“Why,” said the doctor, “are you married?”

“Yes,” replied the clergyman. “When I left the hospital all was broken off, and I went to the seaside to die, as you said. But after a time, finding myself still quite well, the young lady agreed to marry me, especially as I had now such a good income, and we agreed that I should take holy orders, which I proceeded to do; and now have been vicar here for many years. My wife and I have often blessed your name; for though your verdict was a great blow to me at the time, the money has been a great help to us ever since, and as for my heart, I should never have known I had anything the matter with it, if you had not told me.”

The doctor went away full of thought, having learned the greatest lesson of his life; and being a really great man, determined it should not be thrown away; so he set to work and eventually produced that remarkable table of people who have lived to over eighty years of age in good health with valvular disease of the heart. I believe he collected over a hundred cases. At any rate, stirred by this case, he proved, as it had

Valvular
disease
need not
shorten life.

never been proved before, that valvular disease of the heart is one of the few diseases a man may have, and yet be in good health—a seeming paradox; and the result is that lives are now assured on ordinary terms which are known to have such disease.

Compensation by the *vis medicatrix naturæ*.

And now for the explanation. Valvular disease of the heart has the effect of causing the heart to do more work. If well marked the organ may be called to do one-fourth more than the work a sound heart has to do. This would naturally tax it severely were it not for the *vis medicatrix naturæ*, the force that the unconscious mind uses in presiding over and adjusting the mechanism of every system of the body. In this case the problem is solved simply by making the heart *recommence to grow*, until it has grown one-fourth larger; and thus do for its size exactly the same amount of work that the smaller sound heart does for its size. This practically restores the person to health, for the leakage being thus compensated for, it is to all intents and purposes non-existent.

Modern heart treatment.

One more point and then we may leave the heart. Should the leakage (if it exists) fail to be compensated by nature, we have

now means of restoring the heart's power that were utterly unknown a few years ago, so that even in this case there is every prospect of a return to health.

There is, of course, a flabbiness and a weakness that comes over all the internal organs, heart included, when an utterly lazy and indolent life is led, but as long as brisk exercise is taken, for some two hours daily, there is not the slightest fear of this.

On the whole, I am inclined to think that the health of the heart is more easily maintained than that of any other great organ of the body.

One word now about the blood. This wonderful fluid, the marvels of which are still being unfolded to the physiologist, is verily the life of the body, and health consists in it being normal in quality and quantity. It may be, and often is, too poor, or too rich, or poisoned.

It is too *poor* when deficient in iron and oxygen, when the lips and gums are pale and the person is short of breath and is suffering from anæmia. A good meat diet, fresh air, and a little iron soon put this to rights.

It is too *rich*, when from excess of food or

want of exercise it becomes laden with undigested products; thus laying the foundation of gout or rheumatism, or other disorders. The remedy for this is also obvious, to say nothing of the ease with which it is prevented.

Poisoned
blood.

It is *poisoned* not only when microbes invade it and infectious diseases result, but when, through failure of the action of the liver, the blood circulates unpurified through the body. I wonder if it is generally known that one of the chief functions of the liver is the purification of the blood. This is not a book on diseases, but this point is so interesting I must crave a few lines to explain this condition.

Causes of
biliousness,
and "mel-
ancholy."

The liver is so associated with bile in the public mind that when it is affected it is called a bilious attack, although the symptoms are not caused by bile, as are those of jaundice.

The depression that ensues is called melancholy, or "black bile," from the same dominant idea that this notorious secretion is the one aim and end of the liver's activities.

Both bilious attacks and melancholy (of physical origin) are caused by auto-sepsis or

self-poisoning, through the circulation of the unpurified blood in the body and brain. The liver, by being overloaded with food or from some chill, is unable to do its work of purification, and thus it is the condition of the blood that is the root of the evil, and not the condition of the bile at all.

The blood "in order," then, excludes these three great disorders, and is evidenced by a clear, healthy, cheerful condition of mind, ease of body, and absence of all gouty and allied conditions, none of which can be enjoyed with unhealthy blood, though all the rest of the body may be in order.

The blood
in order
means
health.

As long as the blood circulates (and no longer) there is always life, but unless the blood that circulates is healthy blood, the life that is lived is not healthy life.

How to keep the blood healthy need not be a subject for anxious care. If the five simple laws of health, and particularly those relating to good food, good air, and sufficient exercise, be heeded and practised, the blood will give no trouble to its possessor.

The circulation, I think, comes more under the immediate notice, even of the most care-

Circulation
often
wrong.

less, than do either the state of the heart or of the blood.

Feeling cold and chilly makes itself so unpleasantly conspicuous, while paleness or flushing are so vividly seen, that one is perforce obliged to take some notice of the condition of one's circulation.

Any vagaries in it affect us from the crown of the head to the sole of the foot, for the blood goes everywhere; and when all is right there is a delightful feeling of *bien aise*, just as when wrong of *mal aise*.

"Luke-warm" is the healthy state.

The circulation "in order" means being neither cold nor hot, but in that Laodicean condition which, though so disastrous in the body spiritual, is the ideal in a physical body.

The circulation "in order" is a circulation that is never thought of, never noticed. Whether I have a heart or no, whether I have good blood or no, whether I have a circulation or no, I cannot then tell; for all is so harmonious and so sub-conscious that it never occupies my thoughts for one moment. This and nothing less is the circulatory system "in order."

But cold feet and chilblains, varicose veins,

flushes, swollen feet and ankles, all perforce demand our attention, and it is well indeed that they should, for there is this good point about the body—we may be sure when there is anything wrong in its working, it is certain to call our attention to it.

How, then, keep the circulation in order ?

How to
keep the
circulation
in order

Exercise here is obviously the chief point ; but there are minor ones.

There must be no physical hindrances, such as tight collars, corsets, strings, or garters.

If the circulation is feeble or the person full-blooded, common-sense precautions must be taken as regards the morning tub. If taken cold, for instance, all the blood must not be driven in from the skin into the internal organs, liver, stomach, &c., but first drawn off into the legs by standing in hot water, and then no sponging, however cold, can hurt even the weak.

Danger of
cold baths.

After the bath there should be vigorous exercise for five or ten minutes. For men this is best obtained by dumbbells, Indian clubs, or some form of exerciser. For women by vigorous dancing with hands on hips, till all the body is in a glow, by skip-

ping, or by the use of an exerciser. This not only keeps the circulation in order for the day, but takes away all stiffness of the limbs.

How to cure cold feet.

If the balance of circulation be temporarily upset, as by long study—drawing the blood into the grey matter of the brain—so as to leave the feet stone cold, or if the feet from other reasons are habitually cold, one of the best means for restoring the circulation in them is by placing one leg up to the knee in a bucket of hot water and the other into iced water ; and then, when one leg is boiled and the other iced, reversing them, until the opposite conditions are obtained, and so on for fifteen minutes. This alternate shutting and opening all the tiny blood-vessels is one of the most effectual means for inducing vigorous circulation.

Hot bottles. The hot bottle in bed, moreover, is by no means to be despised, and, though it be artificial, is much better than trying to go to sleep with cold feet. Be natural if you can ; but if nature does fail at times—then let art step in.

Nerves in order, and the heart.

It only remains now for me to point out the effect of “nerves in order” upon the

maintenance of health as far as the heart and circulation is concerned. The common idea fostered in modern physiology, that the circulation is a mechanical system of hot-water pipes, with the heart as a force-pump, is as far from the truth on the one hand as the older idea that this organ is really the seat of the affections is on the other.

The fact is that while all parts are affected by the condition of the nervous system, the heart is specially so; and far from the circulation being simply an affair of mechanics or dynamics, it is profoundly modified by mental influences.

The "nerves in order," then, with reference to the circulation, means a complete unconsciousness of the entire operations of the system; an absence of all solicitude as to any details of its operations.

When the nerves are in disorder, the circulation becomes as irregular as the beat of the heart; and the commonest symptom complained of is palpitation, next come cold feet or hot head, or both.

How disorders of the circulation affect the nerves is another question, and may be fitly treated when we reach the nervous system.

On the whole, then, the heart and circulation are best left to take care of themselves, with the few simple adjustments we have spoken of.

No heart strain in youth.

During the time of growth it may be well to point out that care should be taken not to strain the immature heart by over-exertion, and it is a wise precaution before embarking on any violent athletics or gymnastic exercises that the heart be examined by some competent man.

The only other time when the heart is likely to be ignorantly strained is after some weakening disease, such as typhoid. For two or three months after any such disease special care should be taken not to tax the heart in any way. A simple precaution *at such a time* is not to exercise when the beat of the heart is over 100 a minute.

We think we may venture just to give these one or two simple hints, without making any reader over-anxious about themselves; for my whole object is to show how and when to be wisely ignorant and intelligently careless.

The Lungs in Order

CHAPTER IV

THE LUNGS IN ORDER

IN this chapter I will include a few words ^{The lungs and skin.} about the skin as being a supplementary part of the respiratory apparatus, breathing on an average about one-thirtieth part of what is respired by the lungs.

Our subject, thus extended falls naturally, as did the last, under three heads. What we breathe, or the air, how we breathe, or respiration, and the skin.

Of course, taking the first division, with ^{The air we breathe.} "the air" for our subject, a large volume might soon be filled with figures and statistics, and wearisome descriptions of all the efforts men have made by ventilation to supply air in a comparatively pure state to the civilised portion of the human race, for there need be no difficulty where there is no civilisation. But I will spare the patient

Composi-
tion of the
air.

reader as much as possible. I must, however, give one or two elementary facts, such as that the air is a mixture of two gases, consisting of about one-fifth of oxygen, a fiery gas on which all life depends, diluted or "let down" to a suitable strength for comfortable respiration by the addition of four-fifths of nitrogen, a gas which plays in the air the purely negative part that water does in grog. Besides these two gases, there are always, even in the purest air, traces of various impurities, as, for example, carbonic acid gas from various sources, germs of all sorts, both friends and foes, and all descriptions of dust, to say nothing of a variable amount of watery vapour. So that all air that we commonly meet with has as many ingredients as soup, and is never the innocent mixture our artless science primers declare it to be.

Pure air in
the Alps.

Of course, if you will go to the top of the Bel Alp, or anywhere above 10,000 feet, and let no one come with you, you can breathe, if you face the wind, air approaching purity, for it is probably quite free from germs, or dust at any rate.

With such exceptions the air out of doors is in general composition much the same

everywhere ; the amount of oxygen in Seven Dials being by analysis the same as on Ben Nevis or in the Bay of Biscay, all of which simply shows how fallacious are facts, for we well know that really a great difference exists, perhaps not in the quantity, but in the quality of the oxygen. Still, it is wonderful how pure the air is in the cities, the reason being its incessant movement. Probably a few minutes previously it was fresh country air, and we only dub it town air because we find it in a town.

Pure air in cities.

Let me here state two facts about the air not generally known. The first is that the worst town air that can be found out of doors is better and purer than is the air indoors in the finest situation in the country. In other words, the difference between town and country air is as nothing compared with the difference between the air indoors and out of doors. Proof, if proof be needed, is found in the fact that you may see rosy healthy-looking children playing in the streets and squares of the East End, where lives are mainly spent out of doors, while in the Scotch Highlands you find those who lead indoor lives, such as seamstresses, are pale and unhealthy.

Indoor air the worst.

Never pure. No indoor air, even with all the resources of ventilation, can be as pure and wholesome as the air out of doors ; and if this be true of the best houses, what shall we say of crowded theatres or churches, or the squalid rooms of the poor ?

If the lungs, if the body is to be kept in order, the air breathed must be, as far as possible, outdoor air. I am quite sure this is not understood as it should be, that it is better and healthier to live out of doors in town than indoors in the country.

The reason why.

And now for the reason. It is those whose life requires pure air to sustain it that themselves defile it, and where its purity is of the greatest importance on account of the swarm of living beings, there it is ever most defiled by this self-same life. Now, out of doors this is of comparatively small moment, owing to the free circulation of air ; but in all confined spaces, even in courts and blind alleys, but far the most in closed rooms, does it become a most serious matter. The air in rooms, in fact, contains at least twice as much carbonic acid gas as out of doors, and probably very much more, besides being laden with other exhalations, and that most

pernicious form of dust, consisting of animal *débris*. From the mere point of cleanliness, indeed, it would be less nauseous to take a draught of unfiltered Thames water near Blackwall than to breathe the air of a crowded London drawing-room. People think they get catarrhs and influenzas from going out into the pure air, whereas the disease was most probably caught previously in the vitiated and germ-laden air in the house.

Fortunately, if we are "in order" ourselves we can detect very soon, by a marked oppressive feeling on the chest, when a room is unhealthily "close"—*i.e.*, when the air is unfit to breathe. This is especially noticeable on entering such a room from the fresh air, but soon disappears as we get used to the poison. A simple chemical test is to put one tablespoonful of clear lime-water into a half-pint bottle that has previously been brought into the room full of water, and emptied there so as to be filled with the actual air to be tested. If the bottle be then corked and the tablespoonful of lime-water shaken up and down, it will get cloudy with chalk if the air be unfit to breathe, whereas it will remain clear if it is fairly pure.

How to
detect im-
pure air

Dangers of
carbonic
oxide.

Of course there are special impurities that may get into the air in houses, which are still more dangerous, and these are sewer-gas (often inodorous), arsenic, and a deadly vapour that exists where gas escapes called carbonic oxide. This carbonic oxide is specially given off by "geysers," and none of these are safe in a bathroom unless a large pipe be provided to carry off the poisonous fumes.

"Close" air is, as we have said, easily distinguishable at first from warm, fresh air; but it must be remembered that those who accustom themselves to it, and do not heed its warnings, soon cease to be aware of it, and become unable to detect it. This is a fertile cause of "nerves," and, indeed, of the body generally being "in disorder," and good fresh air is one of the five essentials if nerves are to be "in order."

Value of
the open
window.

No room can be healthy to live in where there is not provision for the inlet of fresh air by the window (top or bottom), and for the exit of the foul air by the chimney shaft with or without a fire.

A room with sealed windows or a closed flue is not fit to live in by day or night. And

this brings me to my second point—night air.

Those who have followed me thus far must accept the fact that indoor air is, under all circumstances, more injurious than outdoor air. Now, at night all the air, whether in or out of doors, is "night air." Strangely enough, we have an idea that only the air out of doors is "night air," and that that alone is injurious. A curious inversion this of the truth! The air in the bedroom is as much "night air," as the air out of doors; but at night, still more than in the day, it is much more impure. As we must, therefore, breathe night air at night, it is as well to have the supply as pure as possible, and this can only be obtained by having the windows open (not, of course, so as to cause a direct draught). There is another very interesting point about this, and that is we store up in the body twice as much oxygen at night as we do in the day, and it is therefore more essential that the air we breathe should be purer at night than in the day. Hence the folly is obvious of those who go to the seaside for health, and though out of doors in the daytime, sleep crammed together in tiny

Night
air not
injurious,

but should
be pure.

Seaside
trips.

bedrooms at night with closed windows, breathing the most vitiated air. No wonder they return so often with both nerves and body out of order.

Of late the properties of various dusts have been investigated, and it is found that while some are absolutely wholesome, such as dusts from some sorts of wood and flour, others are harmless, such as coal dust, while the rest are deadly, including mineral dusts other than coal, metallic dusts, and animal *débris* dusts.

Value of
rain.

The best and purest air, then, is out of doors after rain, which washes the air thoroughly and lays all the dust. The worst and foulest air is indoors in a close room after a dance on a dirty carpet.

One point only remains to be noted, and that is the temperature of the air. Sudden changes of more than ten degrees may produce chills, but perhaps when we speak of the skin we shall touch more on this.

Electricity
in the air.

The electricity is, of course, far greater in dry than in damp air, and there is no doubt that our happiness and health depend largely on the condition of the air and electricity: hence one cause of the exhilara-

tion felt in fine, dry weather, and the depressing effects of continued damp.

The second point before us is how we breathe, or respiration. Here we must not be too technical, but may point out one or two facts of interest. Respiration may be divided into inspiration and expiration. The first is a muscular effort that pulls out the elastic lungs in all directions, and the second is the natural elastic recoil that ensues when the muscular effort ceases. In youth, when the elastic tissue is fresh and strong, the expiration is naturally sharp and short; but in older age or disease, as it gets stretched and worn, the recoil is more gradual, and expiration becomes slow and gentle.

When the breathing apparatus is in perfect order, a matter which is receiving very much more attention now than formerly, the great stretching of the lungs is downwards, by the descent of the muscular floor or diaphragm (not "*diagram*," as so frequently called by ladies). This action naturally bulges or expands the waist. Where the waist is rigidly confined (whether by dress bands or corsets is immaterial) this action cannot take place,

On
respiration.

Diaphrag-
matic
breathing.

and the lungs are at once deprived of their best means of expansion. Many ladies, now happily aware of this, allow nothing rigid round the waist, and cultivate this proper mode of respiration universally practised by men. Curiously enough, for many years it was thought to be a masculine type, specially designed by a merciful Creator to supply increased respiration for those unhappy beings on whom the harder lot of life falls.

Not a
masculine
type.

This is now known to be no more than a graceful fallacy, which concealed the real reason of the difference—a difference due rather to human folly than Divine wisdom. Women now everywhere are succeeding in diaphragmatic breathing; a mode that all great singers find essential to sustained notes. If any of my readers wish to cultivate it, they have but to remove all rigid restraints, lie on their backs on a hard couch, and place some thick but not too weighty volume on the stomach, and then see how high they can raise this at each **INSPIRATION**, and how low it can be made to sink at each **EXPIRATION**. This should be done slowly and deliberately at the normal rhythm of 17 breaths a minute, which is the human rate of respiration, as compared

How to
breathe
from the
diaphragm.

with once a minute for a hippopotamus, 10 times a minute for a horse, and 200 for a worm.

When this proper breathing is interfered with by corsets and *id genus omne*, the unhappy sufferer tries to make up for it by over-action of the ribs, thus to some extent straining the upper half of the lungs (which are alone free to expand in a well-laced woman), leaving the lower half stagnant.

The serious nature of this inequality of expansion, due to such an insignificant agent as a stay-lace, is at once seen when we remember that three out of the five most fatal diseases in England are consumption, bronchitis, and pneumonia. Now the first generally begins at the top of the lungs and pneumonia at the bottom, and there can be little doubt that this artificial respiration is a contributing or predisposing cause to both.

Danger of
a rigid
waist.

Whatever tricks, therefore, the healthy may play with their respiration with comparative impunity, there is no doubt that no lungs can be kept "in order" when there is compression in those who have any delicacy of this organ. But the healthy suffer in other ways as well, for the balance of circulation is

also disturbed, and red noses, shortness of breath, dyspepsia, and loss of natural grace are heavy prices to pay, even when no worse evils ensue, for the better set of a dress or greater slimness.

Corsets
need not
injure.

This is no general "cursing of corsets," but is a moderate appeal to common sense where it exists. Corsets have many uses which can hardly be catalogued here, and may certainly be worn without injury.

The next point about breathing is that with our largely sedentary lives our lungs seldom get fully expanded. It is therefore most advisable, with a view of strengthening the lungs generally, and as a good preventative against weakness of the chest, to practise deep inspiration.

Practise
deep
inspiratiop.

Few mothers realise what an admirable way this is of strengthening the lungs. In the new-born child many means are resorted to for encouraging deep respiration, but it is little thought of afterwards.

The best way to open out all the lobes of the lungs, and get every part filled with fresh air, is after the bath, when the skin has been well dried, to stand erect, the hands on the hips, and slowly take the deepest possible

inspiration, rising a little on the toes and seeing that the waist is expanded by the breath. Then it should be held while ten is slowly counted, and then slowly breathed out to the last gasp. This should be done with pauses for six or twelve times as a regular routine each day.

