

"THE BEST HEALTH BOOK EVER WRITTEN"



BY
ARE WAERLAND

With preface by
SIR W ARBUTHNOT LANE
and
Introduction by
J ELLIS BARKER

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A D MCMXXXIV

*Physician, heal thyself: so thou healest also thy patient.
Let that be his best help, that he may see with his own eyes
him who hath made himself whole.*

*A thousand paths there are which have never yet been
trodden, a thousand healths and hidden islands of life.
Unexhausted and undiscovered ever are man and the human earth.*

*Awake and listen, ye lonely ones! From the future winds
are coming with a gentle beating of wings, and there comes
a good message for fine ears.*

*Ye lonely ones of to-day, ye who stand apart, ye shall
one day be a people: from you who have chosen yourselves,
a chosen people shall arise : and from it 'm o r e t h a n m a n'.*

*Verily, a place of healing shall earth become! And
already a new odour lieth round it, an odour which bringeth
salvation - and a new hope.*

Friedrich Nietzsche

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PREFACE

by

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The work that Mr. Are Waerland has produced is one which fulfils a great purpose.

It at once instructs the reader in matters of vital importance to his health and happiness, clothing the information afforded in a most attractive manner.

The author aims chiefly at making knowledge a living and integral part of the reader's mind by appealing not only to the intellect and the reasoning faculty but also to the great 'cantilevers' of human activities, the love of truth, the creative intuition and the enthusiasm, as the most powerful promoters of progress, without which much information, however valuable would not be converted into deeds or become a reality in life.

While intensely instructive, the introduction of so much anecdote and personal experience renders the work as attractive as a first class novel, holding attention from start to finish.

In this way, the usual dull, dogmatic educational method is avoided.

The book is the record of a widely-read and travelled layman's search for health, and constitutes, as such, a valuable medical and human document, made still more attractive by the sympathy and affection the reader acquires for the author.

There is not a dull sentence in the whole book.

One feels that, while it will be most useful to adults, it will serve as an excellent 'text book' means for the education of the young, since it renders the instruction most palatable.



FOREWORD.

The following pages contain in twenty-seven chapters on various health subjects, the record of a thirty year's search for health.

Though having for a life-time been a lecturer in these subjects, the author has persistently refused to submit his views to publication until he was able to take a 'bird's eye' survey of the whole field of his research and had a full certainty that the conclusions he had arrived at were inevitable and that they represented the most practical and effective solutions of the great problems involved.

The book is revolutionary. It constitutes in its essence the most serious and comprehensive attack hitherto published on the present-day system of treating disease, and consequently on the representatives and supporters of that system. But it is by no means an attack upon medical science and its foremost pioneers and leaders, in so far as they have arrived at the same conclusions and realised the necessity of fundamental and thorough reform in the prevailing established outlook upon disease and health.

It is obvious that an attack of this kind, provided that it is founded upon facts, sincerely written and fair to all the many excellent qualities, the integrity of character and the great devotion of the majority of medical practitioners to their profession and their patients, for which the author himself is unable to find a better word than 'noble', cannot but contribute to the solution of all the many problems concerning the greatest assets of any nation - the health of its citizens and the future of its race.

The author is firmly convinced that no reader will lay this book aside without admitting that it has brought forward a very strong case against the prevailing system, of which, from the author's point of view, the bulk of the doctors themselves are victims no less than their patients.

It will also be obvious to every reader that medical science, as it stands to-day, is by no means an exclusive product of the efforts of the doctors, but to a very large extent the result of the thinking and research work done by outsiders - men in other branches of science and interested laymen. The failure of medical science to obtain health and immunity from ailments is, without doubt, due chiefly, on the one hand to the art of healing being monopolised by professional healers operating as a trade union, and on the other to the laymen having been led to believe that their own endeavours and contributions would not only be unnecessary but futile and unwelcome.

One of the author's chief aims in writing this volume has been to convince his readers of the great disaster this view has brought about, and of how heavily we laymen have had to pay for it. Also to show how necessary it is to establish an exclusive research by laymen into these matters, at least for the present, and in the future a co-operation on new lines with an entirely reformed staff of medical practitioners.

The bitter experience the author has himself had may excuse him largely for occasional sarcasm and severity of criticism, and also for his taking the view that co-operation with the medical profession would not be advantageous at present and would in all probability result in a speedy return to the old state of affairs.

Effective co-operation can only be established by bodies of workers - of no matter what calling - who have attained positive, irrefutable health results and are, as the author of this volume is, well aware of the means and methods by which they can be obtained.

It was unavoidable that this volume should be to some extent a record of the

author's own life. While regretting the necessity of referring to himself and his own endeavours, he begs to be excused by his English readers for having recorded, especially in the first chapter, what must be obvious to most people in England, but was by no means so on the continent in his childhood. Still, without having recorded these more or less trivial experiences, the great issues to which they have led would not have been properly understood.

Since 1902 the author has spent most of his time in England and he is deeply indebted to the many friends who have supported him in his work. In particular he wishes to express his gratitude to Sir William Arbuthnot Lane and Mr. J. Ellis Barker for the trouble they have taken in reading the manuscript, and writing, the one a preface and the other an introduction to this volume.

London, 4th Oct., 1934.

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I.

MY FIGHT AGAINST FATE.

"Every man who thinks and observes for himself - and no one who cannot do this should write on medical things - will utter what is in him in his own way."

- **British Medical Journal**

"Look here, my boy," my uncle said, "there is a lecture at X-village to-night, on 'Our Constitutional Rights'. The lecturer has just wired to say he is in bed with a cold. I cannot go myself and there is no one else to be found, so I think you had better go."

I was still in my teens, with little knowledge of life and still less about myself, and I thought my uncle was joking, but when he repeated his request in the tone peculiar to him when he did not wish to be contradicted, I simply answered: "Good gracious, you know I have never delivered a lecture in my life!"

"I know, I know," he said, "but I really think you should try. I have a feeling that you would do well as a speaker; any facts bearing upon our constitutional rights you certainly have at your finger tips, judging from our conversations. So please say no more, but get yourself ready and go."

My uncle was an authoritative person, and a good judge of men and matters. His confidence in me had an electrifying effect. Besides, I had always longed for an opportunity to make an attempt at lecturing. I hurried upstairs, changed, put a block of note-paper and some pamphlets in my pocket and was off by the next train.

An eventful journey!

How I got through that lecture Heaven alone knows. However, neither words nor arguments failed me. And the audience!... When I had finished, there was no end to the applause. I met grateful, enthusiastic eyes everywhere. My success seemed to be decided. The news of it spread like lightning to all the political associations in the district.

When I returned home the next day my uncle seemed more than pleased. He looked at me, embraced me, and shook me by the shoulders. "I always considered you a good talker," he said, "but who would have dreamt that you would reveal yourself as an accomplished speaker at your very first attempt? Your career is made!"

That night I went to bed with a strange feeling. Evidently there was something in me of which I had not been aware until a few hours ago. And now I suddenly saw before me a future I could not have dreamt of yesterday. I could not help smiling. How little we know ourselves!...

The following weeks were like a wild dream that had suddenly come true. I was plunged into work - lecture-halls, audiences, stations, villages, towns and scenery of all sorts followed each other like a phantasmagoria. It all impressed my youthful mind. I felt for the first time that I was fully alive with all my senses, with all my heart, mind and soul.

* * *

But alas, all this was doomed to come to an abrupt end.

Suddenly one evening, right in the middle of my lecture, I saw, as it were, a clammy hand moving towards me. I felt a strange grip on my throat. My voice gradually failed me. I had to summon all my strength to try to make myself heard, but in vain. There was nothing for it but to apologize and leave the platform. Still, everyone was kind to me and, seeing how upset I was, assured me that it could not be anything serious ... only a temporary indisposition.

But it was not!

Two or three throat-specialists declared, in the days that followed, that I was suffering from an incurable catarrh of the throat and that I should have to say 'good-bye' to public speaking for ever.

My throat was subsequently cauterized and I had to take all kinds of medicine. Gradually my voice returned, though for weeks I could not speak above a whisper. However, my uncle advised me to choose a profession that "suited my throat". "It is no use kicking against fate," he said.

Fate... fate... fate...! I repeated to myself. Philosophy was my chief study. To be a philosopher had been my dream ever since my dear father, himself a born philosopher, had explained that word to me.

Well, I thought, I do not need a voice to be a philosopher.

To begin with, I started philosophizing about my own fate. I could not help it. Was that unseen hand, which seemed to have caught me by the throat in the middle of my lecture, really the hand of fate, I asked myself? ... Was fate something outside or inside us? ... Were we our own destiny, or was destiny, as it were, written in a book, the 'Book of Life'? ...

I visualized for the first time the great question modern materialism had brought to the fore: Was life a mechanism and were we ourselves only puppets like Punch and Judy, moved by the wire-pullers of blindly-acting physical forces, or were we endowed with free-will, and was life a continuous creation in which everything, including atoms, protons and electrons, had their share, their work to do and their task to accomplish? ... Upon the answer to that question hung my future. For if life was a blind unfolding of forces without purpose or meaning, and if our thoughts and actions were the result of the play of atoms whose positions were determined for all time, all my efforts to alter my own destiny and to fight my own fate would be in vain.

However, I felt intuitively that life must be, after all, and in spite of all that the physicists of those days had to say to the contrary, *a free creation*. Later on, extensive studies which matured in a book "Matter or Soul", proved to me that I was right and the materialists wrong, a conclusion which had the greatest bearing on my future. Its

first result was a determination to fight the 'mysterious hand' which had deprived me of my voice that fateful night. This determination seemed to surge up from the very depths of my being, once my mind had been delivered from the ice-cold, deadening grip of modern materialism. I felt that, somehow, I was the master of my own fate, and the consciousness of this fact has ever since been the chief source of my strength. It presented me with the key to my future.

* * *

In the following months I consulted every doctor and specialist I came across. I made notes of all their answers and remarks, but found most of them more or less trivial, nonsensical and parrot-like. I now turned to a study of the specialists themselves, their training, their methods, their minds and habits, I found, to my astonishment, that they were all moving more or less in the same groove and quoting apparently from the same books. Any unusual question seemed to bewilder them, to make them look disturbed and sometimes even angry.

A sudden thought struck me! What if these doctors embodied not only my fate but the fate of thousands, and what if ill-health was only a result of factors in life we, after all, could master - factors of which the doctors pretended to be aware, whilst, in reality, they knew little or nothing about them? What if that hand...? I stopped dead in the middle of my thinking, visualizing something.

In the days that followed I began to examine my own case in a quite unconventional way with the aid of two leading works on anatomy and physiology. It proved a fascinating study. I soon discovered a fundamental fact which, strange to say, no specialist had ever noticed or, at any rate, had never mentioned.*

*) That we should breathe through the nose seems self-evident to every Englishman and constitutes an integral part of his upbringing and education. This is due to the fact that England is the oldest home of sport and physical culture, whilst the rest of Europe has been lagging behind. What was self-evident in England half a century ago was by no means so on the Continent.

I was a *mouth-breather!*

I was subject to the bad habit of always breathing through my mouth. I soon came to the sad conclusion that I had done so ever since I was a child. My nostrils were narrow, flat, undeveloped, my mouth was always open as if trying to catch flies, even in the midst of winter when the thermometer was 60° F. below freezing-point.

Just think of it: I was living in a very cold country. The temperature might have been even 70° to 80° F. below freezing-point, whilst the thermometer indoors, thanks to our well-built houses and excellent heating systems, always indicated a summer temperature, generally 65° to 70° F. This meant that my poor throat, for at least six months every year, was exposed, through faulty breathing, to ranges of temperatures varying from 40° to 100°. How could the throat belonging to a delicate constitution like mine ever endure such a difference without finally breaking down? ... It seemed to me that I was beginning to understand something about the mysterious hand which had knocked me out on that fateful evening.