This deep breathing not only strengthens the lungs for the day, but is a good hypnotic. In bed at night a number of very deep inspirations taken quickly, one after the other, predisposes to sleep.

Of course, speaking generally, an erect carriage and good drill greatly promotes the well-being of the lungs, and exercise is essential to keep in order every organ of the body.

The act of breathing is very curious in one respect. It is regularly maintained by the lower nerve centres under the control of the unconscious mind. But there is a subordinate centre of control connected with the conscious mind centres, and by this the breath can be altered in every way at will. Indeed it would seem at first sight as if the conscious will had complete control over our breathing, but it is not so. Let any one *will*

Inspiration
as hypnotic.

The uncon-
scious mind
and
respiration.

to hold the breath for three minutes by force of determination, and however strong the will may be he finds that the governing centre under the control of the unconscious mind forces him to draw a breath. The fact is, in this as in many other ways, the power easily to destroy life is taken out of our hands for very wise reasons.

Value of a cough.

When coughs occur and other lung symptoms, it must ever be remembered they are generally Nature's way of restoring the lungs to order, and no cough at any rate should ever be checked until it has done its work, which is that of keeping the lungs clear of mucus and other obstructions.

The last counsel I would give is to keep the mouth shut. This is not with a view of checking loquacity, but for sanitary reasons which I will explain.

Mouth and nose compared.

The air is, as we know, our food. It is also the special food of our life, for through it, rather than by our meats and drink, we obtain the mainstay of life—oxygen. It is to us what water is to the fish, not only the medium in which we live, but the source of our life ; hence the deep significance to us of all connected with the apparatus by means of

which the actual life within is placed in connection with the potential life-gas without. Two passages are provided by which air can enter and leave our lungs, and two only; but they are very different in construction. The one by the mouth is direct, capacious, and passes between the teeth, over the tongue, and between the tonsils; the other, by the nose, is tortuous, subdivided by a partition, and lined profusely with stiff hairs through which all air must filter, kept at a high even temperature by copious blood-vessels and secreting a special antiseptic mucus.

The air itself, as we have already seen, is seldom or never in a pure state, and is laden more or less with germs and unclean dust of every description, besides being often very cold and raw. This air, inspired through the mouth, has two evils. In the first place, by this direct, unguarded passage all the air and its contents are passed straight down into the delicate lungs without ever being warmed; and, secondly, its constant passage through the mouth dries and fouls the tongue and decays the teeth. If, on the other hand, it is inhaled through the nostrils, observe the difference. The air is warmed to the tem-

Great value
of nasal
inspiration.

perature of the blood ere ever it reaches the lungs, and if too dry it is moistened. The germs, however many and deadly, are so perfectly arrested in the passages that air, after it has passed through the nose, as has been proved by analysis, is practically germ free, and the dust, however foul, is all filtered off in the nose.

Consider, then, the results of shutting the mouth from a sanitary point of view.

Air becomes
pure and
warm.

The mouth ceases to be a common passage for germs and dirt seventeen times a minute. The air that reaches the lungs is warm, moist, and pure, however dirty or cold or dry it may be around.

It was Mr. Catlin, that wrote so much on North American Indians, who in his work, "Shut your Mouth and Save your Life," first called our attention to the fact that no savage tribes or animals breathe through the mouth, and that this habit is only the outcome of civilisation.

Shut your
mouth and
save your
life.

I was lately driving, with three Arab horses abreast, in Palestine, and the two outside ones were very wild and vicious, and took great delight in trying to injure and annoy the shaft horse in the middle.

Whenever there was a halt these two brutes used to press their heads against the nostrils of the centre horse so that he could not breathe, and only when lashed hard did they desist and scream with rage, so well did they know that the horse could not breathe through his mouth even if he wished. As a matter of fact a horse would die of suffocation first.

With these facts before us it will be seen what a potent aid to "lungs in order" a shut mouth is.

I would strongly advise all my readers to cultivate it in all ordinary respiration. A little trouble is found at first with those who have always breathed through the mouth, but this soon is overcome, and the slight feeling of suffocation then disappears if you persevere; and the result obtained is well worth it. Not only are the lungs supplied with pure air, and thus saved from needless infection and damage, but the mouth is kept clean, the face has a less vacant look, and at night, to crown all, snoring becomes impossible. It is the open mouth makes the snorer.

Let us sum up the three great requisites in breathing to maintain the lungs "in order."

Three
requisites
for lungs
"in order."

They are diaphragmatic respiration, the practice of deep breathing, and inspiration with the mouth closed. In expiration it is quite indifferent whether the mouth be open or shut.

We now turn to the consideration of the skin "in order."

The skin
"in order."

In the book of Job we find the skin regarded as identical with the life—"Skin for skin; yea, all that a man hath will he give for his life," and in a very deep sense this is true; for just as the wall is the defence of a fortified town, and when it is passed the town is taken, so is the skin the vital fortification of the body, to which it is such a powerful defence that, when it is gone to any great extent, the life goes too. Hence it is that burns and scalds are more serious in proportion to their extent of surface than to their depth; it being less serious to lose a certain amount of flesh and even of bone than a large amount of skin. In injuries, too, especially about the hand and fingers, when they are maimed or crushed, the great point that decides whether it is better to remove or to leave the injured parts, is the amount of skin by which they remain attached, for on

Value of
the skin.

this the life depends. Skin, when once removed, is uncertain in its growth. As a rule, it rapidly covers again the bare and unprotected surface; at other times, it is almost impossible to make it do so, and as a last resource modern surgery now plants in the breach little dots of healthy skin, cut from some other part or from some obliging friend, and the growth eventually repairs the protecting wall. But the skin has many more uses besides this.

It is the beginning and end of all physical beauty, which literally is but skin deep. Beauty is skin deep. Whatever strength may be in muscle, there is no beauty in its bare appearance; only when clothed with skin does it tempt the sculptor's chisel. Whatever loveliness exists in the damask cheek, the ivory forehead, the well-rounded arm, the graceful figure, all these indisputably vanish with the skin. Nothing makes this truth more painfully evident than the contemplation of a skinned rabbit.

Again, the skin is an organ of expiration, Skin respiration and, indeed, of respiration. It expires a certain amount of carbonic acid gas, like the lungs; and it also absorbs a certain amount of oxygen, where it is very thin, as in the

cheeks, for it is this gas which makes the blood there such a bright red.

Again, it is an organ of transpiration. No less than one pint of water on an average passes out daily by the skin, while only half a pint is expired by the lungs. Water is always evaporating from the skin. It is only when it is produced in excess under exertion that it is seen, and we call it perspiration.

Skin
secretion.

Then again the skin is a secreting organ. It produces a peculiar oil which is also a protective, as well as a natural preservative, for the hair. Besides other minor uses, it is sufficient to say that it also serves the important functions of the organ of touch, and of the regulation of heat.

All feeling of touch is in the skin, but in very different degrees in the various parts of the body. For instance, if the skin is touched in the back with the two legs of a compass $2\frac{1}{4}$ inches apart at the same time, only one touch is felt; whereas in the tongue or fingers, however little the legs are separated, two touches are felt. If a small portion of the skin be scraped off, and the raw surface be touched, a feeling of pain is felt, but the sense of touch is lost.

The tips of the fingers and the tongue have the finest sense of touch, which, however, may be lost if the object touching them be very cold or very hot. These delicate faculties of touch are the sentries of the body that give immediate warning of the character of the substance with which the body is brought into contact. Animals are endowed with a far more subtle sense of touch than human beings are, and especially those which wander about at night. Cats, tigers, and others of the feline race, are very sensitive in the stiff hairs protruding from the face (or whiskers), by which they discern the character of any near object before it actually touches the skin or fur at all.

Sense of touch.

The skin is also the best regulator of the body, the compensating balance of the human chronometer, or the governor balls of the human steam engine. When this power is lost the person dies. In one or two cases where people have been varnished all over, it is probable that death was due to this cause, rather than to any poisons retained in the body.

We have just named the hair and the nails. These, too, are very beautifully made.

Growth of hair.

Each hair grows like a hyacinth or a tulip, from a bulb deeply planted in the true skin, from which it continually keeps growing, and at the same time dying away at the end. The surface of the hair is, as it were, thatched with cells overlaying each other like tiles, while the centre is not hollow, but filled with a sort of pith. Straight hairs are round, while wavy and curly hair is oval. Hairs do not grow straight out of the skin, but at an angle, so that they can be made to lie down flat. In the head they generally all radiate from one centre, and number about 100,000. It is calculated that four sound hairs will support a pound weight. The whole body is covered with hair varying, however, greatly in length and quality. The hair of animals serves, of course, all the purposes of clothing. In man, it is principally an ornament.

The nails. The nails are beautifully modified natural outgrowths of the horny substance of the skin, and are of great use in giving firmness to the finger-tips and in grasping small objects.

The pores are another structure connected with the skin, and one concerning which the vaguest ideas are current. Some imagine

them to be little holes in which the hairs are inserted; others, again, believe they are perforations through the skin opening into the body, through which the perspiration comes, the skin being thus a sort of sieve. Both these ideas are erroneous—indeed, the pore, as popularly understood, does not exist The pores. in reality. There are no holes in any part of the skin leading inside the body at all. Even the mouth and other passages only open into the lining skin or mucous membrane; and food in the throat is no more inside the body than a person in the Thames Tunnel is in the River Thames. The real “pore” is a tiny orifice guarded by lips, which is the mouth and only opening of a small sweat gland which has no communication internally at all, but is just coiled up at the other end like a watch spring. The pores never open by the side of hairs, but always between them. They are really like little lungs, and breathe in oxygen, and keep the skin red, and breathe out a little carbonic acid gas, and altogether about a pint of water a day. They are very numerous, and exist all over the body, though they are most numerous where most perspiration occurs, especially on the

palms of the hands and the soles of the feet. It is of the utmost importance for health that the mouths of these glands or pores should be kept open and free from all obstruction.

Sebaceous
glands.

We have alluded to a natural grease that lubricates the skin. This comes from curious little glands that specially manufacture it, two of which are found beside each hair, opening on either side of it somewhat below the surface of the skin.

It is from these that the oily part of perspiration comes, the watery portion being the outflow from the pores. We can see the water and oil that comes out of the skin, and we can prove that carbonic acid gas is given off by a very simple experiment. If a hand is confined in a vessel for two hours, it will render the air of that vessel so impure by the carbonic acid gas it gives off, that a candle plunged into the vessel will go out.

The network of blood-vessels beneath the skin, of which we have already spoken, is so close and so incredibly fine, that it is almost impossible to pierce the skin anywhere with the point of the finest needle without wounding one of these tiny vessels and causing bleeding.

With regard to absorption, it is doubtful ^{Absorption} if any watery solutions penetrate the outer skin. Any greasy substances, however, well rubbed in, reach the tubes of the oil and sweat glands, and are carried into the neighbouring little blood-vessels, and thence over the body. The process is, however, very slow where the skin is thick and hard, and most rapid where it is very fine and soft, as under the arm-pits. Though, however, the skin does not absorb readily, it allows all sorts of substances to pass through it by the pores, which, although closed, can take up anything in the surrounding tissues.

Considered as a whole there are many ^{Varieties of skin.} different sorts of skins, differing widely in their quality. There is a very thin, fine, transparent skin, which, like Dresden china, is very fragile and very beautiful. A far more serviceable skin, especially if it be soft and elastic, is a thicker one, rendering the possessor somewhat sallow. In many diseases the skin gets hard and brittle, besides tending to break out into various eruptions. In all skin diseases a doctor should at once be consulted, for it is important to find out as early as possible whether the eruption is

due to some local trouble in the skin itself or to some constitutional poison in the blood. Roughly speaking, a general eruption springs from blood-poisoning, a purely local one from causes in the skin. It may be well to consider a few of these further on; but we will first discuss the general care of the skin.

"The use of the skin."

"The use of the skin," said a young lady the other day, in answer to an examination question, "is to be kept spotlessly clean."

There are at least three impurities that need constant removal. First of all, there is the dried-up scarf skin constantly being produced on the surface of the body; secondly, there is the continual secretion of oil and water all over the surface to be got rid of; and, lastly, all the dirt that falls to our share in this dirty world.

The cold bath.

The cold bath is a fine tonic for all who can stand it—that is, who feel a warm healthy glow on coming out. There should be no lingering in it, no cooling down; just in and out and a good rub after, and the skin is not only to a slight extent cleansed, but the whole system is braced up for the day. Amongst cold baths we may consider sea-bathing. When it is not too cold, an

early bathe and swim is most healthful; but for weak people, the best time to bathe is midway between breakfast and lunch, ^{Sea-} _{bathing.} about eleven, rather than before breakfast. One or two warnings may, however, be given. Sea air and sea water are both bad for delicate skins and complexions, and particularly for any skin diseases. Sea-bathing is unsuited for people with feeble circulation, who cannot obtain a reaction afterwards. In sea-bathing great cruelty is often shown towards children; to hear the appalling screams that issue from some bathing-vans, one would think murder was being committed. The fright that children thus get deprives the bath of all benefit, and often lays the foundation for subsequent illness.

Warm baths are of course principally for ^{The} _{warm bath.} cleansing. They should range about 100°, and may be used for twenty minutes at a time. If taken away from home, the precaution of a cold shower after should always be taken, or, if not available, at any rate a cold sponge. A warm bath is soothing and helpful for weak constitutions or when one is tired, and is best at night; a cold bath

is stimulating and invigorating for strong constitutions or when one is fresh, and is best taken in the morning. There are many persons by whom a tepid bath will be found to be the best. Children should be accustomed to a morning bath or sponge, and a weekly hot bath at night, with the greatest regularity, as the habit, once formed, is invaluable through life. It is a great mistake to think that, as children grow up, the daily bath can be dispensed with to advantage.

Tepid bath. An excellent plan, in winter, for those who require the chill off the water, is to wrap up a bottle of hot water in a blanket overnight, and the water will be found sufficiently warm in the morning for a sponge. A daily soaping all over is not required, and with strong soap is not good for the skin. There is a great advantage in putting a handful of salt in the water used for cold sponging after a warm bath, and it is said, on good authority, to be an excellent liver stimulant.

Care of the face.

The skin requires, however, often something more than merely keeping clean. If the skin is at all delicate the face is apt to get hard and dry, wrinkled, spotted, or otherwise disfigured, and often from causes

entirely preventable ; and we are convinced a careful attention to the following instructions may greatly increase the personal beauty of many of our readers. The best lotion or wash for a tender skin, and especially for the face, is *pure rain-water*,^{Value of soft water} or failing this, pure soft water, or failing this, boiled water, distilled water, or artificial soft water, which last can be made in any town where only hard water is laid on by putting at night in the ewer so much of Maignen's "Anti-Calcaire" as will lie on a halfpenny, and in the morning the water will be found beautifully soft and fit for the most delicate skin. For women no soap should be used for the face but pure curd soap, and for delicate skins prepared oat-meal, and once a week very hot water and a little curd soap. The worst thing for^{and good soap.} the face is hard water, and tar, carbolic, or strong yellow soap. Many people, especially boys, positively scrub the outer skin, which is very thin on the face, completely off with hard towels and flannels. Such rubbing may do no harm for once or twice but is not to be recommended for a constant practice. Another way of

making the skin of the face coarse and pimply is to use face powder. In many faces the skin is a little greasy and damp from a too free action of the glands, and powder is used to alter this glazed appearance. These glands, however, though choked with the grains of powder, refuse to "dry up," and put forth more vigorous efforts still, and a crop of pimples is frequently the result. In such cases sponging the face with lemon juice and glycerine, or even a little vinegar and water, is much more efficacious. A teaspoonful of sal volatile in a quart of water is also a very good lotion for the face in such cases.

How to
remove
spots.

Sometimes little black specks on the face mark where the tiny orifices of the sweat glands are choked with dirt; pressure on them with the nail or a watchkey will force the dirt out without water and friction.

I may quote in conclusion a remark I heard the other day—that the "body should be all face"; that is to say the face by exposure and never being covered is unsusceptible to taking cold, and there can be no doubt that while the body must be covered, all

parts that are sometimes bare, like the neck, should be always bare, and the practice of sometimes fur wraps and sometimes bare skin is the way to produce colds and sore throats.

The Digestion in Order

CHAPTER V

THE DIGESTION IN ORDER

HOW many of my readers heave a heavy sigh when they arrive at this chapter ! Hope for dyspeptics

“Alas!” say some, “it can never be that my digestion should be in order. It is a vain hope that I long indulged, but which has been eclipsed for years!”

Do not despair, however ; for though this is no manual on the cure of disease, some hint here dropped how to prevent dyspepsia may point out to you the cause of your trouble, and thus indicate the line of cure.

There can be no doubt as to the importance of this chapter when we learn that in this country alone over two thousand lives a week are lost through bad or improper food. Indeed, this is too low an estimate when we remember that food includes drink, Importance of this subject.

and hence alcohol. It is sufficient, however, for us here to know that the misuse of food (including drink) is by far the chief cause of disease, death, and misery in the English race, and that "proper food" is the first and foremost of the five laws of health.

Choice
in food.

Food is necessary, as we all know, to repair the waste of the body, and in its widest sense includes not only the solid and the liquid, but the gas we inspire from the air under the name of oxygen. While, however, we have ultimately no control over the amount of oxygen we inspire, nor any choice of gases, we can and do adulterate oxygen as much as lies in our power to our own cost. But our powers for evil over which we breathe are small and insignificant when compared with the wide powers and complete control that we have over the food we eat. One would think that the human race when it became civilised and educated would long ago have settled the question of food and drink, and have discovered the proper way of repairing the system.

Present
ignorance
as to food.

How to eat, when to eat, what to eat or drink should long ago have been questions

so settled by experience and authority that the answer should be just as definite as to "what to breathe?" But no, it is, alas! not so; and hence it is necessary to write this chapter, and once more endeavour to guide those who wish to keep "in order" in the right path so far as digestion is concerned.

We require a good deal of food, for, as we have shown, we perish at a faster rate when we are alive than when dead, wasting to the extent of about one twenty-fourth part daily. We thus lose over a ton a year, and the important question is how best this loss is to be made good.

This rate, however, is not even throughout life, and for the first twenty-five years we have to consider not only how to replace the daily loss, but how and of what material to build up the body.

As regards quantity of food, the best and simplest rule seems to be: From 1 to 25, as much food as is wished, provided it be wholesome and given at stated intervals; 25 to 55, as much food as will keep the body at the same weight for these thirty years; 55 to 75, a gradually decreasing amount of simpler food, so that weight is slowly lost, or at any

One ton
of food a
year.

Rules as to
quantity.

rate not gained. In the first third of life we seldom eat too much ; in the last third we very often do.

Painful
interest of
this subject

The difficulty in writing on digestion is to avoid being too explicit, and yet to give directions that are of real value. The subject has still such a painful interest for the race that they snatch greedily at any diets in quantities or detailed directions that may be given even in a work like this, though it must be obvious that such can only be intended as averages. Now the average man or woman is hard to find, and only exists in small numbers. The mass of people are divergencies from the average type, and form special classes to whom no average figures really apply ; and there can be no doubt that the use of average quantities and details by these leads to more harm than good. I shall try therefore to be vague as to details and definite as to principles, feeling assured that though the book may thus prove disappointing to some, it will be more useful to most.

Average
people hard
to find.

Uncon-
scious work
in health.

When the digestive system is "in order" its great characteristic, like that of all other body systems, is that it performs all its work

unconsciously. So perfect is its mechanism that we do not know or feel we have either stomach or liver, although both may be hard at work, and the former in violent motion for hours together. But once disorder begins, this delightful unconscious calm vanishes, and we are only too painfully aware that "Little Mary" is in trouble.

In nearly every case this is our own fault, and is brought on through gluttony for food or drink, producing excess, or carelessness in some other way. Gluttony is a great vice, but being personal and harming no one but ourselves, it escapes censure, save when leading to excess in alcohol.

An old German proverb says, "As a man eateth so is he." It is true that our food influences our character, but it is equally true that our character affects our eating, and that the wise and self-governed man is far less likely to suffer from dyspepsia than the self-indulgent one.

Food alters character.

Personal habits leading in this direction to ill-health are easily formed, and should be carefully watched. Small habits of excess are so readily acquired, and are then so difficult to break.

Moderation
in all foods.

I do not wish to lay down many rules, but say emphatically that "moderation in all foods" is the motto of health. And this can be cultivated as a habit and made so strong that there is no temptation to excess, either in eating or drinking.

This habit formed in youth is a powerful safeguard against many ills, and saves much physical unhappiness.

All things may be lawful, but all are certainly not expedient; for while there may be no sin in eating all that is set before you, there is often great suffering if you do.

Sir H.
Holland's
three rules.

Sir Henry Holland's three rules for eating were:—

1. Never to fill the stomach to repletion.
2. To eat slowly.
3. To allow no mind strain at meals.

These may not sum up all that is needful to keep the digestion "in order," but they are wise and good as far as they go.

How to eat,
when to eat,
what to eat.

All three rules really resolve themselves into instructions "*How to eat.*" But there are, besides, the questions to consider, "*When to eat?*" and "*What to eat?*" which must also be looked at.

Let us consider the question of digestion

under these three heads, and take first, "*How to eat,*" for there is undoubtedly a right and a wrong way of eating ; and when the reader understands that the wrong way leads very rapidly to dyspepsia and nerves in disorder he will understand the importance of the question.

Take Sir H. Holland's first rule, "Never to fill the stomach to repletion," or in another form—perhaps more refined—"Always rise with an appetite." The reason of this is, that when we have really eaten enough the hunger is often not wholly appeased *at the time*, because the food has not yet had time to digest. Therefore, even if we rise "with an appetite" it soon disappears as the food becomes assimilated.

Over-eating of animal food is more serious than in other directions, for in this case, sooner or later, gout is almost sure to supervene.

What, then, is the right amount for me to eat, and how am I to know it? For it must be confessed that in our present state of civilisation mere "appetite" is a most unsafe and capricious guide.

Personally, I think the best and simplest rough guide is a weighing machine. Let me

Rise with
an appetite.

Guide as to
quantity.

first get about my right weight for my age and height, and then let me eat that amount of food which, if growing, enables me to progress in a normal manner, or which, if grown, will keep me at the same weight.

The peace this plan gives to one who is surrounded with over-anxious friends bent on stuffing him must be tried to be appreciated.

Many who are really over-eating and increasing in weight, when they have no business to, are told by their friends that they do not eat enough.

No safe
guide but
weighing
machine.

The fact is, the amount required by any person for repair must depend on the rapidity of the combustion or loss, and this varies in rate not only with every person, but in the same person with the varying amount of force he spends.

I know one brain-worker whose mind is always seething with new thoughts, and who is ever writing the most amazing long, "brainy" letters. This person consumes an appalling amount of food, and yet gains no weight; while another brain-worker, about the same age, but quiet and methodical, appears to eat very little, and yet never loses weight.

The safe and sure plan, then, is to weigh oneself not less than once a month, and if there be any doubt once a week or fortnight, and the amount eaten roughly regulated accordingly.

The next rule is to eat slowly. Of late ^{Eat slowly.} this has found such warm advocates that "munching clubs" have been formed in many places for the excessive slow eating and continuous chewing of food. You are to chew each morsel that enters the mouth continuously until it is absolutely disintegrated and becomes like pap, and, in fact, disappears from the mouth. You are to allow ample time for this at meals, which after all will not have to be prolonged to perhaps double their present length, as the amount required to be eaten under this system is said to be so much less, every particle being absorbed and used and none wasted. It is claimed, and with some show of reason, by those who have the patience to adopt it, that this system is a cure for all slight dyspepsias, enables many things to be eaten that would otherwise disagree, and requires a much smaller amount of food to nourish the body or maintain the weight. ^{Munching clubs.}

Of course it can be pursued *ad nauseam* until the food is so chewed and chewed that it cannot be swallowed at all. But for the bulk who have neither the patience nor the time to adopt this plan there is a simpler way of just eating slowly and deliberately, and never against time or in great haste. This all can do, and if they cannot they should eat the lightest food only when in a hurry.

No mind
strain at
meals.

The third point is most important—"No mind strain at meals." The same simple meal that will perfectly agree with a man in ordinary circumstances may cause violent dyspepsia if eaten under severe mind strain or shock.

Even if done once the bad effects are felt, and if continued chronic dyspepsia is the sure result. I must impress this point, that to keep digestion in order heavy meals must never be eaten when the mind is agitated or strained. At such times the simple and wise course is to live on light food until the mind is relieved. The neglect of this simple precaution often begins the fatal reaction that culminates in a nerve attack. The attack of dyspepsia reacts on the mind, which becomes

more nervous and strained ; this weakens the stomach still more, and this goes on till the whole system is impoverished and nervous debility ensues ; and then indeed it is seen too late how very much better and easier prevention is than cure.

The connection of brain and stomach, of thought and digestion, is very close. Nervous energy and a good blood supply are as necessary for the one as for the other, and the two cannot be fully working at the same time. It is therefore always advisable that a mealtime should be a season of relaxation and of cheerfulness.

Close connection of brain and stomach.

If this advice is needed for those in health it is still more important for dyspeptics. A man who is liable to indigestion, and who eats a full meal when in a state of mental tension, may very likely bring on a sharp attack of gout by so doing. These three rules of Sir H. Holland on *how* to eat are therefore deserving of all attention.

The next point to consider is *when* to eat. As to this, we may certainly say, "At fixed times." Food eaten at irregular times is much more apt to disagree than

When to eat.

if taken at fixed hours. This is truest in early and late life, but holds good all through.

Value of
fixed hours.

A baby from birth may suffer from capricious feeding, and without fixed hours soon becomes a burden to itself and to others; whereas if fed every two hours in the day and every four hours at night *by the clock* it would be in health and perfectly easy to manage. It is astonishing too, how soon a child becomes accustomed to fixed habits, and what an untold blessing these are; and this refers not only to eating, but to all habits necessary for the health of the individual.

Perhaps I may be allowed to point out here the great misery that has resulted to, and is still experienced by, thousands wholly unnecessarily, whose digestive systems in some part of their course are "in disorder" solely from a culpable neglect on the part of parents in forming a daily habit in their children, and thus render constant medicine wholly unnecessary.

The advantage of regular meals is that the digestive organs themselves learn to expect these meals and get ready for them if they are taken at fixed hours.

The interval between meals should never be less than four hours, and is better if not over six. It is most important that a fresh meal should not be taken until the first is digested. The neglect of this rule is a common cause of dyspepsia. The burning question of the number of meals in the day is by no means so easy to settle. We have been recently invaded from America by a no-breakfast agitation, which, though not so much needed here as in the States, raises a very important question. In America breakfasts have run to [such an excess as to become veritable banquets. When one sees a breakfast bill of fare from some fashionable American hotel one no longer wonders that it is the land of dyspeptics.

Intervals
between
meals.

No-break-
fast cure.

Meat in the shape of steaks and chops with potatoes strike an English hygienist as rather heavy fare to commence the day with, but then we must remember combustion is much more rapid in America than here, and perhaps this extremely stimulating fare is needed by some. But writing as we do for English readers, lighter dishes are certainly preferable.

No breakfast at all may suit some, but the

folly is to think of this or any similar device as a universal panacea.

Three
sorts of
breakfast.

Three sorts of breakfasts remain for those who take any, which may be summed up as the English breakfast, the plain breakfast, and the French breakfast, and each is admirably adapted for certain cases.

The man or woman who has to do hard physical work before lunch, and especially in the open air, does well to eat a hearty breakfast, allowing, say, an hour afterwards before the hard work commences.

The man or woman who has light physical or mental work to do, and whose forenoon is spent more within doors, does better with the plain breakfast, with perhaps an egg and some marmalade.

The person who spends the morning in her room, or does absolutely nothing before lunch, is best with a cup of tea or coffee and a small roll or toast and butter, making lunch the *déjeuner à la fourchette*.

Times of
the prin-
cipal meals.

The general consensus of hygienic wisdom lays down that the principal meal, when the man's work is over by one o'clock, is the lunch or early dinner ; while all-day workers do better with a light lunch and a more

substantial dinner. Where there is hard labour all day practically two substantial meals, or dinners, are needed. The principal meal at any rate should be eaten, if possible, when the chief work of the day is over ; and, let me repeat, must always be eaten at leisure. Quantity is the point in early dinners, variety in late dinners ; for the digestion at that hour cannot deal with such large quantities of food as earlier in the day, and variety stimulates the appetite.

Tea is best taken as now, between four and five, with light accompaniments.

One last point remains, as to *when* to take ^{Food at} food, and that is with regard to the interval ^{night.} between eight and nine p.m. and eight or nine next morning. Though this long fast may not be a common cause of dyspepsia, it is certainly a common cause of wakefulness and nerve troubles ; and many a slight nerve case have I cured by providing a meal between these hours.

If the evening meal at eight is plentiful and the night is spent in sleep, nothing is, as a rule, required till breakfast next morning ; but this turns on two "ifs," either of which may fail.

Sometimes the dinner is at six or seven, and very little may be eaten ; in this case some sort of a supper at ten or eleven is needed.

Hunger at night.

Again, the night may be wakeful and the person sick from hunger, and yet no food can be had till breakfast-time.

This should never be. Food of some sort that is palatable cold should always be accessible, so that an impromptu meal can be taken with some milk when required ; while those who always have their evening meal early and often eat little at it, should, as I have said, as a fixed custom, have a light after-supper about four hours later ; and if any part of it can be hot so much the better for digestion. There is really no necessity for walking a mile after this supper. If a brief interval be allowed before bed, it will not only give no trouble but acts as a mild hypnotic, as do all meals taken a little before bedtime.

What we should eat.

And now, having shortly looked at the "how" and the "when," we will look at "*what* we should eat"—a still more thorny question than any we have yet touched.

The first question is, "Shall we exclude

any ordinary staple food such as meat from our dietary, and if so, what?"

My answer, intended for those whose digestion is in order and who desire to keep it so, is "No. Let all ordinary food be eaten in moderation."

But there are many who exclude "butcher's meat" and eat "white" meat only; others who forswear all meat, but eat other animal food such a milk, eggs, butter, &c., and are miscalled "Vegetarians." Others again rise above these and eat vegetables only. A superior class still exist on fruits, but the highest and smallest class of all consists of those eccentric beings who are kept alive by nuts and seeds only, including, very largely, apple-pips. To such heights of faddism, or depths of imbecility, does dieting extend; and in every stage sample men and women are ready to demonstrate in their own persons that every conceivable energy and grace is produced by their particular diet, and to hand you convincing manuals that proves this.

Here, if anywhere, the cultivation of a wise indifference is of profound value. The great army of faddists require to be met with

Varieties of faddists.

A wise indifference.

something of the attitude of Mr. Balfour towards his opponents in the House. For if you argue with any of these "dietists" you are lost; they are so persuaded that each of them has "the truth" on the question, that, unless exceptionally strong-minded, they soon convince you.

All dietaries should be shunned by the healthy; their adoption is a confession of weakness; and even the weak should use diet tables as little as possible.

Folly of
general
dietaries.

When we remember how different are people's temperaments and idiosyncrasies, and that what agrees with one so often disagrees with another, we see the difficulty, if not the folly, of laying down general dietaries. Dr. King Chambers writes, "Some cross off their dietaries everything that has ever disagreed; better to add to it everything that has once agreed." This advice goes rather too far, but it is on the right side.

After infancy, therefore, when the full digestive powers are established, diets do generally more harm than good, save in special diseases.

Even if some food is found to disagree it

is better to eat less of it than to cut it off altogether.

Every effort should be made to be able to eat anything in moderation, and we should be very slow in ceasing to use any food that is wholesome in itself.

We must remember too that cooking can render the same food digestible or indigestible.

The question to ask respecting any article of diet is, "Do you like it?" and "Does it like you?" If both questions can be answered satisfactorily, there is no doubt in the matter. If only the first, try it in moderation, and well cooked, before you decide finally to give it up.

Do you like it? Does it like you?

No doubt not only gout but many smaller ills come from wrong diet, and if a person suffering from any of these is told by a responsible physician that they are caused by any article of food, he should heed him and not use it; but I am speaking of the healthy, and of the self-dieting of dyspeptics.

But what to eat embraces also what amount to eat, and I would touch on this, for it is most important.

I think, and have said for many years, that most people who can afford it eat too much.

Most eat too much.

Live by the
scales.

The rule I have already laid down of living by the scales rather than by the appetite is a golden one. Let the weight be fixed and never exceeded or lessened by half a stone. This is not only the way to keep in order, but prolongs life and avoids many diseases. Luigi Cornaro, the well-known Italian nobleman, is one of the most illustrious examples of a man of delicate health who was made ill from over-eating, restored to health and his life prolonged to nearly a hundred by abstemious habits. I will not give any details of his practices, for some were peculiar, I merely allude to the general principle. Dr. Abernethy was an ardent disciple of his, and followed him to amusing excess. He thus addressed some friends on diet:—

Luigi
Cornaro.

“You should take my blue pill now and then, fasting. Read Cornaro on temperance; he lived to nearly the age of Methuselah! Practise his rules and regimen (if you *can*); get up before sunrise and get to bed after sunset. Sluice yourselves every morning, winter and summer, with cold water. Lie on your back, as you see I do, every day after dinner.”

Dr. Mortimer Granville * says that there is ^{Evils of excess.} "more danger from excess of food than from infection; and there can be no doubt that excess of animal food is a great and crying evil in the English people, and produces an amount of dyspepsia and other troubles wholly preventable by eating half the amount. We consume about four times the amount of meat in this country of any country in Europe."

Eating too much does not strengthen, but exhausts the body with the labour of digestion and the evils of the undigested residue. With the aged this is a common error, mainly brought on by friends and relatives who are continually urging the old man, whom Nature has wisely deprived of his teeth, to eat more and to live better, whereas his health and happiness consist in eating less and living more plainly.

While I thus speak against over-eating in ^{Starvation among the rich.} the healthy and wealthy, I see plenty of evils arising from starvation amongst the rich.

Many eat too little from various reasons,

* Dr. M. Granville, "How to Make the Best of Life," p. 54.

even when otherwise in health ; and this soon leads to the nerves or some other part being out of order. A false idea of refinement, or some slight dyspepsia or over-fatigue, leads to semi-starvation, and very soon nervous signs follow, showing the nerves are no longer "in order." Of the two I should say that the connection between "nerves" and the stomach is more intimate than between "nerves" and the heart. That is to say, disease of the latter will not lead so rapidly to nerve troubles as of the former when it results in starvation.

Too much
meat eaten.

So far, I fear, I have spoken in a very vague and unsatisfactory way for those who, as I have said, love exact rules. I will try and be a little more exact in speaking of one or two articles of diet. Of meat we eat per head here 136 lbs. per annum ; in France 46 ; in Germany 36. No doubt we require rather more than these countries, but the excess over what we really require is enormous, and not only represents great waste but much needless disease.

There is no storehouse in the body for excess of meat food as there is for fats and starches ; and its result is that if the excess

passes a certain point the meat becomes poison, and uric acid is produced.

For light workers meat once a day is enough. Butcher's meat three times a day is an excess for anybody in this country.

The bulk of the diet should be what is called (but is not) vegetarian; that is, farinaceous and vegetable foods, milk, with eggs, &c. In the growing youth and early manhood too much care should *not* be taken that the food is digestible; and above all, artificial and pre-digested foods should be avoided; for hard work in moderation strengthens the stomach, whereas little or nothing to do certainly weakens it. Thus meat teas which are hard to digest are not bad for young people.

Bread is the staff of life, and no attention should be paid to dyspeptic faddists who claim to have discovered rather late in the day that it is the source of much disease. It contains the meat and vegetable principles in a way that no other food really does, and can be eaten in such a variety of forms that none need tire of it. White bread well made is the most nutritious and generally useful; for the weak and for children wholemeal bread

Value of indigestible food.

The staff of life.

is splendid, while Hovis bread is of real value as compared with other breads, on account of the amount of fat it contains, making it nearly equal to bread and butter.

Italian pastes, such as macaroni, are exceptionally nutritious and, indeed, no dish can surpass in food value macaroni and cheese, which is, perhaps, for its bulk, the most nutritious dish that can be made; but then observe, it does not follow that it is particularly easy of digestion.

Temperate
remarks on
alcohol.

But let us turn to beverages, or our chapter may get too long, and I must find time to say something about alcohol. Since I seek to follow in this book the path of moderation in all things, and being after all more concerned in giving sound advice on keeping the body in order than in pandering to the many fads abroad, I fear I shall please few extremists, to many of whom moderation is almost as bad as excess; though from a health point of view there is all the difference between the two. Neither am I here, alas, considering primarily the good of others; for this is not a work on philanthropy, which would no doubt form a worthier and nobler book; but I must confess it is egoistic, and so

concerns oneself and one's own interests first and foremost. I make these few propitiatory remarks to any earnest temperance critics before facing the thorny question of alcohol, in order that they may understand why I do not here support more warmly their noble work.

The importance of the right understanding of the value of alcohol is beyond all dispute, when we remember that one with another the population of Europe consumes on an average four gallons of proof spirit per male adult per annum. Four gallons of proof spirit per head.

No doubt most readers of these pages fall below this average in their drinking—a fact which tends to show that mental capacity does not depend on alcohol!

All are agreed that alcohol in excess is a poison, and no other poison is taken so generally as a beverage, and as an article of everyday use. In this, of course, lies the danger, for where the dose that is poisonous begins and the dose that is harmless ends cannot be defined, as it varies so enormously in different people.

Just as our own country suffers from a plethora of meat, so does it suffer from

excess in alcohol, and it is galling to see in the land of the degraded Turk a sobriety we cannot display at home.

Alcohol is
a bad
stimulant.

Alcohol is a stimulant and a narcotic like opium, though much less deadly in its effects. But it is the wrong sort of stimulant. It is the sort which makes the jaded organism put forth more strength, but it does not supply any as food does. Alcohol does more than this; for it not only does not give strength like food, but it destroys the appetite for food itself. As long as a person can eat heartily three meals a day you may be sure alcohol has not yet poisoned him. Its power as a stimulant is really ultimately due to its paralyzing effect on the nervous system.

Each part of our bodies, notably the heart, has an escapement action to prevent it from going too fast. Take the escapement off a clock or watch and see how merrily the wheels and hands go round, though it can no longer keep time. It is great fun as long as it lasts, but unfortunately it soon runs down. So with alcohol. It increases the action of the heart from 5,000 to 25,000 extra beats in the day, and the effect of this on an already tired organ can be imagined. In larger doses

Increases
heart's
action.

as a narcotic it paralyses the nerve centres themselves.

It used to be thought that alcohol was a food, but few think so now. It is true it is made from sugar, which is one of the best body foods and heat-formers in the body ; and at first it was thought that alcohol increased the heat of the body, though it was known that even if it did, it stopped the combustion of other foods, and decreased vital action as a whole. Like sulphur it might burst into a flame itself, but it put out the fire.