On going to bed that very night I tied a bandage tightly round my head so that I should not be able to let my jaw drop or breathe through my mouth while asleep. I repeated this procedure for a fortnight.

My next step was to take a rapid walk every morning, mouth closed, nostrils distended. I trained myself gradually to run for several minutes, breathing exclusively

through my nostrils. It cost me a great effort. For breathing through the mouth was my habit, and breathing through the nose was painful, objectionable ... to say the very least, uncomfortable. But I was fighting fate, and I was not going to be beaten.

* * *

My voice came back, day by day, week by week. It seemed to come from nowhere, from the land of Silence, from the Mystery Land where that hand had come from.

"By Jove," my uncle said, "your voice is getting better and better in spite of your chronic catarrh! ... What about trying a lecture again? I am just short of a speaker for a meeting tonight. Don't be afraid, just try and see how you get on!"

Six months had elapsed since I started my fight against fate; I had never suffered from any fear in facing an audience during my short career as a speaker. But that night I went to the platform trembling as if in a fever. I started my lecture quietly, striking a low, deep tone, feeling my way. I felt like a child who is just learning to walk, cautiously taking a few steps from chair to chair. As I spoke my voice grew stronger and stronger. At the end of the lecture I felt I had it in hand once more.

The battle was won so far! But did it mean a lasting victory? ...

* * *

I was waging a war against fate and destiny, or rather what ordinary people regarded as fate and destiny. Among ordinary people I included the doctors, for I had found that they, in their views of health and disease, only represented what people in general and their patients in particular thought about these subjects. None of them was a thinker, a philosopher. None of them had gone a step beyond what he was taught once upon a time by his University professors. None of them had, so it seemed to me, ever dared to overstep the boundaries of his so-called 'province'.

I had certainly gained a decisive victory in the first round of the fight, which had been waged just as much against the short-sightedness and lethargy of the doctors, as against my own ill-health. I now felt that my position had to be entrenched and strengthened before I took any further steps.

My morning runs with mouth closed and nostrils wide open proved an excellent entrenchment. I did not fall back. I held my ground. To this I added deep breathing exercises every morning. I measured my chest carefully. It seemed to grow by inches. - May I add that now, thirty years later, I have a thorax which all the anatomists who have examined me have pronounced unusually powerful and well-developed. My breathing capacity is far above the normal.

My voice increased steadily in strength and depth during the months that followed. After a year and a half I could challenge any ordinary speaker as far as volume of voice and endurance in speaking were concerned. I felt sure that I should never slip back again.

* * *

To most readers all this may seem mere common sense. But common sense has proved to me to be the rarest of things in life. - My next discovery, which I consider

of momentous importance, will soon put every reader to a simple test, for it is sure to baffle everyone who has not hitherto given a thought to this matter. And yet, it will prove in the end to be simply *common sense*.

Often, when after a long journey by sledge through deep drifts of snow I was landed in a little village, I used to drink a cup of coffee or tea as hot as possible to warm myself before the lecture. The tea was sometimes so hot that I should have scalded my lips and tongue and the membranes of my mouth and throat if I had not swallowed it quickly. What my poor oesophagus or gullet (the tube connecting the mouth with the stomach) and the stomach itself thought of the excessive temperature of the drinks forced upon them, it never occurred to me to inquire until a serious accident happened.

Once, after having consumed a cup of hot tea on an exceptionally cold winter's night, I found myself hoarse at the end of the lecture. Returning home in a sledge, with a cold wind in my face, I experienced the same sensation as on the night I lost my voice. The next morning my old throat trouble had returned and I was subsequently laid up for a month. This experience marked the end of hot foods and drinks in my life.

I felt that I had made another discovery *outside the province of the throat specialists*. - Now, thirty years later, I know for certain that thanks to this discovery I am the happy owner of a digestion, an oesophagus, a stomach, intestines and, above all, a big bowel or colon which are unique, and which have rid my life of intestinal disorders of any kind, with the sole exception of the incident described in the next chapter. I am now scarcely aware of having a digestion at all.

The new relapse into my old trouble which followed upon that fatal cup of tea, brought me straight into a study of some of the most important problems of modern physiology and biology which are so grossly neglected, particularly by those who are most in need of them and who should be our guides in this study - the doctors.

Sir Arthur Keith, that great and eminent biologist, told me once that in all probability it had taken Nature at least twenty-five million years to develop the human form from the time that the human species branched out from the great tree of life, and that our alimentary canal may count its age in hundreds of millions of years from the time it was first laid out as a simple tube in our sea-living ancestors.

Nature has slowly evolved our digestive system through species after species until it finally emerged, a miracle of perfection, millions of years before ever fire was known as a means of preparing food. It never occurred to Nature, therefore, to provide more than the lips, the tongue, and the membranes of the mouth and throat of this alimentary canal with 'gate-keepers' in the form of taste- and pain-nerves, warning man against the intake of foods and drinks of an unsuitable kind and temperature. As soon as a surgeon, when operating, has cut through the abdominal wall, he can go on at his ease cutting the stomach and the bowels without causing the slightest pain to his patient. What we call 'abdominal pain', 'stomach-ache' etc., is always pain located in the surrounding tissues and nerve-stems, which gradually become involved in the inflammation. The pain from a duodenal ulcer (below the stomach) may actually be felt as far away as under the shoulder-blades - just as if we felt tooth-ache only in our elbows.

Our ancestors could not swallow anything rejected by the protecting taste- and pain-nerves of the mouth, up to the time when fire became the servant and the tyrant of man. Every morsel of food had to be scrutinized and approved of by these 'gate-keepers' during the process of a most thorough mastication, before it was allowed to pass downwards. The oesophagus and the stomach were well protected and safe.

These conditions lasted practically until the onset of the great glacial period, or some 100,000 years ago. - But what is a hundred thousand years in the history of man? ... Not more than a second in an octogenarian's life!

With the discovery of fire for cooking purposes, hot drinks and hot foods invaded humanity, overruling the defence-lines of the mouth, and finding the poor oesophagus, the stomach and the duodenum quite unprepared, *without a reflex mechanism to respond to excessive heat and to reject what was forced upon them.*

Foolish, thoughtless, blindfold humanity!

Man, who has named himself 'Homo sapiens', the *knowing* species, in distinction to all other species as '*not knowing*', believes, in his conceit, that he can disregard in an arbitrary way, what millions of years have built up and perfected under conditions utterly unlike those under which he is at present living, and force upon his internal organs foods and drinks for which they were never constructed.

If you doubt my words, please dip your little finger into your next cup of tea or plate of soup and try to hold it there. In most cases you will withdraw your finger at once as if stung by a bee or a serpent. Experiments have shown 120° F. to be the highest temperature that the outer skin of our hardened fingers can possibly stand for more than a few seconds. And yet we believe that our internal organs are able to stand the test and endure temperatures from 120° to 150° F. and more, without serious consequences. Civilized man has had to pay for this foolishness with innumerable stomach and intestinal diseases, to which learned doctors have given names in Greek and Latin, and for which they are seeking the causes among the microbes, as our pagan forefathers sought those of their illnesses among unseen bogies and goblins of the air, the forests and the earth.

Homo sapiens - who seems to be 'sapiens' or 'knowing' only as far as the names of his diseases are concerned - reasons that the cause of his troubles cannot possibly be hot foods and drinks *because everybody takes them*: doctors and nurses take them; priests, clergy, bishops and all God-fearing men take them. And so do all the clever, learned people. The aristocracy first introduced them, and the royal families and governing bodies in all countries enjoy them. In fact everybody takes them several times daily, and what everybody has and takes and enjoys must, of course, be sanctioned by the gods themselves and therefore be all right. Stomach diseases and ill-health must, as a matter of course, be due to something else. To what then if not to the microbes? Thank God for the microbes!

Whilst all this is going on in the civilized countries of *Homo sapiens*, his dogs, cats, pigs and other domestic animals, which are not classed as 'sapiens' at all, positively refuse hot foods and drinks *as if they were endowed with more sensitive stomachs, or were more 'knowing' in some ways than Homo sapiens himself.* A curious thing, especially about our house-broken, domestic dogs, is, that though they often suffer from cancer elsewhere they *never have it in the stomach*, whilst the stomach is the favourite place for cancer in man. Nearly 50% of all human cancers arise in the stomach. Could this fact possibly be due to the hot foods and drinks civilized man takes and his dogs so carefully avoid? God forbid! Doctors laugh at such a simple and preposterous suggestion. They explain this embarrassing fact in a much simpler way: "Dogs are *immune* to cancer in the stomach and civilized man is not," they say.

The whole secret lies hidden in the little magic word "immune". What would doctors do without these magic words? They enable them to cut a long discussion short without explanations; they silence enquiry by supplying an answer which is nothing short of a trick played upon the mind of the enquirer; in fact, they furnish the doctors, who profess *to know*, with a cloak of false learning which seems an

impenetrable mystery to the ordinary man.

Another embarrassing fact is that most savage tribes are not only 'immune' to cancer on the whole but especially in the stomach. But then, again, these savages do not as a rule take hot foods or drinks and may therefore be classified among the dogs. Hence their 'immunity'.

As we shall see later on, civilized man suffers from cancer on the whole, and especially in the stomach, chiefly because his doctors are 'immune' to - *common sense!* ...

* * *

Doing away with hot food and drinks was the last step taken towards the complete recovery of my voice.

I could now speak in halls of any size for almost any length of time and be clearly heard by everybody. As a speaker I was considered tireless. Once when invited to deliver four consecutive lectures one Sunday afternoon and five the next afternoon, I found many members of the clergy from the surrounding districts among my audience. When I had finished my ninth and last lecture, an old minister introduced himself with the following words:-

"I have come a long way chiefly because I wished to see how two series of lectures like these could be delivered by the same speaker on two consecutive days without the voice breaking down. I must confess that you stood the test wonderfully. Your last lecture was, from every point of view, your best."

I had cured myself of 'chronic' throat catarrh in my own way, in spite of the doctors, and even in opposition to them. For, whenever I mentioned hot drinks and foods as one cause of my troubles and as never intended by Nature for human throats and stomachs, I was only met by a smile or a laugh.

"Who laughs last laughs longest," says an old proverb.

II.

IN THE CLUTCHES OF DEATH.

It came like a bolt from the blue, the terrible blow which finally struck me down, and brought me to the very gates of death.

I had been lecturing all through the autumn until the snow fell. At the beginning of December I still had some engagements to fulfil in a far away district, where one travels for dozens of miles through endless forests, up hill and down dale, without ever meeting a human soul or passing a dwelling.

Never shall I forget those sparkling winter nights when the snow, a yard deep, covered fields and lakes, fences and gates, and all that could be seen of human habitation was the roof of a cottage appearing now and then above the snow-drifts. The horse had often to wade through an even, white field of snow, on what was supposed to be an arterial road. Only a row of juniper bushes stuck in the snow indicated the way. Sometimes we sat in the sledge, the driver and I on the top of a snow-drift, with the horse acting as a plough, plunging below. Sometimes we found ourselves rolling in the snow with the sledge turned upside-down in front of us. Somehow, however, we managed to get through, arriving in the nick of time at a school-house or a small country hall in the wilderness.

I had often to sleep in the most incredible places, in rooms where the doors could not be locked or bolted, on benches in front of open log fires, sometimes wrapped up in my wolf- or bearskin coat on a bed of straw. Lecturing tours in these districts were then in their infancy. My work was chiefly that of a pioneer. I had to break the ground. But people were eager to learn, and many came from the depths of forests, many miles away, to drink from the well of modern knowledge. Many declared that this was the first lecture they had ever attended, and some confessed that they had come without any idea of what a lecture meant, thinking that it might be some kind of divine service, a theatrical performance, or a Punch and Judy show.