But when it was discovered by the clinical thermometer that all feelings of being warmed by alcohol were fallacious and were simply caused by a rush of blood to the skin from the nerve paralysis of which we have spoken, and that the body was actually cooled and the temperature lowered according to the amount of spirit drunk, all claims for alcohol as a food had to be abandoned.

Alcohol therefore gives neither strength nor heat, but it does check other vital processes, especially digestion, so that hunger may be appeased, and the blood become darker from its greater impurity, from the lessened metabolism, or oxidation upon which life depends.

We need not discuss the effects of alcohol in excess, for we all know that it puts out "of order," not only nerves but every organ in the body, and especially the brain and higher nerve centres, so that in time it even alters the moral character.

Alcohol in
moderation.

What then, briefly, does alcohol in moderation do to the body? It causes a temporary paralysis of parts of the nervous system, producing extra beating of the heart (8,000 extra beats if only an ounce of alcohol is taken), greater action of the skin (more heat and moisture), flushing, and in the mind quicker thoughts from quicker circulation. But all these effects are transient, and no permanent change takes place in the body where there is no excess. Moderation may mean to some not more than a tablespoonful of spirits or a glass of wine, or a tumbler of beer, while to others it may mean four times this amount. It greatly depends on the life, exercise, age, sex, and character of the individual. Alcohol is, of course, least deleterious when taken at mealtimes and late in the day.

But so far I have not said one word in its praise. Is it never a real help in keeping the body "in order"?

One may answer, "Never in a really healthy body, but frequently in a weak or diseased one," only then it becomes more of a medicine than a beverage. Of course I am speaking mainly of spirits. Wines and beers are partly food, having other ingredients besides alcohol.

If not a help then, may spirits be drunk, and the body yet be "in order"?

Yes; if taken with meals in strict moderation, and well diluted, no harm will probably ensue, and an agreeable stimulus is felt for a time. But the risks and dangers are so many that it is best for those who wish to maintain perfect health to drink little or no spirits. Light, sound wine is a very wholesome and refreshing drink in the countries where it is grown. Imported to England it is too often fortified with added spirit. It can, however, of course, be obtained pure, but not in the same variety as abroad. For children and the young in England wine and beer are quite unnecessary.

I live in hope that moderate drinkers are increasing and drunkards decreasing; but there is no disguising the fact that if one-quarter only of the present amount both

Moderate
drinkers
increasing.

brandy (or whisky) and beer were used, this country would be all the better for it. Three-fourths of what we eat and drink of these articles tend to the "disorder" rather than to the "order" of the human body.

Unsound
finance.

Stimulants to the jaded will, however, always be as popular as bill-drawing is to the impecunious. The one is a draft on health, the other on wealth, and both lower and lessen the future resources though both give immediate relief. Going to the brandy-bottle is therefore radically unsound finance, and is very much therefore like going to the Jews as moneylenders—both too often end in going to the dogs. Custom and fashion have, however, also much to answer for as to this excessive drinking. They are slowly changing for the better, and markedly so in the army and navy; and we hope will continue to do so.

How to
make tea.

Tea is the next most popular beverage in this country, being for some reason far ahead of coffee. We are told it is because we don't know how to make coffee here; but I have tasted execrable coffee abroad, and more so now than formerly, while the sweet Turkish coffee with its grounds is distinctly an acquired

taste. One would have thought that in this great country of tea drinkers the making of tea in a proper manner would be universally known, but it is not so. This sketch by the late Sir Andrew Clark will be recognised as true by scores of sufferers:—

“When I go into a drawing-room, the lady of the house will say to me, ‘Sir Andrew, you look so tired, do let me give you a cup of tea.’ I say, ‘Thank you very much.’ But the tea has stood for half an hour; and she remarks, ‘I know you do not like it strong, Sir Andrew,’ and then she puts about a tablespoonful of tea into the cup and fills it up with water. Now I call it positive cruelty to give tea like that to anybody, and I hope you, gentlemen, will always set your face against such a beverage. Tea to be useful should be, first of all, black China tea. . . . If you want then to have, either for yourselves or for your patients, tea which will not injure and which will refresh, get black China tea, putting in the right measure—the old-fashioned teaspoonful for each person and one for the blessed pot. Then pour on briskly boiling water, and *within five minutes* you must pour it off again, or it will become

Sir A.
Clark on
tea.

wicked instead of good. Let this patient, therefore, have half a pint of tea, ‘à la Clark,’ if you please.”

The real way to make tea.

Now this is all very well, but it is quite obvious it does not at all meet the whole case. If every one at breakfast or afternoon tea was ready with their cup to be filled five minutes after the tea was infused they would all get tea à la Clark (why, by the way, “à la,” when Sir Andrew was not a lady doctor? “Au Clark” is surely more correct). But no one who entered ten minutes or half an hour after, or asked for a second cup, could hope for a taste of this matchless beverage! And yet breakfast and afternoon teas, when tea is mostly drunk, are two notoriously unpunctual and lengthy meals. Sir Andrew would hardly suggest a fresh infusion for each person, and failing this bad tea must be drunk, if there be no better remedy. But there is. For the root of the evil *does not consist in the tea standing, but in the tea standing* ON THE LEAVES.

Pour it off the leaves.

One of the most curious survivals of senseless customs is that everywhere, for some utterly unknown reason, the tea-leaves are left in the pot and the tea stands on them. They

are always a nuisance, they cannot improve the tea, and the most ingenious devices have been patented to avoid their getting into the teacup, with very imperfect success. In the teapot they are ever blocking up the spout and embittering the language as well as the tea, and yet no one has ever explained why they are kept in the teapot at all. If it be true, and it is, that the maximum of good and minimum of evil is found in tea that, made with fresh boiling water, has not stood over five minutes, how is it some genius has not arisen to direct that at this moment the tea should all be poured into a clean, hot teapot and thence into cups as required? No doubt it needs a genius even to conceive such a simple remedy, but some day he will arise, and then all terrors of breakfast-and tea-table will depart, and all hideous nightmares of nauseous bitter infusions and their consequences will be forgotten.

It is obvious that the length of time that the tea stands in a clean teapot is immaterial; and with this simple device a man for the first time in his life may find his second cup of tea as wholesome as his first! Surely this book is worth buying for the sake of

Whole-
some
second
cups.

this one piece of advice alone. It is so important that I have made it easy for people to turn to it the moment they open the book by means of a little list I have placed in the beginning!

A
dangerous
beverage.

And now we come to a truly dangerous beverage, which is certainly neither food nor stimulant, but not seldom a poison, and that is—water.

Water-drinkers have fallen on evil days and have to walk or rather sip warily. I have just returned from a trip to Greece and Palestine and Egypt, and for six weeks no drop of simple water has passed my lips. Others have drunk this beverage and several have been very ill with typhoid, &c., and one or two have died.

What is a man to do? Boil the water, says one. Did you ever drink boiled water? and do you know boiled water keeps hot or lukewarm for a long time? and you generally want cold water in a hurry?

Boiling and
filtering.

Filter it, says another. Have you read the awful revelation regarding ordinary filtered water and how those precious carbon blocks form crowded nurseries for germs, and introduce absolutely more into the water than

they take out? And do you know that the reliable filters only let the precious fluid through drop by drop, so that a thirsty man has to wait some minutes to get a quarter of a pint? What, then, is to be done?

The first comforting reflection is that many of us are still alive in spite of all, for fortunately but few of the countless germs we swallow are malignant. The best thing we can do is to get the water from as pure a source as possible ; and when any suspicion arises or any epidemic is about, to drink only boiled fluids.

Drinking itself is such a matter of habit ^{Drinking as a habit.} that it can largely be controlled. It is much better to cure the habit of constant drinking than to try and find harmless things to drink. There is really no need to drink so much as we do, and it is a good thing to teach children to drink in moderation, and especially at meal times. One doctor says there are two times when we are told it is as well never to drink, and one is at meals and the other between meals ; but he goes too far.

My remarks do not, of course, apply to the regulation cup of tea or coffee, but to all excessive drinking, and particularly at

lunch and dinner. Constant drinking is mostly due to improper or indigestible food ; when the digestion is perfect, the food plain, and not too salt or highly seasoned, the desire to drink is not felt, unless as a habit.

Hot-water
drinking.

Hot-water drinking between meals is medicinal, but may just be named here as useful when too much food, especially animal food, has been eaten.

Let us now, in closing this lengthy chapter, pick up a few points of importance by way of recapitulation.

For the digestion to be in order the teeth must be in order ; for bad teeth are a most common cause not only of dyspepsia, but of nerves in disorder as a consequence.

General
recapitula-
tion.

I have in my mind at this moment a severe case of nerves in disorder that could not be cured until the teeth were set in order.

If in health, think as little as possible about what you eat or drink, beyond seeing the food is plain, well cooked, and varied from day to day ; for variety as well as quality is essential to health. Avoid excess in meat, and practise extreme temperance as to alcohol, especially in the form of spirits.

Do not drink much of anything, and be careful about water in doubtful localities.

Do not be afraid of somewhat indigestible foods, such as cheese, if you are in health. Slow digestion is not dyspepsia ; and remember, after all, the stomach can stand a good deal without complaining. The following articles were taken from a stomach after death, whose owner did not die of nor complain of dyspepsia during life. It is right to add the lady was a lunatic:—

“Item: 51 pins, 16 needles, 3 darning needles, 32 nails $\frac{1}{4}$ to 3 inches long, 2 screws 2 inches long, 3 pieces of iron $3\frac{1}{2}$ inches long, 2 rolls of hair, 3 pieces of wood (size not stated), 3 pieces of cloth 5 inches by 1, and 6 hairpins.”

Contents of
a stomach.

The Muscles in Order

CHAPTER VI

THE MUSCLES IN ORDER

SOME years ago I was asked to write a Writer like Balaam. special article against the over-athleticism of the day; but, like Balaam of old, though called to curse I felt constrained to bless. It was thought by many then that physical culture was thoroughly overdone all round, and that games and sports had obtained such a hold on the English mind that they were well nigh all that it took seriously. This idea is, of course, largely true, but it does not distinguish between the love of looking at sports and actually engaging in them.

A moment's reflection will remind us how Watching games not athletics. passionately fond we are of watching good games which we never play, and also that such watching cannot in any way aid in our physical development. That such game-

watching as distinguished from playing is common is shown by the following statistics :

On looking into the subject I found that, out of a membership of 2,375 at Lord's, only 118 played cricket in one year. I saw that with 30,000 or 40,000 people on the athletic ground only 20 or 30 played each afternoon—the rest looked on and betted. I learned that in London only 1 per cent. of men between 20 and 40 played athletic games.

Lack of physical culture.

And now I know that I was right, for a rigid examination into the physical condition of our youth and manhood has shown a great lack of physical culture, and has dissipated the hollow fallacy that looking on at sports is "athletics." In fact, watching games has largely taken the place of playing them, and certainly saves labour; or rather substitutes unhealthy brain excitement for healthy bodily exercise. The whole tendency is in this direction, and both motor-cars and motor-cycles contribute directly to it. Nevertheless, we must not be pessimists, for, in spite of all, the race is evolving. The civilised portion, as judged by the size of old armour and the like, is said roughly to be increasing at the rate of $1\frac{1}{4}$ inches in height

Race evolving in height.

in every 1,000 years. Our girls especially have benefited in stature and general physique by the increased attention to games and sports; and after all the body of the woman is of more value than that of the man. This Nature clearly teaches, for we see that in times of famine more boys are born than girls (in the siege of Paris almost all the births were boys), while in times of plenty girls predominate. For the mothers of the race a fine physique is imperative; but with men since the invention of tools and machinery the body however developed is of little use for bread-winning, which is the *rôle* of the man—this has to be done by the brain; and if he cultivates his body he often excuses his love of sport as being needful for the brain. Personally, therefore, for these and other reasons I consider that the physical culture of girls is a matter of high importance for the nation, and at any rate must not rank lower than physical culture for boys.

Value of
women's
bodies.

But not only is the race increasing in height, but amongst the educated classes health habits are more common, the development of children is better understood, and we get straighter backs and broader chests.

Attitudes in school hours are studied,* and games and drill are fostered; so that while the general physique of the lower classes is still very poor, that of the educated classes is greatly improved. Indeed, we may say that a boy at Harrow will average three inches taller and a stone heavier than a boy of the same age in a London Board School.

Generally speaking, the muscular system is "in order" when the person is about his right weight and takes plenty of exercise. Games, however valuable, have certain drawbacks in over-developing various parts of the body, and regular gymnastic exercises are always

Games and gymnastics.

Position and lateral curvature.

* A remarkable instance of this is seen in the connection of lateral curvature of the spine with the attitude of writing. A very large proportion of these deformities are caused during school-life by the twisted position of the body that was *de rigueur*, especially in girls' schools, in the days of the old sloping, angular handwriting. Mr. Jackson, one of His Majesty's Inspectors of Schools, was, I think, the one who proved this by his investigations, and he introduced in consequence a new posture at the desk of sitting straight in front of the copybook and writing up and down without any slant at all. The same gentleman has lately been showing the value of ambidexterity in school life and afterwards. In some professions and trades, indeed, it is essential, and in all it may be of advantage.

of use to correct this. We must remember also that the value of keeping the muscles of your limbs that meet the eye "in order" is because we know that when these are well developed those muscles that we cannot see and on which our life depends, such as the muscles of the heart and internal organs, are also strong. Exercise is therefore essential for health, and the amount required by the average "human" has been roughly stated as a mile a day for every stone weight. In this is included *all* exercise taken, such as walking up stairs or about a room.

What exercise can do in the way of beauty has been so graphically described by Treves Treves on physical beauty. that I must quote it with its wealth of adjectives entire: "Physical exercise is capable of healthfully transforming the meaningless, monotonous, purposeless curves of the physically uneducated, who are mainly muscular paupers, whose limbs are little better than burlesques, composed as they are of shapeless masses of flabby, doughy tissue, covered with dull, loose, lustreless skin, into the beautiful, classical, muscular outline of ancient statuary, clothed with the polished, fresh, elastic skin of perfect health."

Exercise in
youth.

Exercise varies with age and sex. In childhood games and musical drill are best; in boyhood and youth games and field sports and general athletics, always avoiding what leads to extreme exhaustion or breathlessness, such as prolonged runs at "hare and hounds." We must remember, too, that these sports bring only health to the actual players, not to the mere on-lookers.

Riding, walking, rowing, and cycling are pre-eminently of value to all classes.

For girls and young women also games and sports are good, omitting the most violent, such as football. They conduce to growth, beauty, and health.

Exercise in
maturity.

Men of mature years depend on sport, walking, riding, cycling, for exercise, with sometimes cricket, but never football, and often and increasingly golf. Of the physical value of golf for maturity and old age there can be no doubt; but we question very much whether its solitary nature and its absorbing character does not often develop unpleasing traits and tend to selfishness.

All through mature life ten minutes' brisk exercise after the daily morning bath is good

At least two hours a day should be spent where possible in really active exercise. At any rate, this minimum should be aimed at, although, as in the case of the writer himself, it may not always be reached.

It is quite astonishing what a revolution Medical profession and exercise. has been going on and is still progressing in the medical profession with regard to exercise and such matters. The time was when the subject of natural remedies and aids to health were deemed beneath the physician's notice, and the inevitable prescription regarded as the *ne plus ultra* of medical aid. It is not so now with any who have the least claim to be enlightened. More and more the natural therapeutics of exercise and rest, of fresh air and quiet, are coming to the front, and in taking one step more and speaking of them here rather as preventatives than cures, I am but advancing a little further to the front.

Exercise on some such lines as I have sketched is a *sine quâ non* of health, of being "in order," and it is far too little thought of amongst town dwellers and sedentary workers. These are constantly getting out of sorts for want of sufficient brisk exercise. It is well if at least once in the day one

glows all over with active exertion, so that the whole stream of life is quickened in every organ ; and this can never be achieved by a lazy stroll or by just watching a cricket match.

Proper
clothing.

Closely allied to, and indeed almost inseparable from, the question of exercise is that of proper clothing. This, indeed, is one of the five laws of health, and active exercise is often injurious with improper or unsuitable clothing. It is found, for instance, that if girls do athletics in ordinary clothes and corsets the results are disastrous, and a gymnastic dress is imperative. I remember inspecting one large school in London where ordinary dress was worn at the gymnastic class. I inquired into the reason ; and the mistress, a very clever woman, told me that if she had ordered gymnastic dresses for the girls they would be only used a short time two or three times a week, so she started an original plan. When the term began she ordered all the girls into the gymnasium, and the teacher gave them a very vigorous half-hour's drilling, with the result that the floor was covered with buttons. Now this may seem incredible to those who have not studied

Girls' dress
too tight.

the question of clothing ; but if any one will take the trouble to stand the first dozen girls she meets against a door with their heels and two shoulders touching the door, they will find in more than half the cases the front of the dress is actually cutting into the child's neck, or the buttons will be burst off. Most dresses seem made for flat chests and round shoulders ; and so they allow plenty of room behind and none in front.

In this case the gymnastic teacher said nothing, and the girls picked up the buttons for the mothers to sew on. At the next class the same thing occurred, until the mothers got tired of the work and began to let out the dresses ; with the result that the girls of that school have loose clothes all the time. It is found that if a girl tries to run half a mile in a tight dress her heart beats twenty beats a minute more, and her breathing is *three times faster* than if she were in gymnastic costume.

Danger of tight clothes.

Three points should be fulfilled in healthy clothing—no compression, no oppression, no depression.

Three laws of clothing.

The *first* is violated by tight corsets and dress bands often measuring six inches less than the natural waist.

THE END

The *second* is the result of too much clothing altogether. Clothing need not be heavy to be warm. If the innermost garment be of any sort of wool and roughly woven and loose fitting, it contains a large amount of warm air in its meshes which in itself takes the place of an extra garment. Not many clothes are required when the dress is hygienic, and to be hygienic it need not be ugly.

After all we must remember that fashion is only keenly interested in the dress itself, which matters little to Hygeia, who is more concerned with the underwear, and thus a compromise can easily be effected.

The *third* refers to heavy skirts suspended from the waist, still so common in many countries, though rarer in England, and which drag the very life out of a woman.

Change in
women's
dress.

I must refer in this connection to the wonderful and silent change that has taken place in the dress of women of late years. I refer to two especially. The one is the substitution of wool for linen in underwear, and the other is that of knickerbockers for skirts. There can be no doubt of the great hygienic value of this change, and that it has saved hundreds of lives and prevented thousands of sick-beds.

With regard to shoes it is hopeless, I think, to expect short people to wear flat shoes, and no anatomical diagrams will prevent such from wearing Louis heels. But they should at any rate be thick enough to keep the feet dry, and if not, "rubbers" or goloshes should be more worn than they are. Of course in towns and sandy soils thick soles are not so much needed as in heavy clay lands.

Some remarks should be made here on the "pneumonia" or open-neck blouse. It is not that it would be bad if always worn, any more than a bare neck. The evil is the foolish practice of covering up both chest and neck one day with fur and cloth, and leaving both exposed the next. If both were always exposed they would soon become "all face" and quite impervious to cold; for the skin soon adapts itself to temperature, and ceases to "catch cold"; but it is the wild caprice with which these parts are clothed that renders them always more or less dangerous to their owners.

Muscles require not only exercise but rest, and other parts of the system, particularly the nervous, need it even more. If muscles are over used the waste products that are

formed become a positive poison to the system, and the condition known as "breathlessness" has been found to be due to this. If an animal is long hunted and its flesh is then eaten, perhaps imperfectly cooked or nearly raw, the man is seized with a feeling of lassitude and intense fatigue due to the poisonous nature of the tired muscles.

Value of rest.

Rest is therefore essential to the "muscles being in order," and with a brief consideration of this subject we will bring this somewhat desultory chapter to a conclusion. Rest is the corollary of work. Those who never work cannot rest; those who do must rest.

We will briefly review various forms of rest.

It is usual in all schools and most occupations to allow more time than is absolutely required for meals, this extra time being for rest, and it is of the greatest service.

In this respect a workman or clerk often comes off better than his master, who may only snatch a hasty ten minutes while the clerk has his full hour. The former gets soon "out of order" from this cause alone.

Times for rest.

Most children at school may be allowed to play during their spare time, but rapidly

growing or delicate girls do better by lying down and resting after meals for a while.

With younger children the midday hour of rest in bed is of immense value, and should be kept up till schooldays begin.

The poor mother's time for rest is generally in the afternoon after the children have returned to school and the house is tidied up. An hour or two now on the couch, or better still if possible in the open air, gives her the rest she needs to brace her up after the hard work of the morning. The corresponding time for a hard-working father is immediately on his return home at night, or at any rate after his evening meal.

In close connection with this daily rest is ^{Sleep.} the nap after meals. With those advancing in years this is a good habit, and not a bad one to be resisted. It greatly aids digestion and can do no harm.

Rest with those who work in the open air is constantly in the form of sleep, which is much more enjoyed by body workers than by brain workers. It is a common saying that the workmen cannot wake and the masters cannot sleep. Sleep at night should be sufficient, and in the present day six hours

for a man and seven for a woman is generally too little. Eight hours for a man and nine for a woman is much better.

It should be refreshing, and the window should therefore be open, and the bedclothes light.

Sunday
rest.

The weekly rest is on Saturday and Sunday. The custom of having no school on Saturdays and no work for men after one or two is gaining ground, and helps to keep the body "in order."

The Saturday should certainly be spent as far as possible out of doors in pure air.

The Sunday is an institution of the deepest significance, and under the form of the Jewish Sabbath can be traced back ages before the Decalogue. One day in seven as a cyclical rest is of supreme value, and the half-day on Saturday by no means takes its place.

How to
spend it.

Before the institution of the Saturday the latter half of the Sunday had to be given up to games and sports. No such excuse exists now, and the day is spent to the greatest advantage spiritually, mentally, morally, and physically, if part of the day is devoted to special food for soul and mind, while the man

is helped morally and physically by spending the rest out of doors quietly in company with Nature.

A further rest is that of change for a fortnight or month each year.

This summer holiday should have as its essence freedom from all care, and as entire change from the rest of the year as possible.

Summer holiday.

It is for this reason that a fortnight abroad often does as much good as a month at home.

Where health is the prime consideration it is often beneficial at this time for members of a family who are together the other eleven months, to separate for this one.

In brain workers this holiday may still be called rest though combined with active bodily exercise; for muscular exercise acts as rest to a tired brain at times.

About rest of mind we may speak at another time.

I have said enough now to emphasise the great truth that for muscles to be in order we must have both suitable exercise and rest.

**The Special Senses and the Voice in
Order**

CHAPTER VII

THE SPECIAL SENSES AND THE VOICE IN ORDER

THIS, like the last, will be a short <sup>Sight,
hearing,
and speech</sup> chapter, for not until the next do we come to the real subject of the book—the nerves themselves in order.

Though short, however, this chapter is not unimportant, as is easily seen when we remember that sight, hearing, and speech are the three great avenues by which the mind is formed and grows, and by which it is fed and exercised.

No doubt a mind can continue to exist in an adult if he become deaf and blind and dumb; but it cannot be formed in a child if he be so from birth, unless special means are taken to overcome these hindrances.

If the nerves and mind are to be in order it is, then, a necessary stipulation that the special senses should be in order.

Taste and smell are often lost in nervous affections, but no very great harm ensues and we need not spend any time in considering them.

Ears "in order."

The ears "in order," or the hearing in order, is a much more important subject, but one that, rightly enough, seldom demands much attention until it is "in disorder," *i.e.*, lost, or more or less impaired.

Writing as I do, not for the deaf but for the hearing, there is not much to be said.

Causes of deafness.

Perhaps the most common way for the hearing to get out of order is through neglected sore throats of various kinds, and colds in the head. These should always be cut short as speedily as possible that the inflammation may not extend along a very favourite route—the Eustachian tubes—to the middle ear, and thus often lay the foundation of incurable deafness.

If with any such cold or throat affection definite deafness sets in, it should be at once treated.

It is seldom that deafness comes from any direct injury to the ear.

It is possible, of course, to rupture the drum of the ear by a violent "box" on the

ears, or by the firing of cannon ; but these accidents are not of everyday occurrence, and few would find their hearing get out of order if the evil only came from outside.

One other external trouble may be mentioned, and that is excess of wax in the ears pressing on the drum and thus preventing its vibrations. Not infrequently when the ear is syringed, presumably for wax, neglected plugs of cotton wool are discovered, and prove to have caused the deafness. As a test of normal hearing I may add that if an ordinary watch can be heard at anything over a foot from each ear the hearing is practically in order.

With regard to sight the test is somewhat similar. If a medium type book requires to be held less than a foot from the eyes, or if the head is nearer to the paper than fifteen inches when writing an oculist should be consulted.

For want of this simple precaution as to hearing and seeing, a very large number of children are constantly punished at school for being "dull" or "inattentive," when really they are neither, but partly deaf or blind. It

is imperative therefore in the case of school-children that their sight and hearing be at any rate thus roughly tested.

Eyes often
out "of
order."

It must be remembered that the eyes, unlike the ears, are often out of order from birth. Perhaps the organ of the body that is most commonly out of order congenitally is the eye. The disorder generally consists in the shape of the eyeball. If it is too long the result is short sight or the capacity of only seeing near objects (*i.e.*, objects less than 20 feet from the eye) clearly. If it is too short the result is long sight, which, however, is not the same as good sight. This consists in only seeing distant objects (*i.e.*, objects over 20 feet from the eye) clearly without effort. In this case objects that are near, such as books, &c., are only seen clearly by the effort of accommodation, which, if continued, soon brings on a headache and other evils.

How to put
"in order."

Both these congenital "disorders" therefore require to be rectified during the whole life. Fortunately this is easily done; for, however difficult it is practically to improve imperfect hearing, there is no difficulty in improving imperfect sight. All that requires to be done in short sight or long eyeballs, is to

wear concave glasses of the required strength to bring the sight up to normal ; and all that is required in long sight or short eyeballs, is to wear convex glasses of the required strength to produce normal vision.

There is one point more with regard to what is called accommodation in healthy people, and that is after forty-five is reached a difficulty in seeing near objects clearly is felt by all except those with short sight. This is noticed specially in reading, and this difficulty of near vision increases gradually as the years creep on, so that the book has to be held further and further from the eyes. This is the sight of old age, and weak convex glasses are all that is needed to put this "in order."^{Sight in old age.}

Of course it is always necessary with regard to the eyes, as well as other special sense organs, to exercise common sense in their use, so as not to overtax them by too long use, such as reading in a bad light, or books with small, bad print, and especially black letter or German type.

Specks before the eyes are rather the result of the liver being out of order, than a sign of anything wrong with the eyes themselves.^{Specks before eyes.}

The eye should always be protected against very strong draughts of air (as in motor-cars), and against intense glare (as the sun on the snow).

Voice and
throat,

In speaking of keeping the voice and throat "in order" I must enter a little more into detail, as these are so easily put out of order, and are so largely under our control.

There is no doubt this is a subject that demands careful attention, and is of interest to a large and increasing number of people. Time was when public speaking—that is, any speech demanding great effort and possible strain of the voice—was confined to pulpit or platform or professional utterances. In these last I do not include those hoarse cries that seem essential to the trade of certain shops, or to those inarticulate utterances of the coal, milk, and dust-men, the costermonger, and other vendors, all of which may be classed as street noises rather than as speech.

Public
speaking.

At the present time, however, public speaking, properly so called, has largely extended; and all ranks of the community, and both sexes, are increasingly interested in the right use of the voice; for, however much a

woman's tongue may have been a familiar sound in the home circle, or the sanctity of the private chamber, it is only now that it is publicly heard to any appreciable extent. To-day, indeed, some of the most persuasive speakers in the mission-field, in home work, on social or temperance platforms—in short, wherever good work has to be done—are women. It is obvious, therefore, how large is that class to which a few plain words on the right management and use of the voice may be of advantage.

In no part of the body is the difference between prevention and cure more obvious or important than in the throat. Once a person understands how to breathe, to vocalise, and to enunciate, by the lungs, the larynx, and the mouth respectively, he is helped not only to speak distinctly and easily, but so to husband the voice and lessen the strain on the throat as to avoid those chronic troubles, one of which is commonly known as clergyman's sore throat.

The voice is produced by the rushing of the air through the narrow chink between the vocal bands or "cords," in the larynx, which can be plainly seen by any

Prevention
better than
cure.

How voice
is
produced

one who can use the laryngoscope; on the other hand, these bands can be seen widely open and far apart during quiet respiration.

The narrower the chink the greater the pressure of the air as it passes through, and the higher the note produced. By the varying tension and approximation of these cords, a range of sounds extending on an average to three octaves can be formed.

Vocal
cords.

In the adult male the cords are nearly one-third longer than in the adult female.

An imitation of this voice-apparatus can be made by stretching across the top of a glass tube two bands of indiarubber close together. If these are blown through with a certain force, a sound will be emitted, higher or lower according to the tension.

The action of the cords, as well as the closure of the top of the larynx, being regulated unconsciously, it would appear at first sight that we cannot do much voluntarily in arranging the production of the voice. Such, however, is far from being the case. We can, in the first place, see that

the delicate structures are not in any way injured by our carelessness, and secondly, we can, by practice, control largely the amount of air that passes through, as well as, also by practice, regulate to an exact nicety the action of the cords so as to produce instantaneously the exact sound required.

A great point in the care of the larynx is to breathe through the nose, and not through the mouth. This I have already insisted on in speaking of the lungs in order; but the subject is so important that I may recapitulate here.

Breathe through nose.

It is very remarkable how little this essential point is insisted on in the many manuals on the use of the voice.

The mouth is made for expiration, specially in speech and vocalisation, but not for inspiration, for which the nose is specially constructed. The main purpose of the mouth, of course, is for the reception of solid and liquid food, air-food being taken by the nose. For this purpose the nose is particularly adapted, as I have already shown; and perhaps—considering the importance of the subject—the two may be here contrasted in detail.

Use of mouth.

THE MOUTH—

Comparison of nose and mouth. Can be readily shut against air. The teeth are injured and the tongue dried by the constant passage of air to and fro.

Has a straight wide passage to the larynx.

Thus admits currents of cold air direct to the lungs.

Freely admits all the filth of the streets, &c., suspended in the air as dust.

Allows all germs in the air to enter the throat and lungs.

Allows dry, irritating air to enter the lungs.

Is not used for inspiration amongst savage tribes or animals.

Inspiration allowing cold, dirty, germ-laden air direct access to the delicate larynx and lungs, is the cause of the greater proportion of throat and lung affections, helps the decay of the teeth, and dries the tongue.

Used for breathing is the cause of snoring.

THE NOSE—

Cannot.

Contains nothing that can be so injured.

Has tortuous and narrow passages.

Warms the air almost to blood heat before it enters the lungs.

By its projecting hairs filters the air as through a sieve, retaining all the dirt.

Acts as a germicide, and filters out the germs, so that none are found in air wholly breathed through the nose.

Moistens all air before it reaches the lungs.

Is always used for inspiration by all animals except a certain proportion of civilised men.

Used for inspiration, warming the air, and straining off germs and dirt through its tortuous passages, prevents many diseases of throat and lungs, acting as a natural respirator provided naturally for the purpose.

Used for breathing, renders snoring impossible.

I must, however, point out that it is still possible to breathe through the nose with

the mouth wide open, when once the habit is acquired, and, on the other hand, there are certain passages in singing, where, owing to elevation of the soft palate, breathing through the mouth is necessary. If the nose cannot be, or is not regularly used as "the" respiratory passage, a doctor should be consulted at once, as there is something blocking the natural passage, enlarged tonsils, adenoid growths, or some malformation, all of which should be attended to at once.

If, then, this reiteration of the importance of nose-breathing should do nothing else but impress upon speakers and singers the importance of using Nature's method of inspiration, it will have accomplished a great deal.

Leaving, then, this great cause of injury to the throat and lungs, I pass on to consider other matters affecting the larynx.

Sudden changes of temperature are extremely injurious to the vocal cords, especially after prolonged use. Great care should therefore be taken by speakers and singers against chills or draughts of cold air after using the voice, and also after leaving close or heated rooms. A loose muffler over the

Chills and draughts.

mouth and nose when first going out is a wise precaution.

Air too dry or too damp is also injurious in public speaking, but the danger of this is largely reduced by breathing through the nose. Air, again, overladen with dust or smoke or fog, is most injurious to the vocal organs, which must suffer if the voice be much used under such circumstances.

Clergy-
man's sore
throat.

No loud speaking or singing should be persevered in, if the throat be at all sore or relaxed, or if there is a severe cold in the head. Neglect of this is one of the common causes of clergyman's sore throat. Of course, as we have already said, any definite chest affection, such as bronchitis, precludes all public speaking.

So far I have spoken of inspiration in connection with the larynx, let us now consider for a moment expiration.

Secret of
retarding
expiration.

I have already said this is to be carefully economised, and none of the air wasted. The exit of the air can be retarded by the approximation of the vocal cords. But this of course raises the pitch of the voice or note. The secret of keeping at the same note, and yet retarding the exit of the air, is by the

approximation of the false vocal cords above the true. This can only be done, as we say, instinctively, or rather unconsciously by practice ; and the retardation of the expiration, so as only to use what air is needed and keep some well in hand, is one of the secrets of ease in speaking and singing.

There should be no strain in singing or speech. Loudness is not necessary for force or beauty, but a good volume of air is.

The pitch in speaking is of great importance not only to speakers but to the hearers. Importance of pitch.

With regard to the latter, it is not too much to say that the conveyance of thought by speech depends not only on the words, but the tone and pitch. It is wonderful what a power to sway thought a well-pitched and modulated voice possesses. Of course in singing, the pitch is always considered ; but in speaking this is rarely done, though its importance to the speaker is as great as to his audience. For ministers especially who have to plead with men, and try and bring them to repentance and faith, a tender voice should be cultivated.

A wrong pitch strains the voice and the vocal cords.

Speak
naturally.

We all have for speaking what may be termed a natural pitch of voice, just as we have a natural pace for walking; and that is the pace or pitch which we can use with the greatest ease and without strain.

Some
training
necessary.

There can be no doubt that absolute ignorance on the simple laws of voice-production still prevails even amongst our most constant speakers, and it is not much to the credit of the nineteenth century that amongst large bodies of men, such as clergy, barristers, &c., whose living depends very largely on their voice, many should fall out of the ranks altogether, or, at any rate, suffer needless pain and misery, for want of a few lessons on this most useful art. The culture of the human voice has retrograded; and in this, as in so much else connected with the higher arts, Greece was immeasurably our superior. At Athens every student was taught how to speak properly and to use the voice with ease and effect, as being essential to health, quite apart from its special value to speakers. I have little doubt that for a child of a consumptive tendency there could not be a more healthful and curative, or rather preventive

exercise, than a thorough course of instruction in voice-production by a competent master. The number of teachers is legion ; and there is also a society specially formed for the purpose which is largely patronised by the clergy.*

At any rate, it is beyond dispute that such a course should form an integral part of the education of every public speaker. This is especially the case with the clergy. They are the class whose vocal organs are most severely tried. The buildings in which they speak are often far more trying than concert-halls or lecture-rooms, which are built to carry sound, or even than the much-abused Law Courts. The vaulted roof, the long aisles, the cold, vault-like air at the early morning service, the close stuffiness of the crowded evening church, the incurable and ever-present draughts, are all bad. Worse still is that "pulpit voice," artificial and strained ; it is bad for the larynx and throat, and wears them out, while a natural voice would continue in full vigour and tone.

Churches
and a
"pulpit
voice"
injure
larynx.

* The Physical Voice Training Society, 11, Chandos Street, Cavendish Square, W.

**Nerves and
voice.**

Before leaving the larynx, I must point out how the whole production of the voice is necessarily governed by the nerves, so that it is often from forced speaking when in a condition of nervous exhaustion that mischief arises. Nervous debility is a frequent cause of failure or loss of voice: indeed, we know well how emotion alters the tones in speaking.

Turning to speech we note that the vowels alone are true vocal sounds, that can be prolonged as long as the mouth remains in the same shape, and as long as the current of air continues, the pitch being of course determined by the vocal cords.

**Pronounce
clearly.**

It is all-important to enunciate and articulate clearly; all the vowel and consonant sounds should therefore be carefully practised with the greatest accuracy: such practice, like all other vocal exercises, is best done before a mirror.

The letter "h" is often an insuperable difficulty. It is perhaps best overcome by expiring forcibly against a windowpane, and adding some syllable such as "at" or "ot" to the expiration. The expiration is then gradually shortened till it becomes "hat" or "hot."

Another difficulty is stammering or stuttering. In minor cases this is cured by slow, deliberate formation of each word until the habit is broken. More severe cases require special treatment, which is now admirably conducted. Nearly all are curable. "Take care of the consonants, and the vowels will take care of themselves."

Stammering.

For proper speech the teeth should be complete in number and kept in good order. If the tongue be swollen or sore, or the tonsils enlarged, speech is difficult. In the latter case, if the tonsils are swollen, the removal of a small portion under surgical advice is of great value. The throat also must be in good order. All these points help in clearness of articulation and ease in speech. Food and drink greatly affect the condition of the lining membrane, both of the mouth and throat, and indirectly of the vocal cords. First and foremost is the abuse of alcohol. No one who speaks or sings much can indulge freely in alcohol with impunity, while to many even a small quantity is prejudicial, as the effect on the stomach and pharynx is distinctly bad. The

Teeth in order.

Moderation in alcohol and smoking.

very voice of the habitual drunkard speaks of the ravages caused by alcohol. In small doses, well diluted and taken with food, alcohol is not itself harmful to the voice organs when they are in health, but if they are diseased, even a very small quantity may do harm. Strong tobacco, especially in the form of cigarettes, is injurious to the voice.

Much hot tea in the same way acting on the digestion is not beneficial to the voice ; coffee or cocoa, or cold tea, especially if not too strong, are not harmful. It is not well to use the voice publicly, at any length, less than two hours after a full meal. The whole mouth should be cleansed at least twice a day with an antiseptic wash and the teeth kept clean and in good order.

Do not drop the voice.

Two great practical defects in speaking and singing may be noticed. One is that the mouth is often not sufficiently opened, and the other is that the voice is often dropped two or three or more tones in pitch towards the end of a sentence, so that the words are quite lost at a little distance. This is a most important consideration for preachers. As their business is to make known matters of the highest

importance, their words ought to be specially clear and distinct.

The management of the voice consists, therefore, in the understanding of respiration, the management of expiration so as to retard it at will, the use of the right pitch, modulated tone, and the natural voice, avoiding a forced or artificial voice, monotonous, and all strain. Speak in an erect position; partake of suitable food; retain as far as possible good general health and sound nerves.

The *British Medical Journal* memorial on the subject in 1893 enumerates four special points on the right use of the voice. Four rules for the voice.

1. Thorough control of the motive power of the voice and breath.
2. A proper attack of tone.
3. The education of the resonant cavities of speech.
4. The right pitch.

Most public speakers would be benefited by a short course of efficient instruction upon these four points.