I enjoyed this kind of life immensely and seemed able to endure all the hardships without difficulty. My throat was stronger than ever. I often spoke for hours. People never seemed to tire of listening.

Never shall I forget those glowing eyes, shining at me from the depths of a hall, dimly lit by a primitive oil-lamp in the middle, or by a couple of candles in front of me, the rest being plunged in darkness. - The desire for knowledge seems deeply rooted in human nature.

The sacrifices those people made in order to attend a lecture often reminded me of the beautiful Scandinavian tale of Odin, the king of the old Nordic gods, who went once every year to drink from the Well of Wisdom, Mimer's Well, at the root of the great Tree of Life, *Yggdrasil*, where finally he sacrificed one of his eyes, so as to be able to see beyond the veil of things. A truly Scandinavian tale! - applicable to those people from the forests, who, during the long winter evenings in their isolated dwellings, read and think more about life, and grapple with deeper problems than most town-dwellers.

What a change after the lecture, instead of those human eyes, to be met by the myriad stars sparkling in the frosty air and reflected by millions of crystals on the branches of the snow-laden trees. - Impossible to believe that those stars were not

eyes too ... eyes through which other consciousnesses than our own were looking down upon us and taking part in the great symphony of life. - There was the majestic Milky Way, never seen clearer than from the reclining seat of a sledge in the silence of a Northern winter night, with the mercury at 70° to 80° F. below freezing point. To think that that mighty wheel of myriads of stars was moving slowly round its axis through the depths of an unfathomable space, carrying our tiny globe and its sun with it towards an unknown destiny ... and to think that it is our great privilege to be a part of it all, to live with it all and to contemplate it all in our minds and hearts. Surely, life is a great gift and a wonderful adventure!

My youthful mind was full of problems. This kind of life was to me my real University. I dreamt of Mimer's Well somewhere in the forest. How I wished that I could find it. And how willing I would have been then to sacrifice one of my own eyes in order to be able to see through the veil of things. For what was our work at the University in the town but a continuous linking together in our minds of facts which our few senses perceived on the surface of that mysterious thing we call 'life'? One phenomenon followed another in the flow of time, and it was our task to observe which phenomenon followed which, in a more obvious or more subtle repetition, in order to grasp the concatenation of events. That is science, nothing more, nothing less. The mystery remains behind the veil. Will it be so for ever?...

* * *

One evening, whilst I was sleeping in a small cottage in front of a log fire, a gust of wind suddenly blew the door open, a cloud of snow whirled to the very side of my bed and fell upon my face. In rushed, with the wind and the snow, two huge wolf-dogs who had been running about hunting and barking through the night. They jumped up on my bed. They licked my face. I sprang up and shut the door as well as I could, keeping my friends with me. Impossible to sleep any more. Before the dawn I saddled my skis and went with my two dog friends for a long run in a biting North wind. We ran uphill and down dale until I suddenly found that I could not move a muscle in my face or bend my fingers. I knew what that meant. I had been frost-bitten.

When I returned my hostess at once noticed big white patches on my face. Looking in a mirror I found my nose was snow-white. It was as dead and cold as an icicle. My kindhearted hostess at once hustled me out of the warm air of the cottage into the open and began to rub my cheeks and nose gently with soft, newly-fallen snow, more light to the touch than eider-down. After a while, life seemed to return to the frozen parts. The dead-white patches began to disappear and my nose resumed a ruddier hue as the blood began to flow in arteries and veins which might otherwise have gone to sleep for ever.

About four o'clock in the afternoon I felt a shiver running all through my body. A kind of drowsiness seemed to fall upon my brain. My thoughts became erratic, confused. I could not see clearly in front of me. A chair I was looking at began to rock and jump like the flames of the open fire. My face was burning and my cheeks felt as if on fire. My hands, which in the morning had been like ice, seemed swollen and red-hot, like an iron straight from a furnace. I began to breathe more quickly. Vision followed vision in rapid succession, finally chasing each other in a jumble. Suddenly everything seemed plunged in darkness. I was falling through the floor, somewhere deep below. I was seeking Mimer's Well in the forest, feeling sure of finding it. A

little light in front of me guided my steps. I ran after it, trying to keep up the pace. But the more I ran the farther it receded. I increased my pace until it seemed to me that I was running like wild-fire, caught by the wings of the North wind. They carried me through vast, deep forests in the far North until I came to a place where the earth seemed to bend and a voice rang out: "Stop, you dweller of the Midgard, this is the way down to the world of departed souls, and you are not dead yet."

"Not dead yet?" I repeated in amazement, "surely I am fully alive!" A gust of the North wind swept me downwards, the flickering light still leading the way. In the distance I saw two immense, piercing eyes which I soon found belonged to an enormous eagle with wings outspread. I knew at once where I was. This bird presided over the dwellings of those unhappy ones who had met with the misfortune of not being called to the table of Odin in Valhalla. But my aim was to reach Mimer's Well, which I knew was somewhere below the realm of Hel. I had to go through it all if ever I were to acquire that sight which penetrates the veil of things.

Over my head shone the stars in a far-away distance ... those stars our forefathers thought were only shimmering leaves on the Tree of Life. The Well of Wisdom was at the root of that tree.

Suddenly my foot slipped and I fell through what, to me, seemed an eternity.

When I opened my eyes again I saw a pair of well-known eyes, those of my Mother. For a long time I looked into those eyes, so dear to me. Then I smiled. I had reached what, ever since my childhood, had been the only true Well of Wisdom to me ... She was wise, my Mother.

She looked, at me in silence for a while. Then she said quietly, with a sigh: "At last you have come to yourself again."

I was at home in my own bed, and there was the door open to my familiar study.

For days the fever had been running high. This morning it loosened its grip for the first time, but only for a few moments - long enough, however, for me to learn what had happened. I was in bed with a perforated appendix. I knew what that meant. The right cavity of my abdomen was full of pus. Peritonitis had set in. No doctor would have dared to operate in a case like that. Besides, I should have had to be taken ten miles in an old-fashioned railway carriage on a rattling, uneven railway to the nearest hospital. The risk would have been too great.

Could I pull through? I saw the question in my Mother's eyes. She looked pale, but was quiet as usual. I smiled at her again and then continued my journey on the wings of the North wind, tumbling about in the snow, playing with wolf-dogs, running on skis along the Milky Way in an attempt to find its circumference, finally leaving it with the swiftness of a ray of light for another star-cluster, from where I could see our own universe moving in the distance like an enormous wheel of billions of stars in the depths of eternity.

When I awoke again I found my condition still worse, but my brain had become clearer. I had longer and longer spells of consciousness. The pain was terrible and I suffered from an unquenchable thirst. This thirst began to haunt my dreams which took me, as soon as I became unconscious, to brooks and springs in the forests. There was one spring in particular, known for its cool crystalline water, from which I had drunk many times. To this well my dream-path carried me over and over again. I lay down to quench my thirst, but lo! - my lips could never reach the water. Just when they were quite near, something seemed to get hold of me, stop me, and carry me away.

My condition became worse and worse. My strength was gradually giving way. I could feel that most of my muscles were nearly gone. I felt like a skeleton. But the

spells of consciousness returned and became, curiously enough, more prolonged. I could think and remember and reason about my own condition. And I decided that I was not going to die. Oh no! An indomitable will to live surged up from somewhere and made me defiant, ready to fight anything, devils or gods.

Fever and the fight for life had evidently brought out all that was pagan and truly Nordic in me. My great love of the old Nordic mythology may count for much. But still, I had once upon a time loved our Christian creed, the faith of my father and mother, and I had certainly done my very best to apply it to my own life. All my attempts, however, had been frustrated over and over again by the solid resistance of something deep in my own being, a bed-rock of instincts and intuitions expressing themselves in visions and dreams which I failed to harmonize or reconcile with what my religious upbringing had forced upon me. Greek philosophy, comparative religious history and modern biology convinced me later on that my instincts and intuitions were right and that in listening to my own pagan 'daimonion', or the secret voice of my own Nordic soul I should ultimately find my own salvation. It was this 'daimonion' that spoke to me now in my distress more clearly than ever. What ravaging disease had brought out in me was the soul of a viking - nothing of a modern religious man.

Pagan motives began more and more to dominate not only my dreams but my consciousness when awake. It was to the unseen spirits of things that I now appealed. I asked that the gnomes of the earth, who had been my friends since my infancy, should come and help me. Every night I dreamt that they actually came and brought me to their secret dwellings underground in order to rid me of this infernal pain that, like a gnawing vulture, seemed slowly to tear asunder and devour my intestines. All my will-power concentrated upon this motive. "If only I could find the gnomes," I said to myself, "they would do it!"...

But no gnomes came and the sands of my hour-glass ran lower and lower. Soon my time would be up and I should have to go. Where?... That did not trouble me in the least. I knew I should go somewhere if I could not carry on in the sunshine of my forefathers' Midgard. Not for a single moment did it occur to me that death could be the end of it all. I simply seemed to be torn by two forces, one belonging to this life I had only just entered, and another belonging to a life to come I knew nothing about. With all the strength of my will I clung to this earth-life where I knew I had so much to accomplish. I did not want to go.

But the supreme moment drew nearer and nearer. At last I felt the forces of this life waning and those who were trying to drag me over to the other side increasing in strength. I clenched my teeth and wept for the first time in the struggle. I cried bitterly. Everyone around me seemed to know what it meant. - Then I withdrew into myself and was silent.

An eternity seemed to have elapsed when my eyes again met the rays of a frosty sun at the beginning of March. I awoke like a corpse in a coffin. I was weak, but strange to say, I felt freer, easier. The pain was gone, but evidently complications had now set in. My urine was thick like pea-soup and foul-smelling. The doctor's face turned white. He evidently thought that all hope must now definitely be abandoned. This was, then, only a spell of calm before the great event. Still, I felt wonderfully at ease and took it almost smilingly. I knew that life was eternal and would be a great and glorious adventure wherever I went.

People moved very quietly about me. All faces were serious. I smiled at them and fell into a deep, refreshing sleep. And, lo and behold! For the first time in my dream my lips reached the water of that cool, refreshing well. I drank deeply until my thirst

was quenched.

When I awoke again it was another day. The same sun shone as yesterday, only more radiantly. It was thawing. I could hear the water dropping from the icicles with which King Boreas had decorated the caves. I caught a glimpse of the clear blue sky of spring.

The nurse came and took my temperature. The doctor arrived and examined my pulse and urine. He seemed very puzzled. In spite of those, according to his mind, serious complications, my fever had gone. A sudden and mysterious change had set in. - The gnomes had, after all, done their work.

Two weeks later I was again on my skis walking gently over the frozen snow of spring. I felt like a ghost among living beings. Evidently other people thought so too, for they looked at me with a stare, not believing their own eyes. My funeral had been looked upon as a certainty. And yet there I was, not only alive but up and about, and, what was more, on skis again. A religious friend of my deceased father stopped me in the street, looked at me questioningly, and solemnly shook his head. "My boy," he said, "you are challenging God." - "And so did our forefathers," ... I smilingly replied.

A month later I was sitting in the consulting room of one of the finest men of the medical profession I have ever met in my life, - a man whom I shall always remember with great gratitude. He was professor of surgery at my old University.

I told him the whole story of my illness. He listened attentively. I could see waves of emotion passing over his face. When I had finished he rose, shook my hand and said. "My dear boy, you have been very near death and only a miracle, one in a thousand cases, has saved you. Don't you see that morning your urine became thick and foul, smelling, the pus in your abdomen had perforated the bladder and was rapidly seeking a way out?" ...

The gnomes had, after all, done their work. But in the nick of time!

III.

RESURRECTION.

It took me six weeks more, or in all two months, to regain my lost weight and sufficient vitality to stand an operation. After Easter I called on my Professor, who sent me straight away to one of the best hospitals then existing. I was operated on. A diseased appendix, I was told, was equivalent to a loaded pistol in my pocket, and I was not going to be shot down, or again laid up because of that trouble.

The operation was a very simple thing which I got over without any complications. Compared with what I had already gone through I regarded it as nothing. A few hours after the operation the Matron of the hospital was horrified to find me reading a newspaper. She said it was blasphemous and I was tempting Providence. The hospital was run by a religious organisation. The sisters who looked after the patients were among the most kind-hearted and self-sacrificing people I have ever met.

Next morning after breakfast my Professor appeared, surrounded by a group of medical students. He looked at me in surprise, examined my record, and then turned to the students, saying: "Here you see an instance of what a healthy, sober way of living and a love of physical culture count for after an operation. This patient has never touched alcohol or tobacco and has always led a regular and healthy life." He pronounced my digestion to be astonishingly good, saying I could almost digest macadam, and left me with the following advice which I have thought of many a time since: "Take care of your stomach, my boy, and everything else will take care of itself!"

I followed him with my eyes when he left me. How I loved that man. At the same time there was sadness in my heart, for his face looked pale and worn, and I could see from his eyes that he was suffering from severe headaches. When his nephew, a fellow-student of mine, called later in the day, I asked him about his uncle and his life. "Yes," he said, "my poor uncle suffers badly from rheumatic headaches. He often says they make his life scarcely worth living. But what can he do?"

"And yet," I said, "he is a professor of surgery and a leading physician and cannot cure his headaches!"

His nephew looked at me thoughtfully. "By jove, you are right," he exclaimed, "I never thought of that. In spite of his position and with all his knowledge he cannot cure his own headaches." ...

My old friend had himself been ill and just returned from Dr. Lahmann's Health Resort in Germany, where he had been brought into contact with a host of new ideas, quite contrary to those prevalent in contemporary medicine.

A week later I left the hospital for home. It was early in the summer. I put my yacht in order, loaded it with provisions, guns and books, and set out with some of my student-friends for a summer holiday in the Baltic Archipelago. In that vast and wonderful archipelago, formed of granite and covered with pines, are thousands of uninhabited islands where Nature untouched, just as it emerged at the dawn of Creation. You may camp and roam about among those islands for weeks without meeting a human being. Only an elk suddenly appearing from a thicket, a sea-gull rocking on the waves, or a sail in the distance slowly disappearing behind a screen of grey, green and blue, reminds you of living beings. No touch of civilization! You feel

yourself carried back thousands of years, to a time when these rocks were just the same, the islands the same, and men of the Nordic race settled here and gave some of them names which still remind you of the old gods, Odin and Thor.

Here I had roved about since boyhood in a small open boat until I knew almost every passage and channel, of which there were thousands, intermingling as if in a labyrinth. Here I had dreamed my first dreams and seen my first visions. To this Archipelago I now returned from the jaws of death with my head full of bewildering problems and questions. Here, I felt, I should have to think them all out.

To think! But it was not easy to think. I was tired. The fever was gone but there was a fever of another kind. I was restless. I could not sleep. I lay awake for hours, and when sleep finally came, it was a twilight sleep from which I suddenly awoke only to lie and watch the hours passing. I tried to work. It was of no use. I saw the page before me, but I comprehended nothing. The letters and the words I grasped, but somehow they had lost their meaning. And somehow, too, the surrounding world seemed strange to me, not a reality but a dream. I could listen for hours to the talk and jokes of my friends, laughing and seeming to participate, but it was all as if on a stage, as if I were acting. I was not in it, and yet, strangely enough, I could not get out of it. Sometimes I seemed to be nowhere. Sometimes a cold perspiration broke out on my forehead and I looked about in wild despair, feeling a desire to throw myself down from some of the rocks into the sea, to dive deep down and never reappear.

I had escaped death but I had come back a ghost.

During the long nights - those wonderful Northern nights without darkness, when Nature seems like a divine symphony of newly-sprung green leaves and flowers and glittering waves and sailing, feathery clouds - my thoughts seemed to wander astray and move among things far away in other worlds. Why was I here? What was the aim of life? Was it worth while to go on, to live?

I remembered my vision of that huge chained eagle in the under-world of our forefathers, tearing the flesh off the dead and gnawing their bones.

Symbolically speaking, I felt as if that monster were tearing my flesh and gnawing my bones. Why was there so much suffering in life? Why did Professor B. in spite of all his knowledge suffer so severely from headaches, the same suffering that had devastated the last years of my father's life and brought him to an early grave? The same headaches which had been the plague of my own life and stolen from me so many days of work, so many joys of my youth, and which now returned with increased frequency and severity? Many a time I regretted my fight against my recent illness. Why didn't I go when the gates were open?

These storm-clouds of black depression were interspersed with moments of calm, like the sea enveiled in morning mist. The night was at last broken by a ray of sunlight bringing its message to my befogged mind: "You are under a cloud, encircled in a mist, you are drugged and poisoned, and your vitality has been sapped ... but hold on! Soon the clouds will lift, and you will once more sail into open waters."

When this ray of sunshine pierced the clouds, there surged up from the depths of my being a new determination, a will to go on in spite of everything, and finally this determination got the upper hand.

The summer over, I was appointed Headmaster at one of the Peoples' High Schools, having only just celebrated my coming of age. I looked forward to it, for I loved youth, and I loved to see the enthusiasm of the awakening souls in those faces when some new vista of knowledge was opened up to them. I had to do it, it was my work and my privilege. And I did it, though I was still in dreamland, unable to get back to reality.

By the end of the first year I was faced with a mental crisis so severe that my only choice was to leave the school immediately and seek my salvation in travelling.

My path brought me to England, a land I had always longed to see and to live in. Little did I know then that this country was destined to bestow on me the greatest gift I have ever received in my life - new health and a new outlook upon life. England has saved and guided me twice when I felt I was going astray and could not see my way. Finally I settled here among these people of Nordic Race, where from the first moment I felt so strangely at home that, in the dreamy state in which I landed, I could not help thinking I had lived here sometime in bygone ages.

IV.

NEW DISCOVERIES.

When I landed at Harwich and boarded the train it was again Spring and March. I had left Scandinavia snow-clad, with Nature dormant, to be greeted in England by green lawns and budding trees. The change seemed miraculous. The air was mild and humid. The soft green of the fields and the mildness of the air soothed my mind. Besides, in the compartment the windows on both sides were kept open so that the delightful air could play through - an unheard of thing at home, where any attempt to open a window is met by horrified faces and protests from everybody. For the Scandinavian people, as a rule, believe that a draught is the cause of colds and influenza and almost every disease that follows in their train. I do not remember ever having heard of anybody sleeping with open windows even in the height of summer.

I had always loved fresh air, but to allow it to blow through the compartment and take it in like this, almost horrified me. For I had always, like everybody else at home, looked upon a 'crossdraught', as we call it, as dangerous. However, that idea was soon to be knocked out of my head, for everywhere, wherever I went and wherever I travelled, I seemed to move in a perpetual English cross-draught from which there was no escape. The English people had certainly survived it and seemed none the worse for it. On the contrary, judging by the looks of the young girls one meets everywhere, with their open necks, rosy cheeks, and curls dancing in the cross-draught, they seem not only to stand it well but to thrive on it, and to be all the hardier for it. I wrote a long letter home about the English love of fresh air. My friends would hardly believe that people could sleep with open windows winter and summer, and sit in a cross-draught without contracting perpetual colds, serious ear- and eye-diseases, fatal lung-troubles - not to speak of rheumatism, arthritis, gout, etc. However, they had to bow to facts, and even the doctors at home did so, declaring that the English were 'immune' to draughts, whilst the Swedes were not.

I started at once investigating the way in which English people lived, and found from available statistics that out of twenty-six large towns in Europe, Paris had the highest deathrate from consumption, whilst our beautiful Stockholm, situated like a queen in the most wonderful surroundings and favoured by an invigorating climate, was seventh, but London, that vast metropolis with its eight million people, came far down the list, as twenty-third.

This was a bit of reality which I understood to perfection. I took long walks through the London streets at night, counting the bedroom windows that were left open for the night air to stream in and refresh the sleepers, and I soon began to understand why London was twenty-third on the list, for even if in the day-time the London atmosphere was polluted by smoke and dust, the nights were generally clear and serene. Eight or ten hours' sleep in air like that could not but make people healthy. I at once decided to follow the old proverb: "When in Rome, do as Rome does." For the first time in my life I threw my bedroom windows wide open. The effect was almost immediate. I began to revive, and I could not, at the same time, help blushing to think that I had shut out the air of that wonderful Baltic Archipelago in the middle of a lovely summer when the night temperature was above 65° F. and the atmosphere full of the aroma of young vegetation and the invigorating breath of the sea.

My next thought was: - is not this something for our doctors? At home, curiously enough, people are ordered to sleep in the open or with open windows *only when consumption has developed*, the doctors obviously believing that something has made a consumptive person immune to the dangers of fresh air, cross-draughts, etc., whilst open windows and draughts are looked upon as deadly things for healthy people. All our doctors in Scandinavia with very few exceptions - I do not know of any! - still sleep with their windows closed, winter and summer. Sleeping in fresh air has, of course, nothing to do with medical science, training or outlook.

An English clergyman, who married an old friend of mine from my University town, told me quite recently the following incident which occurred during his first visit to Sweden: "When my future mother-in-law brought me a telegram one morning, she looked horrified to see my bedroom window open, and begged me to shut it at once if I valued my health. Her daughter, who had been in failing health for nearly 20 years and whom her mother would never have allowed to sleep with open windows, soon, however, acquired the habit when we settled in England. We noticed an immediate and decided improvement in her health which has continued ever since. She could not go back to closed windows again."

The tale in my own case was very much the same. My health certainly improved, and I regained my voice to such an extent that I could hardly believe I had ever had any throat-trouble at all.

* * *

The cold bath was another English habit which struck me. I was used to one hot bath a week at home, generally taken in a public bath-house. Fifty years ago there was scarcely a home, a manor, or a residence, including the Royal Palace at Stockholm, which had a bathroom of its own. To get a bath everyone had always to go elsewhere. When the late King Oscar II, who died in 1908, desired a bath, both the bath and attendants had to be brought to his Palace from the nearest public bath institution. Only the arrival of Princess Margaret of Connaught in Stockholm, as the bride of the present Crown Prince, brought about the installation of the first bathroom in the King's stately home at Stockholm.

Many of the modern houses in Stockholm were, however, provided with bathrooms at the beginning of this century, but these were generally looked upon as a concession to modern times far in advance of public requirements and were in consequence very little used. I remember seeing in those days many bathrooms filled with brooms, dusters, laundry and stored furniture.

A cold plunge or a cold rub-down in the morning is still considered a luxury or a very doubtful practice by the vast majority of the Scandinavian people. An enquiry made as to the habits of Scandinavian doctors in this respect would give a result which could not be published.

Anyone endowed with a little common sense can easily understand how a cold bath or cold rub-down is bound to invigorate the skin, which is one of the largest organs of our body, full of millions of small ventilators or pores and stocked with many more millions of tiny little capillaries or blood-vessels so small that their diameter only amounts to a 7000th of a millimetre. Still they are all endowed with muscular walls of their own which should normally respond, by contracting and expanding, to every change in the surrounding temperature. This, at least, is what Nature intended, but man thwarted her intentions by packing up the skin in all kinds of garments, one more

compact and air-tight than the other. Everything in Nature deteriorates, unless kept in constant use. A skin, shut out from the invigorating breath of the air, will soon become dead, hard, dry, full of pimples, to which our overclad Scandinavian peasant boys, when examined before joining the army, bear witness.