Nerves in Order

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CHAPTER VIII

NERVES IN ORDER

NERVES in order, in common with all Nerves in order. other parts of the body in sound health, call for little or no comment. When in health their working is so absolutely easy and unconscious that none but the unconscious mind is aware of their activities. But though here, happily, I am able to relegate to another handbook the consideration of nerves in disorder,* I am obliged to consider not only the state of health, about which, after all, so little can be said, but the maintenance of that state about which, in the present day, so much has to be said.

Already in the first two chapters, regarding "nerves in order" as expressive of the entire health, I have said much in a general way that need not be repeated here; and later on

* "Nerves in Disorder" (Hodder & Stoughton).

again in our summing-up I shall say somewhat more.

Here it is rather my duty to confine myself to the actual consideration of the maintenance in health of the nervous system proper.

Nervous
system
described.

To do this intelligently we must have some idea of what the nervous system consists of, and what part it really plays in the body.

Primarily the nervous system centred in the brain is the organ of mind, and the mind can only be in order when the instrument on which it plays is in tune, *i.e.*, when the nervous system is in health.

The nervous system consists of two parts—cells and nerve fibres; the former play the part of battery or discharging or nutrient centres to the nerve fibres, which are the wires of this electric-like apparatus.

Solar
plexus.

The cells, in enormous multitudes, are mainly congregated in three groups. The brain, of course, is by far the largest, then comes the spinal cord, and then an important, but little known, group, the solar plexus, which lies immediately behind the stomach in the very centre of the body.

This is not far from the heart, and much of the feeling attributed to this passionless and insensible organ really springs from the solar plexus.

The nerves, or electric wires, proceed from and return to these three centres from every part of the body. Not only from every square inch, but from every part as large as the point of a pin to every individual muscle cell and to every secreting cell in every organ of the body. No one can estimate their numbers. All those running to the various parts of the body are either motor or secretory or trophic nerves (*i.e.*, nerves concerned in nourishment), while those that proceed from every part of the body, particularly from the skin to these centres, are called sensory nerves.

Nerves are of two sorts, again, in another way—those that can be set in motion or stopped voluntarily, that is, whose activity is generally set in motion through consciousness; these are white and larger than the others. The smaller red ones are entirely outside the control of will or consciousness, and wholly moved by the unconscious mind; and they are concerned rather in the main-

Nerves innumerable

Red and white nerves.

tenance of life than in its physical or mental activities.

Consciousness.

The relation of consciousness to the nervous system is of interest. Consciousness has only power over that part of the nervous system that controls voluntary movement of all sorts, including speech ; over that part of the nervous system that is the organ of mind and thought ; and over the nerves of sensation by which every variety of feeling is experienced. The seat of consciousness is the upper part of the brain called the cortex, or surface whence all these actions flow, and to which all sensory messages are brought. All the lower parts of the brain, the whole of the spinal cord and solar plexus, as well as most smaller centres scattered about the body, are at work purely unconsciously for the good of the man.

Nerves at different ages.

The next point to note is that "nerves in order" differs in its meaning at different ages and in the two sexes.

In very young children "nerves in order" are much less under any central control than in adults. Indeed it may be said that the amount of equilibrium, or stability, necessary to perfect health is greatest in a man,

less in woman, less still in youth, and least of all in childhood.

This is due to the slow development of the controlling centres in the brain. They act unconsciously, and control all body actions, all vital processes, all chemical changes, all temperatures for the good of the body generally.

A trifling disturbance of digestion in a small child will at once produce a temperature of 103° , because of the slight controlling power. In an adult such a temperature would indicate some grave disease.

Control
weak in
children.

In the same way the heart's action, muscular action, brain action, are all subject to much greater fluctuations in children than in adults. Movement is not always a sign of strength, but often of weakness of the centres of control. Repose is more frequently a sign of strength than weakness, whether it be of muscular movement, or of lips and language.

It is, as we shall see, when these controlling centres are "in disorder" in adult life that the condition of neurasthenia supervenes.

We have spoken a good deal about consciousness and unconsciousness; and perhaps before considering in detail the maintenance

Regions of
the brain.

of health in the nervous system it may be well first to indicate a little more clearly the regions of the brain, since we have already said something about its structure.

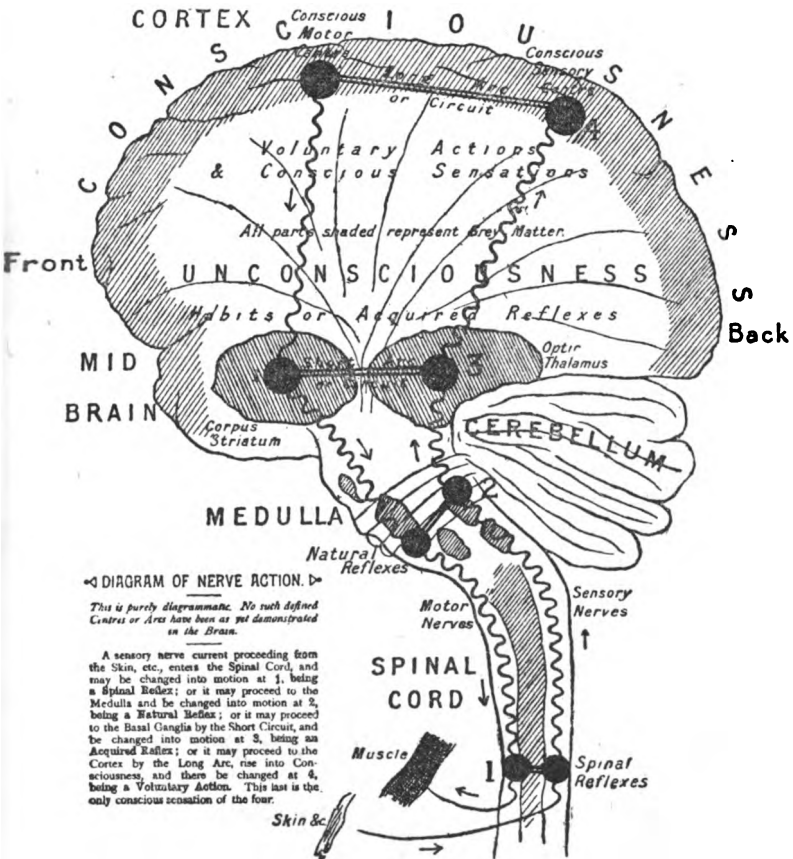
The rough division of a man into spirit, soul, and body, or, if you prefer, into spiritual or mental life, animal life and physical life, is very fairly represented in the head by the upper, middle, and lower brain regions. The diagram on next page will make these clear.

Upper
brain.

We see here the *upper* brain, also the seat of consciousness, the home of the conscious, intelligent *mental life*, and the sphere of all voluntary or intelligent action, as well as of all sensations of pain or pleasure. This is generally called the cortex.

Lower
brain.

Then at the base of the brain, just above the spinal cord, we see the *lower* brain, the seat of unconsciousness, the home of the unconscious *physical life* that constitutes existence—the sphere of those unconscious natural reflex actions, such as the digestion of food, the beating of the heart, &c., that are necessary for the maintenance of life. It is divided into two parts: the anterior being generally called the medulla, and the posterior being the cerebellum, or little



◁ DIAGRAM OF NERVE ACTION. ▷

This is purely diagrammatic. No such defined Centres or Arcs have been as yet demonstrated in the Brain.

A sensory nerve current proceeding from the Skin, etc., enters the Spinal Cord, and may be changed into motion at 1, being a Spinal Reflex; or it may proceed to the Medulla and be changed into motion at 2, being a Natural Reflex; or it may proceed to the Basal Ganglia by the Short Circuit, and be changed into motion at 3, being an Acquired Reflex; or it may proceed to the Cortex by the Long Arc, rise into Consciousness, and there be changed at 4, being a Voluntary Action. This last is the only conscious cessation of the four.

DIAGRAM OF SENSORI-MOTOR ARCS.

brain, an organ principally concerned with the unconscious regulation of muscles so as to preserve the equilibrium, or erect position.

Middle
brain.

The *middle* brain is also labelled unconscious, but some might term it rather subconscious. Anyhow it is the centre of what may be called *animal life*, or the soul, meaning by this those actions that spend force rather than those that build it up, as in the lower brain. This middle brain is the seat of all habit, *i.e.*, actions once wholly conscious and voluntary, now mainly unconscious and involuntary—or “acquired” (as opposed to “natural”) reflexes.

It is mainly composed of two large masses with long names that we need not concern ourselves with. It is through this part of the brain that all voluntary movements pass, or from which they proceed, and it also receives all general and special sensation.

Body, soul,
and spirit.

We then see that the lower brain is concerned with carrying on the functions of purely physical or *bodily* life, and all actions are purely unconscious.

The middle brain carries on the active or *animal* life, and the actions proceeding thence are unconscious, but were once conscious.

The upper brain carries on the intellectual, or *spirit*, life, and all actions are conscious and voluntary.

Experiments have been made with pigeons and other animals that demonstrate the characteristic differences of these three regions of the brain. Experiment with pigeons.

If the upper brain, or cortex, be removed, a pigeon can still fly and pick up seeds, but he flies against a wall, and his actions, complicated as they are, cease to be intelligently directed. If now the middle brain be carefully removed, all these animal powers cease, and the pigeon cannot fly or move, but it can breathe and still lives.

When the nerves as a whole are in order, the action of all the three divisions of the brain are harmonious, and as a rule act together for the good of the organism. When the nerves are not in order, *i.e.*, are in disorder, general disorder of the organism ensues. Take, for instance, poisoning by alcohol. The stages are very interesting when considered in connection with our diagram.

Alcohol paralyses nerve action, and as in most poisons the highest centres succumb Poisoning by alcohol

first. If, therefore, a person takes several glasses of wine he soon paralyses the upper or directing brain. The result is that all the conscious control which it exercises over the lower or middle brain or animal life disappears, and the man talks, laughs, and jumps or dances about without much reason or consciousness to guide him.

Three stages.

If now he continues to drink, the middle brain or centre of animal life gets paralysed. All motion and talking ceases, and as the cerebellum or little brain is also usually affected at this stage, he cannot maintain the erect position, but lies still on the floor—as we say, dead drunk. He is not dead, for the lower brain is still in order, only the nerves of the two upper parts are “in disorder”; and so his heart beats and he breathes and life goes on, though otherwise he is paralysed. Indeed it is to this paralysis that he really owes his life. Because such is the drunkard’s love of the poison that kills him that but one fact prevents a man from dying in his first debauch, and that is his arm is always paralysed before the lower brain is affected, and thus he is physically incapable of taking at one time enough

Reason why drink does not kill.

alcohol to kill him. It is this humiliating physical reason that alone prevents thousands of the "lords of creation" from poisoning themselves every night!

It will be clearly seen from the above that part of the nervous system may be in the most dire disorder and part in order at the same time: that the conscious centres of control that guide the life in accordance with the dictates of common sense may be lost, while the unconscious centres remain intact that govern the rhythm of the heart and respiration.

When the conscious mind as a whole is in disorder we speak of a disordered mind, or madness, although the unconscious mind may be sane and pursuing its even tenor as wisely and well as usual. Madness and unconsciousness.

On the other hand, the unconscious mind may be in sad disorder, and all sorts of nerve symptoms set in, culminating in neuromimesis or the actual mimicry of disease, but if the conscious mind remains sound this is rightly not called madness, but nervousness or neurasthenia, or, inaccurately, hysteria.

Having thus generally cleared the ground by a brief survey of the structure of the

nervous system, we may consider now the maintenance of "nerves in order."

Of the enormous importance of this subject the slightest consideration makes us aware. If any special nervous system, as of the heart or digestion, be wrong, that particular part suffers; but if the central nervous system of which we are now speaking be "in disorder," the whole man is sick—all is out of joint. Nerve power is the very force of life, and if it fail, then life fails. However perfect the machinery it is useless if there be no steam, for, after all, it is the nerve-force that drives the body.

Nerves
worth more
than blood.

Professor O. W. Holmes says, "It is better to lose a pint of blood than to have the nerves tapped. No one can measure your nerve-force as it runs away."

Dr. Goodhart, in his Harveian Lecture, said: * "As year succeeds to year I become more and more impressed with the widely prevailing influence of the neurotic element in the production of disease."

And yet, after all, nerve-force is not exactly mind-force or life-force. A man may have

* Dr. Goodhart, Harveian Lecture, *Lancet*, January 16, 1892.

his nerves in order and be stupid and die young; and, on the other hand, he may be a nervous wreck, and yet be very clever and long-lived.

But there can be no doubt whatever, Nerves and functional disease. as we have already pointed out, that nervous breakdowns or failures are responsible for all functional diseases, as well as often being a contributing cause in organic diseases.

In view of this how important it is to know how best to preserve nerve-force; and it is in full consideration of the multitude of needless breakdowns of nerve-force simply from want of knowledge that this book is written. It may indeed claim a higher place than the companion book on "Nerves in Disorder," on the principle that "prevention is always better than cure."

In considering the maintenance of nerve-Predisposing causes. health we must guard against the slow predisposing causes that may undermine it, as well as the exciting causes of positive breakdown.

Amongst predisposing causes we may name temperament, and slow mind and body poisons.

Value of nervous temperament.

A nervous temperament is certainly a strong predisposing cause to disease, but is the best temperament to have ; and in the present day is almost the only temperament that is found in the first rank of life.

Or perhaps it would be more correct to say it is the only temperament that leads into the first rank, for those who owe their position to heredity are often of anything but a nervous temperament.

These nervous people form a well-marked class ; just as the sanguine type are fresh-complexioned, the bilious type dark-skinned, the lymphatic type pale and thick-skinned, so is the nervous type thin-skinned, generally pale, having small hands with long fingers, large heads and eyes. The movements of body and mind are quick and often capricious. Sleep is often difficult and the temper uncertain.

It leads the world.

Nevertheless this type includes the wisest, wittiest, and greatest of mankind. They have great powers often with deficient control ; and it is this latter defect that brings such disorder into the nervous system.

There can be no doubt that this type, this

temperament, this nervous diathesis, forms a distinct predisposing cause to nervous disease, and such children need special care in their upbringing.

Another predisposing cause is slow injury to the mental organism. In the highly-strung, monotonous and mechanical occupations tend to this in one way just as much as over excitement, tension, and strain do in the other. ^{Evils of monotony.}

Long routine seems in time to wear out the brain paths of the lines of thought and eventually to evoke nerve disturbance.

Even without definite work a very grey and monotonous life leads to disaster in nervous people. There must be an outlet, there must be distraction. A sad case rises before me here, whose distressing condition seems entirely due to ceaseless repression as a girl in all directions.

We must also say one word about the practice of morbid introspection. This leads ^{Morbid introspection} physically to a number of sensations being felt and bodily processes observed that are intended to be unconscious ; and the bringing of the unconscious into consciousness is ever an unhealthy process. Indeed, a hypochon-

driac is one who takes over the conscious control of what should be unconscious. And there is no doubt that when one begins to think about symptoms, symptoms grow.

Mentally, too, morbid introspection may be followed by still more disastrous results. In both cases, however, the process is slow, so that there is plenty of warning given.

The knowledge of these predisposing causes is of the utmost value. Here, if anywhere, to be forewarned is to be forearmed.

Malnutri-
tion.

Amongst physical predisposing causes of bad nerves we may mention first of all malnutrition.

I am amazed at the numbers of people that I see who would never have had any trouble with the nerves had they only been taught the simplest principles of the importance of nutrition. People seem to be never shown, even in these days of science classes and drawing-room hygiene, the connection between the nervous system and the general physique, and especially the quantity and quality of blood.

Money
squandered
needlessly.

The result is, that to my knowledge and to the knowledge of every doctor who has to do with these matters, hundreds and thousands of pounds are spent needlessly

by people on cures which might never have been needed had they been taught the connection between body weight and "nerves in order." If this whole book contained nothing else but these paragraphs I am writing it could not fail to do good if my readers only took in the importance and force of what I now say.* For what, after all, are these boasted cures? Simply one and all the restoration of that natural physique which ought never to have been lost; simply the replacing of those lost pounds of flesh and blood that should not have been wanting; simply supplying to the nervous system that nourishment without which it is physically impossible it can bear up against the least extra strain.

I see patients paying one or two hundred pounds for treatment that would never have been required had they grasped this interdependence of mind and matter, and acted on their knowledge. ^{Ignorance is costly.}

One reason why people are so careless in this respect is because they see thousands of ^{Practical bankrupts}

* I think I have made a similar remark before, on more than one occasion. In each case, however, I believe it true, so I let it stand.

people who, as I have said before, are practically physical bankrupts, and yet have not gone into bankruptcy or "broken down," simply because the extra strain has not yet arrived, and so they are able to keep up an appearance of health. But it is all a deception. Let some disease, some shock, or some reverse arrive, and down they go, if not into death, into nervous invalids. Such people are often used up with just living, and have nothing to spare for anything else. Let me beg you, then, to see that this first most common predisposing cause of "nerves in disorder" has not begun to work in your case.

Another cause is an indoor life with more or less bad air, and coupled with insufficient exercise. This life long continued leads, surely enough, to a breakdown of the nervous system.

Evil of
living in
town.

You cannot find, save very rarely, full health in incessant town dwellers. As a rule the blood is anæmic, the muscular system much out of order, and the functions of the body sluggish. What wonder in such cases if the nervous system follows suit?

Dyspepsia, caused by improper food and other means, already detailed in a previous

chapter, is another common predisposing cause of disordered nerves, but alcohol in excess is not only among these causes of dyspepsia, but is a direct poison to the central nervous system, as also is nicotine. Excessive drink and sometimes excessive smoking long continued, are therefore special causes of nervous breakdowns. The time of ^{Time of life} life should also be included among predisposing causes in nervous people. Between 15 and 20 and 45 and 50 may be indicated as the two principal times when nerves are likely to be weak from this cause; and therefore at these times special care should be taken to keep the vitality up to the highest pitch.

But time would fail me to go through all the causes that lead to "nerves in disorder." I have pointed out some of the principal ones, and that all of them, including heredity, are avoidable, for even the force of this can be guarded against successfully.

We must now pass on to exciting causes, ^{Exciting causes—} or what actually brings about the nervous ^{"shock."} collapse. First and foremost I will place "shock"—a well-known condition difficult to describe, but readily understood. It con-

sists of a jar or a jolt, or a nervous agitation produced by some sudden event, or thought or fear, or grief or joy. The two principal causes of pernicious shock leading to disordered nerves are love and religion. When we consider how deeply these are connected, the one with our emotional nature, the other with our reasoning, emotional, and moral natures, indeed with the whole spiritual man, we shall feel no surprise at this.

Love.

Love acts as an excitant, producing "nerves in disorder" in disappointments, breaking off engagements, too long engagements, and sometimes in marriage itself. Also in troubles after marriage, and in misunderstandings between parents and children, between bosom friends it may be of the same sex, in the death or removal to a distance of any one beloved ; in unrequited love, and in many other ways, most of which, never alluded to in speech, only show their disastrous results in the nerve wrecks they cause. Indeed, their power for evil is universally increased by the very fact that it is so difficult to speak about them.

Religion.

Religion is a scarcely less powerful exciting cause of nerve troubles. It must be noticed

here that I do not now speak at all of the effects of the body state upon the religious feelings, which is often considerable, but rather the effect of religious feelings upon the body. I have noted three special ways, among others, in which religion prejudices nerve health.

First, by over-excitement at religious meetings, conventions, camp meetings, mission services, retreats, Lenten services, &c. These are a common cause of nerves in disorder.

Secondly, by introspection and absorption in some special line of religious thought, bringing on, in a morbid or melancholy person, nerve troubles.

Thirdly, the depressing, gloomy atmosphere found in some highly religious families and houses, curiously enough, where the very Christianity that should fill the house with light and song seems turned wrong side out, and shuts out both. ^{Depressing gloom.}

It must be remembered that in all these cases there is probably a predisposing cause at work as well, in the shape of temperament, age, &c., so that we must never put the break-down wholly to the love or to the religion.