However, things are changing, and many people in Scandinavia have now adopted the English habit of sleeping with their windows open. Most of them also take a daily cold dip, a cold sponge-bath or a cold rub-down. This means a great step forward when we consider that, at the beginning of this century, available statistics showed only one bath a year per inhabitant in the Swedish capital. The bulk of the people are still far behind, especially the country people.

Our peasants were once weekly bathers, to which habit of the seventh day of the week, 'lördag', originally the name 'lögdag' or bathing -day (from löga - to bathe), bears witness. Every village, nay, nearly every dwelling in the whole country had its own bath-house, where all the members of the household, men, women and children, came together to take a bath on Saturday afternoon or evening, when the week's toil was over. Here they all undressed in the same room in a quite unconventional way. Provided with a bucket of ice-cold water and a besom made of birch-branches, the bathers climbed upstairs to a big platform, called 'lava', where they lay down upon fresh, clean, dry straw, generally rye. In one corner of the bath-house was a big stove, built of boulderlike stones, where a fire was burning under a huge iron cauldron filled with water. The woman in charge of the stove scooped boiling water from the cauldron, throwing it at intervals over the burning-hot stones. A loud hissing and sputtering was heard and clouds of vapour spread all over the bathroom, causing girls, boys, men and women on the platform to perspire. When the perspiration was at its height the besoms were dipped into the ice-cold water and everyone gave himself a thorough beating all over, which made the skin as red as a lobster. Often, as a token of friendship and a privilege, one bather would hand his besom to a neighbour, whereupon the two started thrashing each other in turn on the more inaccessible parts of the body.

The cold water, the hot, moist air, the vigorous thrashing with aromatic birch-leaves and ice-cold water constituted a skin treatment to which I have found nothing comparable anywhere. As a boy of nine, when visiting some relatives far away in the interior of Finland, where this form of bathing is still universal and looked upon as an indispensable part of life, I often went with my cousins and the people on the estate, boys, girls, men and women, to have a Saturday bath. How we enjoyed it! Perspiring all over, red as lobsters, with glowing skin, burning like fire, we often ran out of the bath-house into the open, leaping like calves let out of the byres for the first time in the spring or tumbling about in the snow-drifts in the winter. We felt we had wings and no bodies at all, or we fancied we were gnomes turned into elves. This great treat ended with a general scrubbing with soap and hot water on the floor downstairs, after which the woman in charge poured a bucket of ice-cold water over our heads and bodies and sent us into an adjoining room to dress.

At supper-time - what an appetite! And in bed - what wonderful, deep, invigorating sleep!

I am told that this form of bathing, which had been prevalent all over Scandinavia since time immemorial, or for at least nine thousand years according to our archaeological records, was stamped out by the doctors by the end of the eighteenth century because the bath-houses were suspected of contributing to the spread of infectious diseases. The doctors closed the houses and so destroyed the habit, but were never able to re-establish it, nor did they ever make any attempt to do so or to

provide a substitute. Thus Scandinavia lost a health factor of enormous importance. For our peasants, believed to constitute still some 60% of the population, do not bathe, or treat their skin in any other way than by changing their underwear. Since the closing of the bath-houses a fear of water has taken hold of the whole of our country population and has become so deeply rooted that many would rather endure disease and death quietly at home than the compulsory bath required for entering a hospital. I know of one instance where a man blind in one eye, was told that his sight could be restored by an operation. He agreed to the operation, but when the nurse took him into the bath-room he flatly refused to undress and get into the water, preferring to keep his blind eye for the rest of his life.

I consider this wonderful way of bathing one of the chief reasons for the extraordinary achievements of the Finns in the Olympic Games and on the sporting fields of the world. For if the skin constitutes one-fifteenth of the weight of the body, i. e. about ten pounds in the case of a person weighing a hundred and fifty pounds, if it is given due consideration as one of our largest and most important organs, capable of attracting to its expanded capillaries and myriads of lagoon-like vessels up to one third of the whole quantity of blood, and if it is our foremost defence against all the changes in the outer air, against extreme heat and extreme cold, against rain, sleet and snow, against a suffocating sirocco or a dry, biting, piercing north-east wind, how are we to keep it in good condition unless we treat it as the Finns do, with hot vapour and ice-cold water, with merciless beating and a run afterwards in the fresh country air, a dip in a lake or a plunge in feathery, mid-winter snow?

This form of bathing, which is the cheapest of all and the quickest and easiest to establish, can be arranged in many ways and installed in houses of various sizes, from the most primitive to the most luxurious. No form of bathing is more suitable for schools, military barracks and institutions, where a good and effective bath has to be provided in the shortest possible time for the greatest number of people.

* * *

I consider the closing of the bath-houses all over Scandinavia one of the greatest losses in our history, a national calamity compared to which the loss of a few provinces in an unsuccessful war seems nothing. Travelling extensively in Scandinavia from North to South, I have sometimes, in a far-away district, met the old name: 'bath-house' applied to a century-old building now used for flax-beating. Where men and women formerly beat themselves to health with besoms of birch on clean, fresh straw in the cleansing atmosphere of a steam bath, only flax is beaten now. But the name has survived, though the idea seems dead.

The medical profession stamped out bathing in Scandinavia in the same way as the Roman Catholic Church stamped out the old Scandinavian sports. For centuries the old sporting-fields or playing-grounds - 'lekvallar' have been lying idle and deserted, in many cases covered over by the invading forests. With the waning influence of the church and the revival of the Olympic games, however, came a sudden revival of the old Scandinavian 'idrott', though in its form and terms essentially English. But the spirit of English sport is, again, nothing but the spirit of the old Nordic 'idrott' which the eternally green fields and the invigorating, health-giving climate of Albion rescued from oblivion. Here 'sport', in the very best sense of the word, can never die.

May we not, therefore, hope also for a revival of the old Nordic form of bathing in all the countries inhabited by the descendants of the old Nordic race? I cannot think of

a form of bathing more suited to the English climate where, I am told, bath-houses of the old Nordic type as described above were once just as universal as in Scandinavia itself. Changes in the fashions of dressing and especially the introduction into general use of underclothing which could be washed instead of the skin, contributed to a gradual desertion from bathing which was ultimately looked upon as a means of keeping clean only for poor people who could not afford to dress themselves in washable underwear. In order to avoid the stigma of appearing poor and without underwear, even those who loved bathing for its own sake refrained from using the good old bath-houses which became more and more deserted until they finally disappeared.

But England as well as Scandinavia will have to go back again to this old form of bathing, the best and most effective of all the systems North of the Alps, and so exceedingly well adapted to the inhabitants of the temperate zones. It cleanses the whole system by profuse perspiration; it alternately expands and contracts the blood-vessels by the application of heat and cold in succession, thus exercising and strengthening the muscular walls of the capillaries upon which the regulation of the blood-flow to the skin, and consequently the warding off of colds, ultimately hangs. This ability of the capillary muscles to expand and contract is still more enhanced by the beating of the skin with besoms dipped in cold water, and this has proved to be one of the best means of removing the outermost layer of dead cells and stimulating the layers below in the production of new ones.

Upon the constant renewal of this outermost layer of cells health depends to an unbelievable extent. For the skin is the only organ in the whole body which never stops growing. The cells of the underlayer, or dermis, are constantly multiplying and pushing up new cells to replace the worn-out ones, which are used by the whole system as a convenient dumping-ground for all kinds of toxins. Being composed of a dead, horny material with a great capacity for absorbing impurities, these cells may be looked upon as veritable dust-bins for the whole system. Thick, air-tight clothing and infrequent bathing diminish the flow of blood to the skin; the capillary muscles decay because of lack of stimulation and exercise; the outer layer of horny cells thickens and prevents the natural exchange between the surrounding air and the skin, the air between the clothes and the body becomes stagnant and poisonous because of the decaying matter in the dead skin; the multiplication of new cells, which should have provided man with a new suit of clothes practically every week, slows down, leaving man, in his shortsightedness and foolishness, to be poisoned in an old, dirty and worn-out suit of which he cannot rid himself.

No amount of cold bathing and rubbing, or dips in warm water and scrubbing with brush and soap will help man to a new vigorous skin so well as this old Nordic form of bathing. I suggest that those of my English readers who are interested in this great question of skin treatment on a rational basis, should pay a visit to Finland during the winter season and not only see with their own eyes, but join in the village bathing as it is still practised in the interior of the country. For one has to experience it to understand what this form of bathing means for the health and welfare of a population. The Finns have beaten all the other nations, proportionately to their number and wealth, on the sporting fields of the world. They will continue to do so until the other nations adopt their form of bathing.

* * *

England taught me the value of a cold plunge every morning followed by friction massage and exercise. No other kind of morning bath can make a better health-overture to the day. If taken immediately upon awakening when the skin is filled with warm blood and the body still retains the heat of the bed, it comes as an invigorating reaction to the -drowsiness of sleep and invariably brings about vigorous breathing, creating a demand for fresh, cool air and exercise in the open. For there is a close connection between the skin and the lungs - a fact of which every doctor is aware when he sprinkles cold water on the face of someone who has fainted, and every nurse knows when she tries to animate the breathing of a newly-born baby by stimulating its skin. Upon vigorous breathing, again, hangs the oxygenation of the blood, which is of great importance especially in the morning. For the oxygen intake determines in its turn not only our working capacity but the general tone for the day. Besides, life-long personal experience has taught me to regard the treatment of the skin with cold water every morning, combined with the Saturday bathing of our forefathers, as one of the best means of making man impregnable to colds.

I have to thank England for fresh air and cold baths, but I must thank her at the same time for having opened my eyes to all the dangers of the hot bath. It is, without the slightest doubt, the most dangerous form of bathing. Here again man has applied heat to his body in a way which is daily wrecking the health of thousands. The body defends itself against excessive atmospheric heat in a marvellous way by pouring over the skin the requisite amount of fluid to keep its temperature normal by gentle evaporation. On an average, two or three pints of fluid are excreted by the sweat glands every twenty-four hours. This quantity may be increased to quarts if the heat is increased. Stokers in gasworks have sometimes been found to excrete as much as five pints in seventy minutes. By means of this wonderful cooling arrangement the famous Fire King, Chaubert, could enter an oven of dry heat at a temperature of 400° to 600° F. without his bodily temperature being perceptibly raised.

But if you immerse yourself in a bath filled with warm water at a temperature exceeding 98.40° F. your poor body is defenceless and cannot, by means of evaporation, protect its skin and other organs by keeping them at the usual blood-heat temperature.

This spells disaster. It depletes the body, ruins the skin and its delicate evaporation mechanism, making man very susceptible to colds. Many have unwittingly injured themselves for life by a daily warm bath which is so enjoyable on a cold morning but which always makes for a dull, listless day. The breathing is low, the oxygen intake insufficient. The indulger feels languid, often looks pale and cold, and is seen yawning and gaping for air many times a day. The tone of his whole body is lowered.

This toning down is chiefly due to a fall in the general muscle-tone of the body. Every muscle in the body is twitching at the rate of from forty to eighty twitches a second from birth to death, though, of course, we do not notice it. But if we put our fingers in our ears we can hear the tone they make as a low booming and soughing produced chiefly by the little contractions of the masseter muscle which moves the lower jaw and is in close proximity to the ear.

"The vigour of these little involuntary contractions varies from time to time," says Dr. R. C. Macfie in his excellent little book 'The Romance of the Human Body'. "The limp, slack feeling produced by a hot bath, or by hot weather, is due in large measure to an actual slackening of the muscles, while the braced-up feeling that is produced by a cold bath or a cold breeze is due in large measure to an actual tightening and bracing-up of the muscles. When we are slack we really are slack, and probably many

cases of laziness are largely due to inefficiency of the little involuntary twitches that give tone to the muscles."

It is these contractions that produce the heat which keeps the blood at an even temperature of 98.4° F. When at the onset of a cold we begin to feel cold and shivery, the sensation is chiefly due to a general and often dangerous drop in the number of these twitchings, caused by toxins circulating in the system. Nature counteracts this fall by accelerating the breathing which, in its turn, oxygenates the blood causing the bodily fire to flare up and the circulation to increase. The muscles, being thus supplied with combustion-material in abundance, increase their twitchings far beyond the normal, possibly more than doubling them, judging by the 'fever-note' which can be heard at a considerably higher pitch than the usual, normal 'health-note'. This is probably Nature's best and surest means of neutralizing or burning up the toxins and curing a cold.

The effect of immersing the body in water of a temperature beyond 98.4° is just that of producing a slight toxaemia sufficient to poison the muscles and cause a general fall in their tone. A Finnish steam bath, or a Roman or Turkish bath in dry, hot air, has none of these ill effects.

Post scriptum. Since this chapter was written in July 1933, I have visited Finland on a skiing and skating expedition in December and January 1934.

The leading Swedish newspaper in Helsingfors, *Hufvudstadsbladet*, contained in its edition of 21st January, 1934, the following article which has a direct bearing on our subject :

FINNISH BATHS FOR THE ATHLETES AND SPORTSMEN OF SWEDEN.

"A Finnish Bath-House installed at every playing-ground, every farm and every village in Sweden is the great aim which the well known Swedish trainer, Hugo Sjöblom, is endeavouring to realise. He has constructed a standard Finnish Bath-House of iron in three different sizes and types, of which the simplest one can be had for only 150 kronor (£ 7.10.-).

"A limited company has been formed for the construction of these houses on a big scale. They will be built in such a way that they can easily be installed in the ordinary shelters and changing-rooms already existing at most playing-fields, or attached to the stands."

It is only natural that a country so near to Finland as Sweden should be the first to realise the enormous importance of the Finnish baths for athletic achievements and general health of the people, and also, the first to re-introduce them. It is significant that this lead comes not from the doctors but from the sportsman of Sweden.

Another article, "Arvid Järnefelt's 'Lalli'", in *Hufvudstadsbladet* of January 19th., though on a literary subject, actually commences with the following words:

"The posthumous novel, 'Lalli', Arvid Järnefelt opens with the description of a scene in our *National Temple, the Bath.*" - A good instance of the extent to which the Finnish Bath dominates even the minds of the people!

This *National Temple* has also made a great impression on an Englishman, Mr. George Godwin, who, after having travelled fifteen hundred miles through Finland, publishes an article, "*Finland's cult of Health,*" in the 'New Health Magazine',

February 1934, edited by Sir W. Arbuthnot Lane.

He is amazed at the physical fitness of the Finns, and finds them chiefly remarkable for *stamina*. "In the Olympic Games they carried off all the prizes that called for this quality," he says. "How is this *stamina* achieved?" he asks, and, finds the answer in the *National Temple* of the Finns, the "*Sauna*", which he describes as "a sort of Turkish Bath." "However humble the Finn's home, he has set apart a wooden building, the bath-house. Here great stones are heated over a wood fire in a bio metal container. When the stones are very hot, water is thrown on them. The bath-house is arranged with wooden benches upon which one lies until profuse perspiration comes."

This is, however, a description of a modernised Finnish bath.

In the interior of Finland the bath-houses are still constructed and used in the manner already described.

The men generally use the bath first, the women afterwards.

Bathing takes place in most parts of interior Finland on Wednesdays and Saturdays. During harvest time the fire in the *Sauna* is kept going night and day, so that a bath may be had at any time. No one goes to bed at this time of the year without a bath.

The writer makes two excusable mistakes: the Finns are not Slavs, but belong to the Finnish-Hungarian branch of the Mongol race. They came from Asia and not from western Russia, where, however, many Finnish tribes have settled and are still speaking their own tongue.

Also, the Finns occupy the interior of Finland whilst the coast-line is populated almost exclusively by Swedes, of whom there are about half a million. Åland, with the greatest flotilla of wind-jammers in the world, is exclusively Swedish. Consequently it is not the inland Finns hut the Swedes of Finland who are, according to Mr. Godwin, "next to the British the greatest sailors to be found anywhere".

May I point out once more that this form of bath was once prevalent all over Scandinavla, and that it, in all probability, constitutes the oldest form of bath, characteristic of the whole Nordic Race?

This form of Bath has been preserved in far-away Finland just as the evergreen fields of isolated Britain have saved the old Scandinavian sport.

V.

NATURE'S WEAVING AND MAN'S CLOTHING.

It so happened, during the World War, that in the North of Finland the temperance police, while in search of lawbreakers and hidden stores of liquor, found in the stable of a distant farm in the Finnish wilderness a strange being, which at first was taken for a specimen of ape or gorilla. Human in form, it was covered all over with thick fur. It could not speak and seemed very frightened.

Pressed by the police, the farmer and his wife finally confessed that the strange being was an orphan who had been entrusted to them as a baby by the local authorities but had soon been forgotten by the latter, though the farmer and his wife had continued to draw a monthly allowance for the support of the child for a good many years. Being short of room in their own house, which was swarming with children, they simply left the orphan in a sty with the pigs and cattle, feeding it very much in the same way as an animal. The pig-food became the child's food, i.e. it was given all the residues of the cooking and the peelings of potatoes and various vegetables together with skimmed milk and other food-stuffs to the entire exclusion, of course, of the luxuries of modern life such as tea, coffee, tobacco, white bread, white sugar, etc.

This strange being seemed to be quite well-fed and had never been in need of a doctor or a dentist. All its organs worked to perfection and its teeth were intact, showing no decay whatsoever. But the whole skin was covered with a thick fur coat, as the child's clothes had never been replaced since its first garments were worn out. Seeing how grossly neglected the child had been by those entrusted with its care, kind Mother Nature stepped in, obviously delighted to be offered for once a diet free from modern luxuries, and quite capable of providing an excellent substitute for clothes.

No modern way of manufacturing clothes for man has yet been able to equal the perfection of Nature's way of weaving. The furs and feathers and other coverings she provides for her children contain up to 98% of air, and *air constitutes*, as we now know, *the most important part of all forms of clothing*.

Nothing is so warm and efficient as air. Cold may often set in with a biting frost so intense as to cover the lakes in a week's time with ice thick enough to bear even the weight of heavy guns. But a single covering of snow prevents further freezing. Falling gently in the stillness of the night the snow wraps the ice in a feather-light blanket. The power of King Boreas is broken. All his efforts to build a solid bridge over the lakes are in vain. In spite of temperatures far below zero the ice remains thin and treacherous until the snow melts or is blown away and the frost is again able to resume its interrupted work of turning water into a solid, blue-green mass.

In the same way as the downy snow, through its great content of air, protects the water of the lakes and the soil of the fields from the grip of excessive cold, which might otherwise soon ruin the new growth of the autumn sowing, so Nature wraps up her children in various cloaks of a similar or still greater air capacity to suit various climates from the equator to the poles. Birds and bears, swimming among icebergs, are protected by an air-coat containing only 2-3% of material, i.e. 97-98% of air, compared with 80-90% of air in downy snow.

Man makes attempts to imitate Nature in his weaving though he never attains her perfection. Linen and cotton underwear contain, as a rule, 45-52% of air, an ordinary

suit 75-80%, knitted goods and stockinette 84-86%, whilst the most expensive flannels only reach an air-percentage of 90-92% as compared with Nature's 97-98 %. Besides, Nature's clothes never wear out as man's clothing does. They are always kept up to the same standard, the worn out parts being imperceptibly replaced by an unseen hand, more skilful at invisible mending than any visible girl mending in a London shop-window.

If you want to buy a warm blanket you have to pay chiefly according to the percentage of air it contains, the lightest blankets always being the most expensive. New clothes are warm because they contain much more air than those which have been long in use and have had their air-capacity diminished by constant pressure and dust that has clogged their pores. After the fabric has been moistened with steam and the impurities removed, a suit or dress at once feels warmer.

But Nature does not exert herself unnecessarily. When man wraps himself up in artificial clothing she gradually withdraws her own weaving and leaves him naked. Left to herself, however, like the child in the far-away farm in Finland, Nature again resumes her responsibility and works to perfection. Equally unsurpassed is Nature as a dyer. She dyes the coat of the Northern hare brown in summer and white in winter - and she has endowed the chameleon with the power of changing the colour of its skin from one hue to another and back again within a few seconds - a feat no man can imitate in his artificial clothing.

What Nature cannot do, however, is to provide coats of various stuffs and air-capacity to be put on or taken off according to requirements varying from hour to hour and day to day. She strikes at a medium in providing a coat, though any bird can regulate the warming capacity of its feathers by increasing or diminishing the volume of air they contain. Sparrows look bulky on a cold winter's morning but thinner later in the day when the temperature rises. Still they have to be dressed in the same feathers, just as our dogs wear the same fur winter and summer. Here man scores. He is able to adapt his way of dressing to suit any climate and temperature and any changes in the weather, whether rain, storm, hail or sleet.

But in gaining this supremacy man has made himself subject to a great and unnecessary loss by strangely forgetting Nature's teaching. For the unseen new suit that the weavers in Andersen's immortal tale were weaving for their Emperor, came, after all, nearer to the right way of dressing than the clothes which were left behind in the Emperor's wardrobe. Air is the only right material for any kind of clothing, and the whole art of making clothes lies precisely in capturing the right quantity of air in our suits so that we both hold it and let it escape, giving it a free but retarded or restrained circulation.

It is the layers of retained but movable air round our bodies that make us feel warm in the coldest climate, and it is the gentle streams of moving air, fanned by the wind in the open, or by the imperceptible draughts in our homes, that bring us health and make us feel bodily and mentally at ease.

Hence, in the air lie the magic properties of keeping us both warm and cool. And here lies also the danger, for layers of immovable air in tight-fitting, tightly-woven clothes, as for instance an air-impregnable mackintosh, are a danger in all climates. A simple experiment will prove this.

Enclose your body or a part of it, for example the arm or the leg, in an air-tight rubber bag and examine the air contained in the bag after a few hours. The result of the examination will prove that this air has lost some of its oxygen and taken up a certain amount of carbonic acid. The inside of the bag will be more or less dripping-wet from the condensed perspiration. The surface of the skin will be found covered

with a small quantity of urea, the substance which constitutes one of the chief sediments in urine. Provided that the experiment has been carried on long enough we may even find other more or less toxic or poisonous substances, either in gaseous form or in solution. Add to this a certain amount of fat and cast-off dead skin of which the whole body in twenty-four hours sheds ten grams, or one third of an ounce, i.e. *not less than a whole ounce in three days*, and you will realise what an impediment to healthy skin activity air-tight clothing is.

As seen in the previous chapter, evaporation of water from the surface of the skin is one of the chief means by which our body regulates its temperature. For this purpose the skin is pierced through to a depth of a quarter of an inch by microscopic canals which end in the dermis in a number of loops and coils, compacted into a little bunch and separated by a thin permeable membrane from the surrounding blood-vessels.

This is an admirable arrangement. For in hot weather when the skin becomes flushed with blood, the blood-stream is able to deliver large quantities of fluid to these tubes or canals which, by evaporation from the surface, help to keep the blood at a normal temperature. There may be as many as two or three thousand sweat-glands to a square inch. On the palm of the hand we are able to count 3,500 per square inch. There are not less than 2,500,000 spread all over the skin, and their total length of tubing has been calculated to equal thirty miles, with orifices representing an area of 10,000 square feet. By this ingenious device Nature has increased the surface-area of our bodies more than 500 times, or turned its skin, symbolically speaking, into an enormous living canvas 100 feet in length and 100 feet in width. Every sweat-gland may be likened to a fire-engine able to pour water over the canvas more quickly and effectively than any man-made fire-engine over a proportionately equal area, should the external heat attempt to raise the bodily temperature above the danger limit.