**Bible does
no harm.**

Moreover, I do not believe the quiet reading of the Bible and prayer can ever cause such nerve trouble, and that in these rare cases where it may appear to do so, it will always be found there is another religious cause as well.

Perhaps next, as a fertile modern exciting cause, this time of physical origin, we ought to put influenza.

Influenza.

This insidious brain poison acts in a peculiar and special manner. It seems to attack often more than the mere nervous system, and to extend to the mind itself, causing, it may be, wrong and foolish actions as well as every sort of nervous debility. It is also a common cause of morbidity of all sorts, and it would be difficult to point out the mind or nerve trouble that it may not cause.

**Worry and
hurry.**

Worry comes next, and we all know what that means, though not all realise its disastrous effects upon the nervous system. Worry is to work what discord is to music.

With it, perhaps, we may associate in a minor degree its physical colleague, "hurry."

Hurry is a great physical evil, producing irregularity in physical action, and worry is

a great nerve evil, producing irregular action in the nervous system. They have both the same effect as overdriving a horse.

Overdriving of men or horses is no economy. We can't "put a quart of liquid into a pint pot," and yet we are ever striving to put more work into a given time than is possible. Result: Spoiled work and nerves.

There must be some *via media* between the old-fashioned torpidity and the modern rush.

Take, for example, the easy life of the old-fashioned clergy of the "forties" and the weekly drive of the modern parish "priest."

Of course, even now we do get compensations, and it is only by aid of these that we can live at all at the pace we do. Compensation.

For the present rush is doubtless made possible, and also compensated for by the increased ease of transit, in comfort and convenience, by the saving of wear and tear through telegraphs, telephones, dining-trains, &c., &c.

Another great cause of nerve collapse is over-pressure. This may start, as I have known it, from an over-conscientious governess driving a little child on too fast, and producing St. Vitus' dance.

Over-
pressure.

It may occur at schools of all sorts, and is sure to occur when there are competitive examinations. If over-pressure be combined with under-feeding, or decreased vitality from any cause, "nerves in disorder" are sure to be rife.

At the same time, the other extreme is also bad, and indeed may be adduced as another exciting cause, and that is having nothing to do. I find neurasthenia arises from both causes.

Warning
signs.

The warning signs of incipient trouble with the nerves are plain to read, and include a change in temper (generally for the worse), sleeplessness, a wrinkled forehead, a dislike to loud sounds or bright light, caprice, restlessness, and purposeless movements. Certain bad habits and malpractices are adduced as common exciting causes of nerve trouble, but it must be remembered that they are very often its results. This applies also to several causes we have named, and especially to "worry."

We have pointed out some of the warning flags Nature hangs out in incipient nerve trouble. To these I may add, if the case is severe, a certain retraction of the head, vomit-

ing, and neuralgias of all sorts. Neuralgia has been, indeed, not inaptly described as the prayer of the body for healthy blood.

Dyspepsia too often sets in in those who are healthy at other times. Less food can be taken. This aggravates the debility, and thus the vicious circle begins of which I have elsewhere spoken.

Another sign (as well as cause) is loss of weight.

In children especially the relation between age and weight and height should be noted. Boys and girls should weigh 4 stone at 9, 5 stone at 11, 6 stone at 12½, and 7 stone at 14; roughly speaking, half their age in stones. Boys should weigh 8 stone at 15, 9 at 16, and 10 at 17; girls 8 stone at 17, 9 at 20, and 10 at 22; and any child deviating more than 7 lbs. from these weights should be seen to. Between 3 ft. and 4 ft. a child should increase 2 lbs. in weight for every inch in height; between 4 and 5 ft. 2½ lbs. for each inch. A child should not grow less than 2 inches or more than 3 in a year, but this is not of so much importance if the weight be right.

Two very common warnings against overstrain are fatigue and pain. Not much

harm can be done where neither of these is felt.

Solar
plexus.

A sinking is often felt in the "stomach" closely connected with nerve weakness. It must be remembered that the centre of emotion is rather the solar plexus behind the stomach than the brain, for it contains a strong physical element. We glow in our breasts, and we feel misery under the ribs, and our heart sinks within us, and we are full of trouble. The Bible has many expressions, which we need not quote here, referring to the solar plexus.

Turning on
the verge.

It must be remembered that in all that we now write we seek to help those who have not yet broken down, but may be in danger of doing so; we do not write for actual nerve invalids.

And the class for which we write is a very numerous one. There are thousands of persons living in a condition intermediate between health and nervous debility. This unhappy and dangerous state is commoner in New York than London, in London than Paris, in Paris than in the country.

When these signs or any of them become obvious, when the individual begins to fear

a breakdown and wishes for prevention rather than cure, he naturally takes up this book and turns to this chapter to find out what he is to do. So far he gets no hint; he finds elaborate directions how to get ill, and the causes that will most rapidly upset the nerves detailed, all useful in their place as enabling him to avoid them; but now he is already below par; what should he do to recuperate so as to avoid medical aid? Well, the obvious course is to remove the exciting and predisposing causes that have produced the trouble so far. It is not always possible to do this, but he can sometimes remove himself from them; in other words, he can take rest and change.

How to
avoid
break-
downs.

He can weigh himself and make up any deficiency he discovers. He or she can take a day's rest in bed, can breathe fresh, bracing air, and live an outdoor life; he can get further good from distraction of travel, especially foreign; or if too far gone and worn out for this, he can get what Lord Alverstone calls one of the overlooked pleasures of life, and in some remote village can have the conscious enjoyment of perfect rest.

Taking
rest

There are of course many sorts of rest for mind and body, and the appropriate one must be sought and found. In this case there is often a deep and true instinct of what is best, may be safely listened to and followed.

There must be no neglecting or temporising with the matter. Resolute action at once is the safest and cheapest policy ; and even if friends don't see why you should have a rest, if you do—then take it.

and
physical
ease.

Of course there are endless details, but the main points are to build up the physique and to rest the mind. Many little things help : absence from all familiar surroundings is one, resistance against suggestion of weakness is another, congenial society another ; and we may even go so far as to take a suggestion from China, where among the poor, nervous people are so rare. A means of cure given, amongst others, is the wearing of soft shoes, and the freedom of the foot. This is not always possible there among the rich. In nervous debility the clothing should be easy as well as the feet uncramped, the bedroom quiet, the surroundings bright and peaceful, and there should be sufficient occupation and

variety so that introspection and brooding is not encouraged.

These hints are without any definite sequence, but include most of what is needed in the way of prevention. If not sufficiently lucid, always remember that the most modern, wise and up-to-date way of using your doctor is to consult him as a preventive officer to help you in the maintenance of health, rather than merely as a restorer of it when already lost. This use of medical men will become common as we get wiser. This is the stitch in time that saves nine.

The Mind in Order

CHAPTER IX

THE MIND IN ORDER

I DO not intend in this book to enter at ^{Book for the sane.} all into the consideration of the causes of loss of mind or any matters relating to the insane. I write wholly and solely for the sane, and merely desire in this short chapter to touch very briefly, a little more definitely than in the last, on the mental rather than the physical side of nerve trouble.

In all nerve sufferers the mind to some extent shares the functional weakness, but this is very different from those cases where it constitutes the main and primary disorder.

There are certain causes that affect a sound ^{Mind and monotony.} mind and render it temporarily ill-balanced, or clouded, or weak. I have already spoken of nervous debility as one great cause, but besides this I may point out specially monotony of mental occupation or outlook,

grooves in which the mind constantly works, and outside of which it rarely is exercised ; as in some religious sects and in hard-worked professional men.

Work of course is health for the mind, but we must have variety. Mutton is an excellent food, but if we eat nothing else we get ill.

For health we must work, for without work recreation is impossible.

It is not as a rule the amount of work, but the manner of it that produces mind trouble.

The sudden cessation of steady, daily occupation as when retiring from business, or from other reasons, is bad for the mind.

**Exercise
for the
mind.**

We must ever remember that health and strength come from exercise and not merely from food, both in mind and body. Mere study does not in itself strengthen the mind, for knowledge stored and not used is like fat, and merely increases the size of the mind ; put into use it becomes wisdom, and like muscle in the body increases its strength.

The two forms in which the mind shows that it is in temporary disorder are generally

depression and melancholy, with possibly slight delusions of some sort.

“Mental depression,” says Gautier, “is ^{Mental depression.} caused by vexation, trouble, varying and violent passions, a restless life, excess of mental work, jealousy, and gambling.” In my experience it is quite as commonly caused by a gloomy and monotonous life. Delusions are quite common where there is an insufficient blood supply to the brain, and are by no means necessarily of serious import, and especially where the physical cause is obvious. Another incipient mental trouble is the loss of the sense of humour. A fixed ^{Loss of humour.} mental background is always bad; a fixed balance is a useless and injured balance; scales should be able to move up and down; and in the same way the mind should rock easily up and down between grave and gay to be well balanced and in health.

Another sign of coming mind trouble is when the work ceases to be done well; when needless mistakes constantly occur. Good work is an excellent test and also a safeguard of mental health.

Now in the way of checking these beginnings and in the way of regaining health

much that I have said regarding nerves in disorder applies.

Sound
thinking.

No doubt in these early stages much, very much, may be done by sound thinking. The old proverb says: "As a man thinks, so is he." No doubt thinking disease makes for disease, and thinking health for health. Auto-suggestion of evil is quite as powerful in producing disease as suggestion of good is in curing it, but the former is much the more common. Auto-suggestion is available to a large extent in the early stages of nerve and mind troubles, and may be most successfully carried out if conducted systematically. The best and most impressionable time for the brain is just on going to sleep, or on waking in the morning when all is still and quiet, and suggestions vigorously and determinately made at these times, even when there is little faith in the process, have often a marked effect. Extrospection as contrasted with introspection should be vigorously cultivated.

Auto-
suggestion.

Brain work
good.

Sir B. Ward Richardson lays great stress on the value of regular brain work as a restorer of mental health. He says (quoting Dr. Beard), "Brain work is the best antidote

to worry. A brain worker's work is like one long vacation, not so the body worker.*

Certainly light mental work feeds the brain and stores mind force,

The one who fears mental disturbance must be resolute never to give way to inertia, weakness, or depression.

The power to effect this is obtained by change. Change often acts as much by stirring the fire as by putting on fresh fuel. The mere anticipation of a change acts as a mental tonic. But it must be remembered that at least half the value of a change in these cases depends on the mental attitude in taking it. If it is agreeable and according to one's tastes, and if it is expected to do good, and if the company is congenial, it will be twice as beneficial as the same route taken against the grain. Compare the value of a voyage down the Mediterranean when returning to work in India with what it is on a first trip to Palestine or Egypt. Its value in the first instance is generally nil, in the second it is very great.

There is an idea, purely founded on theory, that the mind is rested by muscular exertion.

* Sir B. W. Richardson, "The Commonwealth," p. 41.

Only occasionally is this the case ; more often the mental condition is only aggravated.

A tired mind should have real relaxation, not only in scenery but in books. Such works as Clark Russell's, Jacobs', "Hucklebury Finn," and "Tom Sawyer," Barry Pain's, and similar light reading are good specifics for curing the depression that follows influenza.

Value of
light
reading.

Serious-minded persons devour silly stories greedily when in this condition, and they do them great good.

A well-known colleague of mine says, "When a man (who has been ill) reads *Answers*, Mark Twain, or Artemus Ward I know he is getting on all right."

On the other hand, the best of all preventatives for these disorders is when the whole man is at peace and harmony within and with his God. A healthy altruism and a child-like faith and hope are powerful factors in mental health, and there can be no doubt of the hygienic value of true Christianity.

Religious
strain.

As I have pointed out, there is a religious strain far too common nowadays that makes for disease ; but when God and man are in their true relations, and when the

whole of the human faculties have their legitimate scope and outlet, and half the spirit is not starved and imprisoned, the whole organism feels the benefit, as many a sufferer can testify. The spirit requires good food to be in health, just as much as the body, and soon shows the benefit of it where it is provided.

The Man in Order

CHAPTER X

THE MAN IN ORDER

LET us now consider for a little, first of all, the almost forgotten factor in all medical problems—the man himself—before we enter upon the question of the order or disorder he may happen to be in.

What, then, is a human being?

A human being.

He is, in the perfection of civilised life, in this twentieth century, physically, if a man, an individual six feet in height, and weighing 13 stone,* if a woman 5ft. 4in., and weighing 9½ stone.† At birth he will expect, if a man, to live for 42 years, if a woman for 44, although it is believed that his full span of life should be 105, or five times the period of his growth.

* In certain manufacturing districts he is 5 ft. 1½ in., and averages 7½ stone in weight !

† This average is being now constantly exceeded and must soon be raised.

Unity in
diversity.

He is essentially a unity, and yet a unity in diversity.* A collection of divers machines of complex structure, and constructed of heterogeneous materials, all crumbling away at different rates, he yet moves and acts as an independent unit, governed as regards the life of his body by the one unifying factor, the unconscious mind ; as regards its actions by his conscious mind, the two forming but one mind, one personality, one ego, and the whole with the body forming one person—*i.e.*, man.

Length of
life.

This man, if he survives the first 2 or 3 years of his life, will probably live to 75 ; and his life would then be divided into three stages of about 25 years each, the first being growth, the second maturity, and the third decay.

The Chinese use more elaborate divisions. We have in England the seven ages of man, but the Chinese have ten, as follows :—

Chinese
divisions.

- From 1—10 The opening degree.
 „ 10—20 Youth's experience.
 „ 20—30 The strength of manhood.

* It will of course occur to all that he is a trinity in unity, a compound of body, soul, spirit, and yet but one man, one personality.

- From 30—40 Officially apt.
 „ 40—50 Error knowing.
 „ 50—60 Cycle closing.
 „ 60—70 Rare bird of age.
 „ 70—80 Rusty visaged.
 „ 80—90 Delayed opportunity.
 „ 90—100 Age's extremity.

The body takes about 25 years to build, then exists in good repair for 25 or 30 years, and then slowly deteriorates for 25 years.

During the first 25 years the great requisite is good food of which to build the body. The next 25 years the great need is self-control, or temperance in all things; and the last 25 comfort, and in old age especially warmth.

Those men who do not reach the high ^{Height and power.} standard of 6 ft. and 13 stone run as follows, if in perfect health :—

5 ft. 6 in.	= 10½ stone.	5 ft. 10 in.	= 12 stone.
5 7	= 10½ „	5 11	= 12½ „
5 8	= 11 „	6 0	= 13 „
5 9	= 11½ „		

A woman is to a man as 7 is to 10, or even as 4 is to 5 at the present time; the proportion used to be as 5 is to 8. A curious and somewhat capricious calculation of the construction of an average woman shows that she

**Materials
for a
woman.**

contains the material of 1,000 eggs, as much iron as would make 5 tacks, 6 salt-cellars of salt, enough carbon to make 9,000 lead pencils, and nine gallons of water!

The best time for marriage is for women from 21—28, the limits being 20—35; for a man 28—35, the limit being 24—40.

**Happy
marriage.**

For a happy marriage there should be some contrast between the pair, but not too great a difference in tastes, position, temperament, age, size, or race. Neither should be seriously diseased, and if healthy up to the age of marriage the fact of being the offspring of diseased parent or parents is not a sufficient bar to marriage. The marriage of healthy cousins is not, as a rule, detrimental in one generation; but if persisted in for several, results in a dwarfed and deteriorated race. A town dweller of three generations should certainly marry into a country stock. The health of the parents is of the utmost value to the offspring. Hence nerves should be kept in order in married life not only for selfish, but for altruistic reasons. All excesses of body, soul, or spirit should be carefully avoided, and moderation and temperance in all things should be practised.

When the food is scanty and poor, boys are likely to preponderate; where plentiful and generous, girls are most numerous.

Birth of
boys and
girls.

A woman reaches her perfection at thirty-five years of age, a man at forty. The following lines of Ben Jonson's confirm the former of these statements:—

“Oft in danger, yet alive,
We are come to thirty-five,
Long may better years survive,
Better years than thirty-five.
Could philosopher contrive
Life to end at thirty-five,
Time should ne'er his hours drive
O'er the bounds of thirty-five.
High to soar, and deep to dive,
Nature gives to thirty-five.
Ladies, stand and stock your hive,
Trifle not at thirty-five;
For howsoe'er you live and strive,
Your life declines from thirty-five.”

Perfection
of
thirty-five.

Up to twenty-five years egoism rules the nature, for the body has to be constructed, after that altruism: in a woman, in the cares of marriage and child-bearing; in the man, in working for his wife and children. Egoism more easily persists in bachelors and in spinsters than in married life.

Egoism and
altruism.

Race
increasing
in height.

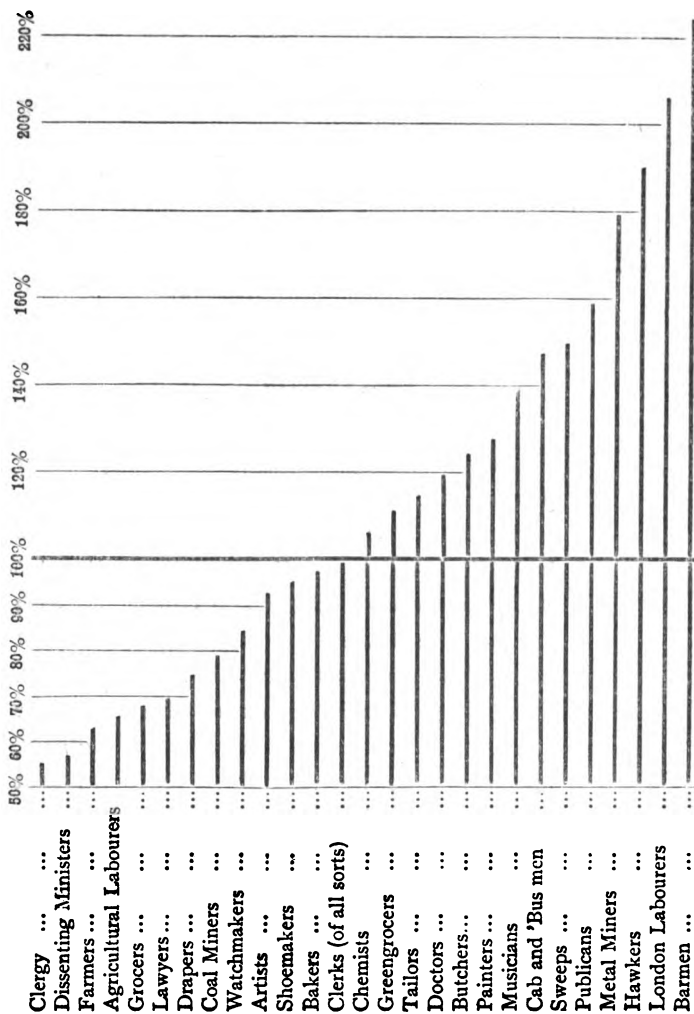
As to physique, it must be remembered that the measurements we have given are far in excess of ancient times; for the race is supposed to increase, as we have already said, in stature in civilised countries at the rate of $1\frac{1}{2}$ inches in every 1,000 years. Not only so, but low as the average of 43 years out of a possible 105 may appear, it is really a very great advance over that of 36 in the early nineteenth, or 20 in the eighteenth century, and is mainly due to the increase of private and public hygiene everywhere. It is probably an understatement to say that hygiene saves now some 120,000 lives every year. And yet to-day the needless mortality amongst infants is terrible and shameful; and it is to be hoped that efforts will not be relaxed until it is greatly decreased; for the low average of 44 is mainly due to the enormous infant mortality that still persists.