Now, tight clothing greatly interferes with this wonderful arrangement, while porous, air-filled clothing both assists the effectiveness of the evaporation in hot weather and prevents undue radiation of heat in cold weather.

Anatomically speaking, our skin is built up on exactly the same principle as our lungs and kidneys, the blood being brought to all three of them by a net-work of capillaries separated by a thin membrane from outlets in the form of tubes of various sizes and construction. Also all these three organs serve, in the main, the same purpose, ridding the blood of waste-products in fluid or gaseous form. In this task they are all three able to substitute each other within certain limits.

In common with the lungs the skin has the ability of absorbing oxygen and excreting carbonic acid and water. In common with the kidneys it excretes water, which sometimes, under certain conditions of heat and intense manual labour, may, as we have seen, amount to more than a quart per hour. The quantity of urea excreted through the skin may in some cases rise to one twenty-fifth of that normally found in the urine. Add to this the excretion of highly putrefactive nitrogenous substances, and you can easily understand what will happen if all these are retained in the surrounding layers of stagnant air, shut out by thick, heavy clothing from easy communication or interchange with the surrounding atmosphere. They will all poison the body by being absorbed into the blood-stream through the capillaries of the skin. For, in common with the lungs, the skin is, as we have just seen, an absorbing organ, readily taking in oxygen and ridding itself of the poisonous carbonic acid. If salicylate of soda is rubbed on any part of the skin it is found in the urine within fifteen minutes.

Unsuitable clothing will retain a closed-up atmosphere full of poisonous excretions increased by the shedding of particles of dead skin, and these, in the moisture and heat retained around the body, soon decompose, thus offering a suitable soil for microbes

which add their own poisonous excretions to those of the human body.

It is these excretions and the decomposition of fat and dead, horny material which give soiled linen and underwear their peculiar smell and vitiate the air in our houses especially in the winter.

Experimenting with air in various German elementary schools, the famous pioneer in hygienic research, Pettenkoffer, found that no ventilation, however efficient, would keep the air pure and healthy unless he sent all the pupils in a classroom regularly to a public bath. Pettenkoffer once explained his findings in a lecture in the following drastic way: "If you have a heap of manure spread over the floor of a hall, no amount of ventilation will ever keep the air pure unless you sweep the floor and remove the manure. A neglected skin will act exactly in the same way. Give the children at least one bath a week and you will improve the air of the school-room accordingly."

The same principle applies to the air surrounding the human body. There must be ventilation, there must be a continual free exchange between the atmosphere and the layers of air in immediate proximity to our skin. But ventilation is not enough. Without a daily cold bath followed by friction-massage, and a weekly vapour-bath, taken preferably in the old Nordic way, the manure-heap will still be there to a certain extent. Add to this a daily air-bath whilst doing your morning gymnastics, a brisk walk in all kinds of weather, a daily run for some minutes, and you will soon feel that you have changed yourself into a new being, that life is glorious and that all kinds of depression and worry are simply indications of a diseased state of affairs within your own body.

VI.

THE INVIGORATING ENGLISH CLIMATE.

In England I discarded woollen vests and underwear for ever. I had to come to England to realise how detrimental these garments are to the skin. When new, they are of course best, but even then too warm and insulating. After being used for a time they become more compact and tight, until finally they act like a more or less impenetrable armour. They both increase and absorb the perspiration, for a man in a woollen vest perspires more than one wearing an ordinary cotton or linen shirt. They also have the extraordinary ability of retaining in their meshes most of those ten grams (a third of an ounce) of cast-off skin which man normally sheds every day together with fat, which easily decomposes in a constant temperature of 98° F. Add to this all kinds of gaseous emanations, of which, as we have seen, the skin in common with the lungs, constantly rids the body.

Before my arrival in England I would have laughed at anyone who suggested taking off the woollen armour, which I regarded as the best protection against colds, 'flu.', pneumonia, consumption, and a host of other diseases. But this fresh-air-loving people set me thinking. My own ill-health had made me a keen observer, ready to investigate and try anything that could possibly contribute to an increase in physical and mental vitality. What struck me as peculiar in the English way of living would, however, be regarded as a matter of course by the English themselves. For every nation takes its own mode of living as something natural and reasons very little about it.

The English are regarded by the consensus of opinion abroad as the most reticent, quiet and well-behaved people in the world. They seem to go about their business with a minimum expenditure of energy. This manifests itself in a minimum expenditure also of speech and gesture. In England it is always difficult to find a genuine topic of conversation. What on the Continent, especially in France, seems like a fountain-display produced by high-water pressure which, without a continuous extra outlet, might burst the pipes, can in England be likened to the quiet and self-conscious flow of a mighty river, which on reaching its estuary has found its poise and is measuring its equilibrium with that of the sea. No more babbling brooks and jumping waterfalls with whirlpools of conversation! The flow is reduced to a minimum and requires the motor-energy of a launch or the stirring event of an incoming steamer or liner to cause a momentary commotion.

One really has to make up one's mind to start a conversation in England, and to use a certain amount of determination to keep it going. The normal trend is to be quiet, not even appearing to observe, and if caught stealthily observing a vis à vis, to smile as pleasantly as possible, as if to say: "Oh, I beg your pardon, I am so sorry I am sitting here looking at you sitting there!"

How quiet and dull life would be in these circumstances if it were not for the blessed English climate, which by common consent is considered so bad and unreliable and wicked that complaints about it are always likely to meet with a sympathetic reception, offering no end of topics for an eventual conversation.

I remember how amazed I was when, on landing in England, somebody said to me: "It is very wet today, it is raining, what wretched weather we are having", etc. I had

never been used to these remarks before in my life. If it was raining at home everybody saw it and knew it and there was no reason to comment on it. Besides, we always had so much to talk about that the weather was generally forgotten and only referred to in embarrassing situations, such as an unexpected meeting with one's tailor or any other unpaid creditor of long standing.

It took me a long time to get used to these constant remarks about something so obvious as the English weather, but at last I realised that everyone was using the weather as a means of entering upon a conversation and striking a sympathetic note on meeting a neighbour. For the English people are very kind-hearted, indeed kindness itself. They always meet you half way, are ready to excuse you if you make a blunder, and to help you to any extent provided you are a decent fellow. They are also very honest. But not as far as the weather is concerned. It sometimes happened that I found their remarks about the weather contrary to my own observations or to what should have been obvious to anyone. In trying to correct a statement, however, I soon found that my attempts to exonerate the English climate were taken very personally, almost as a demonstration against the person in question. After that I always fell in with all that my grocer, milkman, charwoman, or anyone coming in my way, had to say about it. The effect was magical. It won all hearts. I made friends everywhere. People evidently thought I was an unusually decent fellow in spite of being a foreigner. And all this, thanks to the English climate!

By writing this chapter I hope to make things still more agreeable. For, apart from its usefulness as a topic of conversation, I am firmly of the opinion that there is no climate in the whole world to beat the British as far as health is concerned. No where have I found myself in better physical condition, more vigorous, active and alive than on this blessed island embraced by the North Sea and the Atlantic.

In the first place, where do you find, in the whole of Europe, less difference in the extremes of heat and cold? When the temperature on the 2nd - 3rd of August, 1933 did not fall below 73° F. (22.8 C), the night was proclaimed by the morning papers the *hottest* for 92 years. That fact speaks volumes. Here man is able to dress almost in the same way all the year round, leading, as a Frenchman said, throughout the year, "an indoor life out of doors and an outdoor life indoors".

Only observe how the houses are built! It amazed me when I arrived in England to see the waste-pipes from kitchens and bathrooms running unprotected along the outer walls. I hardly believed my eyes when later on I had an opportunity of studying how the water system was laid inside the houses, bringing water from the main through absolutely unprotected pipes, through cold cupboards etc. to an equally unprotected tank in the loft where a simple tiled roof shielded them from a direct downpour of rain, but by no means from winds and storms or changes in temperature. Still, all seemed well until a sudden exceptional fall in the temperature played havoc with the whole system, as it did between Christmas and New-Year 1927. I think only a small percentage of the houses in London were left with water that fatal week. The plumbers, though also without water, were naturally delighted. The rest of the population took the event complacently, some stoically, almost forgetting to blame the weather.

One would have thought that a calamity like this would have some effect upon the building and planning of new houses. Not a bit! The new houses erected that same Spring had water system laid in exactly the same way, as if there had never been any trouble. Of course, the plumbers would not have it any other way, so I suppose there was nothing else to be done. I am told that they pay their taxes only after a general pipe-burst, i.e. about once in twenty years.

No matter how much an Englishman may blame his climate, he always trusts it.

He trusts it to keep his grass perpetually green, his six-month Summer enjoyably cool, and his equally long but spring-like Winter without snow or frost. For here the Winter is an eternal Spring and the Summer an eternal month of May. Snow is generally only seen on Christmas cards. You can live in your garden from the middle of April until the end of October.

Even after Christmas a rose is often found in bloom, to be closely followed by winter jasmine, snowdrops, crocuses, aconites, violets, primroses, daffodils, wild anemones, lilies of the valley, narcissus, tulips and hyacinths - not to mention all the flowering shrubs and trees. The laurustinus, gorse, blackthorn and almond have been known to bloom as early as January, and they are the forerunners of the pear, cherry, apple and the may and, in the height of Spring's exuberance, wistaria, lime and chestnut.

It is true that you may have something like a winter day in May or a summer day in February, and that nearly every month seems to set some kind of a weather record for good or ill. But how delightful these constant changes and surprises are! I have many a time sat in my shirt-sleeves writing in the garden in January and February, and have had to put on a jacket to be able to do the same thing in May or June. Far from complaining, I have always realised that these changes keep one extraordinarily fit and alert, stimulating the action of the skin - the circulation, nerves, metabolism and appetite. If you are sensibly dressed, nothing but benefit will be derived from these constant and wonderful changes - and you will enjoy them.

You cannot escape them even in your own house, provided that it is built by British architects and workmen. Sit down in your room with its single windows, open fire-place and airy floor made of single boards with ventilating spaces in direct contact with the outer air below, and count upon your fingertips all the various draughts that sweep more or less imperceptibly around you, and you will be amazed at their variety and number. There is always a draught between the windows and the fire-place, the doors and the floor and vice versa; then a draught between the windows and the doors and floor, and, if there is more than one door, a draught between the doors themselves, the same applying to the windows - altogether at least half a dozen to a dozen or more different draughts, continuously changing the atmosphere in your room and keeping it wholesome. I have counted fourteen different draughts in my dining-room and nine in my study. Surely in England you can easily live "an outdoor life indoors"!

Add to this in winter time the magic glow and delightful warmth of an open coal fire. It is quite true that 70% of the heat goes straight up into the air through the always open, spacious and almost perpendicular chimney, but what does it matter when benevolent Nature protects your house from most of the extremes of a continental climate? That eminent authority on climates and their effect upon human beings, Professor Leonard Hill, Director of the Department of Applied Physiology, National Institute for Medical Research, thinks that the right way of heating a room should be the same as that in which the sun heats the earth, warming our feet by contact with the heat-absorbing ground, and cooling our heads through the moving layers of air above. That is precisely what an English coal fire does. It keeps your feet warm whilst your head is cooled by the moving atmosphere around it. There is nothing more suffocating and conducive to ill-health than stagnant air.

I am quite aware that it takes a Scandinavian or a Canadian some years to become accustomed to the English climate and the English way of living. My Swedish friends who visit here, generally feel uncomfortably cold, shivering both indoors and out

from early Autumn until late in Spring. Returning home they speak with horror of the 'Arctic climate' of the English houses.