When all babies under six months old drink nothing but clean milk, infant mortality will at once be reduced by one-half.

Occupation
and health.

The occupation or trade has a bearing upon the health and longevity of the man. The following table shows this :

AVERAGE DEATH-RATE OF MALES ACCORDING TO OCCUPATION.



It will be seen that clerks of all sorts are the only people who live the right time according to the present average : that is, that die at the rate of 100 per cent. and at 43 years of age.

Clergy live
long.

The clergy head the list, and don't die half as fast ; or, in other words, live more than twice as long as the average. They come of a good stock, are of temperate habits, and have a small but assured income.

Dissenting ministers die a little faster. Farmers live long, but would show up better if they spent less money in drink. The agricultural labourer's favourable lot in life (only three-fourths of the average death-rate) is all the more striking when contrasted with that of the town labourer (the lowest but one), who dies just twice as fast as he should. Grocers owe their higher death-rate to the spirits they consume. Lawyers are well off, but would be better, only it is found that after 45 they die off more quickly than they used to, probably from increased strain of life.

Drapers die largely from consumption, owing to the amount of dust in their trade, which makes it less healthy than that of a grocer.

The health of coal miners, which is surprising, is probably due to only strong men entering the colliery, and the harmless-^{Coal mining healthy.}ness of coal dust.

Artists owe their higher mortality to the fact that with them are included engravers and sculptors, among whom the death-rate is high.

Bakers die largely from drink and suicide.

Clerks occupy the average, as we have seen, and their death-rate is much lower^{Clerks represent average.} than it used to be, owing probably to better ventilated offices and increased exercise.

The high death-rate amongst doctors needs no comment ; it is obviously inseparable from the nature of their profession. Butchers, on the other hand, die largely from drink.

Musicians include all organ grinders and German bands, hence their high mortality.

The rest of the trades owe their enormous death-rate to special^{Special poisons.} poisons. Among cab and 'bus men, publicans, and barmen (who really die like flies), it is due to alcohol ; amongst sweeps and metal-miners it is due to soot and dust ; amongst hawkers and London labourers to exposure, drink, and foul air.

The table ranges from the clergyman, with

a mortality of 55 per 100, to the potboy, with 220—a difference that needs no words to show the value of hygienic influence. Nevertheless as a whole this table, which is not new (1885), shows an improvement over previous ones that is equivalent to an addition of 2,000,000 years of life annually to this nation. Since then the improvement has continued steadily.

A man
"in order."

A man "in order" is then, as a whole, one free from disease, functional or organic, whose weight bears a certain relation to his height and general physique, who leads a healthy life, pursues, if needed, some healthy calling; who is temperate in all things, avoiding intoxication, physical, mental, or moral; who gives due balance of work to physical and psychic natures; to whom every morning is a resurrection, and whose life is one of perfect personal ease and action, both in mind and body. All his three natures are in perfect harmony with one another, so that internal discord is unknown; and lastly, but above all the rest—as an American has put it with great felicity—he is "in tune with the Infinite."

A man "in
disorder."

A man in whom this order is disappearing becomes subjectively conscious of his life in a

hundred ways, loses that easy bearing that is such a sign of perfect health ; he is no longer master of every desire. His pulse ceases to be regular and strong, his eye is no longer bright and clear, his face ages, his appetite goes, his judgment loses its value, his character becomes depressed and gloomy and erratic, the power of perfect co-ordination being lost.

Not all these signs are seen in every one below par, but some are seen in all.

Now to what causes, other than age, is the downward trend due? We need not formally recapitulate the various predisposing and exciting causes detailed in our last chapter as affecting nerves. Nearly all of them apply, of course, equally well here, to the man as a whole, whose very centre is the nervous system.

Causes of
"disorder."

So I may content myself here by giving in addition a few extraneous causes that may affect my readers.

And, lamentable to say, it is quite possible, in spite of all our care, that some may be found who will attribute their ills, first and foremost, to the study of this book.

Effects of
this book.

My readers will bear witness how that in the opening chapters I have given warnings as to this; and yet so perverse is human nature that some will, doubtless enough, still wrest this valuable work to their own destruction.

What is to be done? We cannot taboo medical works because Jerome K. Jerome on casually perusing them gets every disease save housemaid's knee. Still less can such a useful manual as this be suppressed because some humble follower of his will misuse it.

The sort of fallacious reasoning that really produces the evil is of this nature.

Silly
reasoning.

The inquiring girl, nervous youth, or elderly hypochondriac reads this sentence: "Cancer is nearly always accompanied by pain, sometimes of a dull and at others of an acute character."

"Yes, I see; cancer has two sorts of pain, dull and acute. Well, I have a dull pain, so I must have cancer; the book says so!" or "I get a sharp pain at times, and the book says I have got cancer." People with such scanty reasoning powers are difficult to reason with, for they have no spare stock left;

it takes all they have to produce these ponderous fallacies.

But there are other causes of disease besides reading this book. There are some, perhaps, who have never read it, and yet are out of health. How is this accounted for? Well, they may have read similar works, or, at any rate, something may have started introspection. Nothing is so unhealthful as too much attention to health. Better eat anything, drink everything, defy all of Nature's laws, than live to think of nothing beyond self and health. Ever to think of what to eat or drink, or how much exercise to take, or how many blankets to sleep under is the acme of unhealthfulness. An eternal round of health maxims, including dietaries, &c., reduce health to ill-health, and life to weariness. Too much anxiety what to eat, drink, and put on squanders life-force.

Hurry we have spoken of, and many a young man of sound and vigorous constitution by rising late, snatching a mouthful and hurrying to business, taking a hasty meal in the middle of the day, and spending the evening in a close and vitiated atmosphere through a number of years has, at last, suc-

This book
not sole
cause of
disease.

Hurry
destroys
health.

cessfully destroyed it, and proved the truth of our remarks.

Another little suspected cause in advanced life is sudden change of habits, as when one leaves business, or removes into the country. We cannot safely transplant a tree or a man after a certain age.

Maintenance of health.

Let us turn now to the repair of the man, or how to maintain the threatened health.

I should like in the first place to make a somewhat long quotation from Sir Hermann Weber's recent remarkable address on the prolongation of life.* I should prefer to insert it all, but space forbids. He says:—

Prevents degeneration.

“It is all-important to prevent the degeneration of the nervous system as long as possible; we must nourish it and keep it in action. The state of the blood-vessels and the circulation is, again, all-important. Degeneration of the blood-vessels of the brain, and the impairment of the brain structure and functions consequent on it, is a frequent cause of premature death, and the tendency to this degeneration is in many families hereditary; but it is to some degree pre-

* Sir Hermann Weber on the Prolongation of Life *British Medical Journal*, December 5, 1903.

ventable by great moderation in food and stimulants, by regular physical exercise, and by judiciously arranged mental work and occupation. I have often witnessed this, ^{History of family.} and in a very striking way in a family whose male members had for generations died between 56 and 54 from apoplexy or paralysis or mental decay. Of five brothers in this family two led an active life, mentally and physically, coupled with moderation, and lived to beyond 70 and 73 years, and died from heart affection and pneumonia, while the three others, with less active and less temperate habits, died between 60 and 64 from apoplexy.

“The brain often decays from want of ^{Brain decay.} physical exercise or mental work. Many men retire rather too early from business ; others, especially officers in the army or navy and civil servants, are obliged to do so by the regulations. Amongst these men we see not rarely weariness, dejection, and an inclination to give up occupation and active habits ; to remain longer in bed and sit longer over their meals ; and, in consequence, sickness of different kinds and also premature decay of the brain functions. Such

Value of
hobbies.

men ought to find occupation for their brains and take regular bodily exercise. They ought to seek some objects of interest in art or in literature, in studying the habits of insects or birds, in history, geography, geology, zoology, botany, in gardening or agriculture, in the beauties of nature, in travelling, or in adopting and educating a child, and in other philanthropic matters, &c.; they ought to cultivate a hobby, and this ought to be commenced already while people are still at active work, since the inclination and the aptitude to begin something new disappears not rarely long before 60, when they have to retire from their work. Many old people derive great benefit from chess and other intellectual games, but also from games at cards, especially when the eyesight fails, provided over-excitement or passion is avoided. The families or companions of old people ought therefore to play with them, instead of allowing them to go to sleep during the day or the long evenings. A great point is to keep up variety in mental occupations, and to keep awake the interest in many things so as to prevent mental torpor, which is akin to ossification of carti-

Games
good.

Prevents
mental
torpor.

lages or arteries. All mental occupation leads to increase of flow of blood to the brain, activity of the small blood-vessels, and nutrition of the nerve cells. I have already mentioned Mosso's experiment. I could produce the most remarkable proofs of the influence of mental activity on the condition of the heart, the digestion, and the whole body.

"I cannot resist mentioning a very striking ^{Interesting case.} case which I had the opportunity of watching from day to day, as the subject was an intimate friend of mine. A man of great energy and intelligence, who was the leading spirit in a well-known hospital, began to become languid and to lose his interest in his work at the age of 78. The action of his heart became weak and very irregular, he lost the expression of intelligence, the saliva ran constantly from his mouth, and a viscid and acrid fluid from his swollen eyes; œdema of the legs, and, at last, effusion from the pleural cavities developed themselves in his 82nd year, when suddenly the arrangements which he had created at the hospital were in danger of being overturned. This caused ^{Value of occupation.} violent excitement in him, he began at first

to dictate, and soon to write letters; he held meetings and succeeded in saving his arrangements and his influence. Marvellous was the improvement manifesting itself from day to day. The pleural effusion and œdema disappeared, the heart became almost regular, the eyes and mouth returned to their natural condition, the puffiness of the face subsided, and the intelligent expression came back. He remained in this improved condition about a year, when he died of pneumonia from a deleterious meteorological change. It was the work of the brain which improved the circulation, and especially the joy at his success, which caused this astonishing improvement. Wonderful is the effect of success, and especially of joy, and shows the immense power of the mental condition over the whole organism. But we see also, in our professional intercourse, the influence of the opposite mental conditions. Grief and loss of hope cause in some people the greatest mental depression, total indifference for their surroundings, combined with at first functional, afterwards organic, changes in the heart, and thus they may die of what may truly be called a "broken heart." Diminished

Brain work
improves
circulation.

A broken
heart.

respiration and imperfect supply of blood to the brain probably have a great share in these conditions of depression. Sometimes, but not always, we are able to produce a favourable turning in such cases by awakening an interest in near relatives or friends, or by some other powerful mental influence, which is followed by arousing the depressed functions of the brain, the heart, and the rest of the body.

“We must endeavour to cultivate cheerfulness and a happy and placid mind. ‘A merry heart doeth good like a medicine: but a broken spirit drieth the bones’ (Prov. xvii. 22).

“In order to promote cheerfulness and avoid mental depression it is of great importance to educate the sense of duty. The feeling of dissatisfaction or satisfaction with oneself exercises a powerful influence on the mind, and, through this, the whole organism, and the thoughts ought to be turned to this from early life. The head of a family, for instance, who neglects the happiness of his wife and the training of his children for his personal enjoyment; the woman who shirks her duty in bearing children and in nursing

Promote
cheerful-
ness.

Happiness
in health.

them, from frivolous motives, prepare for themselves, in most instances, worry and often disease and premature death, while those who bring sacrifices for home and family, for the improvement of the condition of the poor with whom they come in contact, earn mental satisfaction and happiness, which act like sunshine on the whole body, and thus become means of prolongation of life and a happy old age. A further point of self-education is the restraint of our passions ; not only that we must not allow ourselves to become furious if anything displeases us, but we must also conquer our ambition, our avarice, our jealousy, our sexual desires, which often become the sources not only of unhappiness, but, as you know, of bodily and mental disease, premature death, or 'miserable' old age.

Self-
control.

Strengthen
the will.

" A powerful agent in health matters is the will. We must develop it from youth and cultivate it throughout life. A large proportion of those whose lives I have been able to prolong exercised their strong will in carrying out the precepts which I gave them, although they appeared to them at first tedious and difficult. 'I will not decay

early,' they said ; ' I will maintain my powers and faculties as long as possible.' And not only is a strong will a great aid in attaining longevity by maintaining health, but it is also a powerful agent in overcoming disease. This is generally acknowledged with regard to pulmonary tuberculosis, but I have also seen many, and amongst them some almost marvellous cases, in other diseases."

He finally sums up the whole subject as follows :— Summing-up.

"The main points of my advice may be comprised in a few sentences :

"Moderation in eating, drinking, and physical indulgence.

"Pure air out of the house and within.

"The keeping of every organ of the body as far as possible in constant working order.

"Regular exercise every day in all weathers; supplemented in many cases by breathing movements, and by walking and climbing tours.

"Going to bed early and rising early, and restricting the hours of sleep to six or seven hours.

"Daily baths or ablutions according to

individual conditions, cold or warm, or warm followed by cold.

“Regular work and mental occupation.

“Cultivation of placidity, cheerfulness and hopefulness of mind.

“Employment of the great power of the mind in controlling passions and nervous fear.

“Strengthening the will in carrying out whatever is useful, and in checking the craving for stimulants, anodynes, and other injurious agencies.

“In laying down these precepts I wish not to create a life of privation, but to promote a long life and a useful and happy one to the end without suffering, and I can assure you that it has been my good fortune to succeed in a great many cases.”

Variety not
uniformity.

After such comprehensive conclusions, but little remains to be said. It may be pointed out that a well-ordered life does not mean a monotonous life or a life by rule. Diversity and variety, not uniformity, is the rule of life of every healthy being.

Work is undoubtedly the great health preserver of the world. Mental work tem-

pered with sufficient physical exercise and refreshed by sound sleep represents the most delightful life possible. In fact, it is both good and pleasant. Definite times for recreation and holiday are most hygienic, but it must be remembered that long recreation without work soon becomes labour in disguise and ceases to be a source of health, and, eventually, even of pleasure.

Work and recreation.

Some find recreation in inconvenience and adventure which are a delightful contrast to the well-ordered life at home; others in the placid enjoyment of sun and air and meat teas.

It is well in advancing life to have various sources of recreation and many channels of recuperation. Indeed, work should never be finally given up, if health is to be preserved, without some definite occupation that is agreeable, some hobby to fall back on when wished.

Giving up work.

Just a word or two, in closing, on our surroundings in relation to health, for man depends greatly on his environment. In fact, Herbert Spencer lays down that perfect correspondence with environment is health, imperfect correspondence is ill-health, and want of all correspondence is death,

Country
and town
life.

There is no doubt in this respect of the great superiority of country over town.

In a north country village 140 children were born and none died during a period in which 30 died out of the same number born in London, and yet London is a very healthy city. The fact is that Acts of Parliament and wise legislation will make cities healthier, but they cannot enter the houses and regulate the personal habits of the people. It is not that town people are more ignorant of hygiene than country people. On the whole I am inclined to think it is the other way about. But it is that they are crowded together in such vast numbers that practically a town dweller leads an indoor life and a countryman an outdoor, and this is the essential question for health. The best way to mitigate the evils of town life is whenever possible to spend Saturday and Sunday in country air, and the best way of increasing the health of towns is to multiply outdoor recreations and places where people can spend their time in the open air with enjoyment. Happiness and health are often connected with atmospheric conditions. A pressure of the atmosphere

Indoors
and out of
doors

Atmo-
spheric
pressure.

affects some greatly ; the dryness of the air, the electricity in it, the season of the year, are all-important ; dry, cold, or genial warmth are best, and summer and autumn the best seasons, spring is the worst.

Dry subsoils, nearly universal in London, are most healthy, while damp subsoils are most unhealthy, and are also the cause of many infantile diseases.

The aspect of the house, the amount of sunlight, that is, of the violet or actinic rays, have a great bearing on both animal and plant life.

The open fire-place is undoubtedly more Open fire-places. healthy than any system of pipes, and is best for temperate climates.

But all these details do not touch one important point connected with surroundings, and that is the power of suggestion that comes from our environment. This force is Force of environment. amazing, and cannot be realised by those who have never studied it. Even such lowly organisms as the caterpillar and the chrysalis absolutely change their colour to correspond with the colour of the sheet of paper on which they may be placed. How much more

must the susceptible and highly organised brain of man respond to the influences that beat on his unconscious mind from his environment on every side!

To be in health, then, the man must live in surroundings that fit him, that suit him; they must not only be in themselves healthy but they must suit his personality.

Well-cut
circum-
stances.

Circumstances and surroundings fit just like our clothes, well or ill; and well-cut circumstances are as important for health as well-cut clothes are for appearance.

A wise in-
difference.

Health is therefore most easily maintained, and the nerves kept in order, in those who are perfectly adapted to their environment, and in whom a wise indifference refuses to be over-solicitous about health matters or to be bound too tightly by health laws, and yet whose vision is keen enough easily to observe any grave departure from them, and who are wise enough to at once take those simple measures we have indicated to restore the lost balance when needed. I will not say more, and only hope I have not said too much.

Appendix

APPENDIX

(SEE CHAPTER I, PAGE 26)

SINCE writing this chapter a remarkable scheme of the Mayor of Huddersfield has been brought to light in the *Daily Mail*, November 11, 1904, which, we hear, gives an account of its great value. The statement about Côte d'Or is particularly worthy of note. It would be well if any wealthy reader of this book would seek wisely to copy such an excellent example:—

Extract from the "Daily Mail," Nov. 11, 1904.
The italics are ours.

"General approval is expressed of the new Mayor of Huddersfield's scheme for preventing the sacrifice of infantile life by giving a bonus of £1 on every child in Longwood, born during his year of office, which survives its first twelve months of existence.

"The promissory note which, beautifully printed in gold and colours, is to be given to every Longwood mother who adds to the population up to November 9, 1905, recites this striking fact:—

"For every baby fed on its mother's milk who dies before the age of three months *fifteen babies*

die who have been fed by other means.' In the *Daily Mail* of October 22nd last, Professor Long, writing on 'The Sacrifice of Babies,' said : 'There is no baby food like the milk of a healthy mother, and if mothers would feed their own children instead of weaning them and resorting to substitutes, we should no longer hear of these amazing death-rates.'

"It is this 'golden rule' which the Mayor of Huddersfield hopes to see recognised by his ingenious insurance of the living.

"'In these manufacturing districts,' says Mr. E. H. Hill, the West Riding Coroner, 'there are many mothers who are unable or unwilling to give their children their "natural food," because they work in the factories. Therefore, the second object of Mr. Broadbent is to diffuse certain broad principles as to the artificial feeding of children. One of the rules of the bonus card, for instance, warns mothers "never to give the baby *bread, or sops, or gravy, or any other food, except milk, till it is more than seven months old.*" Strict adherence to this rule alone would, in the opinion of an eminent doctor, reduce infantile mortality 50 per cent. Hardly a day passes without an inquest on some poor babe at which the mother complacently argues that it was well fed, as it "had everything we had."'

"It has been said that the Mayor of Huddersfield has borrowed the idea of a bonus scheme from the commune of Villiers le Duc, Côte

d'Or, of which M. Morel de Villiers is doctor and mayor.

“Of 823 children born in this small commune between 1800 and 1893, 183 died in their first year—or nearly *one child out of four*. M. Morel de Villiers was appointed mayor in 1884, and *all* the children born in the commune during the last ten years (from 1894 to 1904) *are alive and healthy*. Why? Because the mayor made regulations under a ministerial decree issued in May, 1894, which deals in a common-sense way with the life of the child, and the mother before it is born. The medical and monetary assistance given to poor mothers comes from a municipal fund.

“It is not possible for the Mayor of Huddersfield to go so far officially; but his plan of unofficially showing a civic interest in infant life has in it the germs of great success.”

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