This fact seems to puzzle most English people who have heard wonderful tales about Scandinavian and Canadian winters where the thermometer sometimes falls as low as 70° and 80° F. below freezing point. But it is precisely these spells of very severe cold that have proved so ruinous to the people of the North. They have forced them to build houses sufficiently substantial, air-tight and cold-proof to give protection from these extremes.

Things were quite different in olden days when the whole population lived in the country and fuel was plentiful. Since time immemorial a log-built house, without windows, ceilings or floors, constituted the dwelling of our forefathers. There was a hearth in the middle of the house, from which the smoke escaped through an open hole in the roof. The log fire on the hearth was kept going day and night. The old people slept on benches along the walls where they could be warmed by the fire, whilst the young people had to sleep on beds of straw in barns or in lofts where no fire could be provided. There was plenty of moving air in those days.

It was not until the middle of the seventeenth century that chimneys were introduced into the log-built peasant houses of Scandinavia. This innovation brought with it a radical change in the mode of living. The "wind-eye" in the roof disappeared, ceilings and floors closed the house above and below. Later on came double windows, double doors and double shutters for the fire-place as well as for the chimney. Last but not least the stove-makers invented those horrible iron stoves, which dry up the air and the membranes of the throat and bronchi, paving the way for all kinds of diseases. No wonder that consumption increased and that Stockholm ranks *seventh* among twenty-four big towns in Europe pestered with 'the white plague'.

Modern inventions culminated in those monstrous barracks, where people are bunched together like bees in a hive in a dry, hot, stagnant atmosphere. Of course modern invention has also produced ventilators. But these are as a rule inefficient and usually kept shut.

The more weather-proof the house, the more weather-frightened and delicate the occupants!

You cannot have it both ways in this life: you cannot have comfortable summer temperature indoors with full winter out of doors and expect to keep in good health. Something has to be given up, and there is no doubt that the Northern peoples have had to pay heavily in health for their present way of living. They come of a stock which maintained health and vigour by leading a strenuous outdoor life in close contact with Nature, spending their time indoors beside an open log-fire which kept the air in constant circulation under a single roof, through the "wind-eye" of which you could see the sun shining and the clouds sailing by day, and the stars wandering majestically across the sky at night. There can be no doubt that the old way of living and feeding in the North was vastly superior, as far as the preservation of health is concerned, to that of the present day.

It is only in England, of all the countries North of the Alps, that we find ourselves taken back, as it were, to olden times and brought into contact with air and light and all the changes in the weather, which townfolk in their air-tight and weatherproof modern barracks are scarcely aware of missing. Only as consumptives, when diseased lungs demand the invigorating breath of our mountains and pine forests, are they brought back again into contact with Nature and to a mode of living lost to them.

Perhaps the most illuminating instance of the effect of an indoor or outdoor life, is the fate that befell a group of apes brought from the tropics to the zoological gardens

of Chicago, where, for their reception, a special ape-house had been constructed, provided with a modern central-heating system which kept the temperature at tropical heat night and day. The apes loved the warmth and generally gathered round the radiators. The superintendent of the zoological gardens took every prominent visitor to see this ape-house, the various inventions of which he demonstrated with great pride, adding that it had only one fault, viz. that the apes were dying like flies.

At last there were only five apes left. A new group of twenty apes had been purchased from the tropics and were about to arrive when Dr. Evans asked whether the five remaining apes of the former group might be handed over to him so that he could submit them to an experiment which might be thought barbarous, though he was sure it would be for their benefit. Dr. Evans' request was granted "since the apes were, in any case, regarded as lost and would soon die". His experiment is described by the famous Dr. Hindhede, Superintendent of the Danish State-Institution for Food-Research, who quotes him as follows: -

"Late in the Autumn the five ailing animals were taken to a place, where they were continuously exposed to the rough changes in the weather. Through this exposure, however, they were soon turned into real out-door animals. A special shelter had been provided, so that the apes would have a refuge in frosty weather, but they had no access whatever to artificial warmth. Curiously enough these ailing, thin and shabby-looking patients from the tropics did not care much for their shelter in the day time, only using it for resting in at night. When the Winter set in, the five consumptive apes seemed, to the astonishment of Dr. Evans, not only to prefer the cold, fresh and often crisp air but to love it just as much as they had formerly loved the radiator in their ultra-modern ape-house. On their emaciated bodies which had lost almost all the hair in the tropical ape-house, new hair began to grow, getting thicker and thicker progressively as the temperature fell until, by the end of the Winter, Nature had dressed them all in superb fur coats. The former dull and listless animals seemed at the same time to wake up, obviously enjoying life more and more every day in spite of the winter weather. Instead of sitting huddled together in a corner, as formerly in their sumptuous ape-house, they began to climb and chase each other, performing all kinds of antics. By the end of the Winter they were all in excellent health and provided with a good covering of flesh and tough muscles. They had good appetites and turned more and more to their favourite occupation - pilfering. In their open-air house they soon became one of the chief attractions, where they were often seen sitting in the snow munching, with obvious relish and delight, bananas and other fruits, whilst the teeth of the warmly clad onlookers were chattering in a temperature at zero F. (- 18° C.).

"To their twenty sisters and brothers, who had, since the beginning of the Autumn, been enjoying the 'hygienic' and well-heated indoor life provided for them in the scientifically constructed ape-house, fate was not kind. When Spring arrived not a single one was left alive. They had all fallen victims to consumption. In the five tropical apes, who had been suffering from consumption and who had now, for the first time in their lives been exposed to all the severities of a Winter in the temperate zone, not a trace of consumption could be discovered."

What a lesson to Homo sapiens who, especially in the temperate zones, has fallen a victim to this disease to such an extent that it has been called 'the white plague'. But it is an ill wind that blows no one any good! Consumption has done much to awaken the people of the North to the importance of fresh air and good ventilation. But it is yet a long, long way to the open window. For the draught-frightened population of Scandinavia still prefers sleeping in rooms with windows, ventilators, fire-places and

chimneys shut. They can endure a lecture or concert in a hall, where the air at the end of the performance is saturated with impurities, heavy and almost impossible to breathe. Only a few years ago in a Scandinavian hotel I had to slit the strips of paper pasted over the chinks of my bed-room window in order to open it. There was no ventilator, and the window had not been opened for six months.

Here England scores. Of all the peoples of the Nordic race hers is the hardiest. No one - not even the natives - can endure the extreme cold of Russia, Scandinavia and Canada better than an Englishman. His airy houses, light clothing and cold baths make him fit to stand almost any climate. He is pre-eminently an explorer and colonist. And for all this he has to thank, first and last, the wonderful, invigorating climate of his blessed island which keeps him always fit, always active, always 'on the go', and which has endowed him with an ineradicable love of fresh air, exercise, outdoor life and sport.

It is the evergreen sporting fields of England that have built up the English national character and laid the foundation for the life-outlook and the moral and ethical views of her people.

VII.

THE FLAME OF LIFE.

Man can live without food easily and sometimes even with great advantage, for a fortnight. Some have cured themselves of serious diseases by fasting much longer. In certain cases fasts up to 100 days have been recorded. Quite recently an interesting letter, dated April 8th 1933, was published in the 'Merthyr Express' about a patient 53 years of age who, by a 101 days' fast, was cured of a disease which had crippled him for months.

Next to food comes water, without which man cannot get along for more than a few days.

The most important, however, of all the foodstuffs is air, without which man cannot live for more than a few minutes.

One fifth of the atmosphere consists of oxygen. It constitutes 8/9 of water, and one half of the weight of all the mountains. Not less than 70.8% of the human body is made up of it.

We all know that life is combustion. Though the flame is unseen we live by its heat.

If a coal fire gets low you take the bellows and blow a fresh supply of air, i.e. oxygen, into the embers, which soon turn from dark red to intense white. The fire flares up and radiates a pleasant heat into your room. But though you have withdrawn your bellows you will find that some other bellows have replaced them, and that the draught of heated air rising up your chimney draws a fresh supply of cooler air to your fireplace. Streams of oxygen are rushed from everywhere, from chinks and keyholes, from beneath the floor, from the openings about windows and from the doors - provided that you live in England. It is Nature's breath that keeps your fire going.

Once, in Scandinavia, a man who was very much afraid of draughts had all the walls of his room covered with linoleum instead of wallpaper and the joints filled with putty. The windows were sealed with rubber and adhesive paper, and the door fitted like the door of a safe without allowing the slightest current of air to penetrate. Triumphantly he demonstrated his air-tight room to all his neighbours. But lo and behold! When he tried to light the fire it would not burn. To his great disappointment he had to call in the same workmen who had helped him to create this acme of draught-proof air-tightness, but this time to remove one after another of his ingenious devices. The man had learned his lesson.

If a fire cannot burn without a continuous supply of air, certainly man cannot live without a similar supply. We get it by breathing, and this action carries the air to two of the most wonderfully constructed bellows, our lungs. Air is drawn into them by every heaving movement of our chest and diaphragm and brought straight to 725 million of the tiniest hearths you can imagine. For our bronchial tube, the beginning of which you can feel with your hand on your throat, soon divides, like the branches of an oak, into smaller and smaller branches and twigs, until they finally end in a cluster of microscopic, grape-like air-bags or alveoli. It is here that an exchange takes place between the air brought to the bags through the bronchi on the one hand, and the blood which the heart continually pumps to the outside of these bags from all parts of the body, on the other hand.

This pumping takes place about 50 to 70 times, sometimes up to 150 times, per

minute. In between these grape-like clusters of bags the blood is rushed through capillaries the diameter of which is only 0.007 mm. It is separated from the air in the bags by a thin layer of cells, every one a consummate little chemist and inspector who knows exactly what has to go one way, from the air in the bags into the blood in the capillaries, and the other way, from the blood in the capillaries into the air in the bags.

Some years ago, when at all the Universities attempts were made to explain the processes of Nature as manifestations of a more or less dead mechanism, physiologists thought that the exchange between the air and the blood could also be explained in the same way. But it was soon found that the oxygen in the blood was under far greater pressure than the oxygen in the airbags, and that according to the laws of physics it should flow in exactly the opposite direction, i.e., from the blood to the air-bags until finally the oxygen supply in the blood equalled that in the air. We now know for certain that it is only because of the mysterious activities of these epithelial cells that oxygen is transmitted into the blood in quantities which the blood could not hold unless it had been placed under special supervision. Through the agency of these cells the blood receives from the air every hour not less than 21.5 litres (approx. quarts) of oxygen in gaseous form, or 516 litres per day, in weight about 3.46 kg. or 7.61 pounds.

In spite of their microscopic size, the total area of the 725,000,000 air-bags in our lungs would cover a surface of over 120 square yards, or a floor 10 yards by 12. Made into cloth they would supply material for not less than 60 tight-fitting suits, i.e. they would cover the whole body 60 times over.

Just think of it: we all conceal within us an enormous living sail against which the atmosphere rhythmically beats, leaving behind it at every beat a certain amount of this precious oxygen to be absorbed by the blood, whilst receiving at the same time from the blood-stream a lot of waste products to be dispersed in the atmosphere like smoke from a chimney.

In case of exertion more oxygen is wanted. Our breathing is doubled or trebled, and so are the beats of our heart in order to spread the blood over the meshwork of this great living sail. Here our bellows, the lungs, and the marvellous mechanism of our circulation work together in such a way that every little living cell in our bodies receives its supply of fuel and oxygen in precisely the right quantity to suit the occasion.

My eyes are just now fixed on a great oak in front of me. - I cannot look at a tree without visualising at the same time the tree of life of my biological text-book. In following its branches to the trunk and the root I strike upon common ancestors for the oak and myself, represented by animalcules which, at the dawn of time, spent their life moving about in the seas. Once our ways separated. Whilst the ancestors of the oak tree became firmly rooted in the ground, my ancestors preferred to go on roving about in the seas and building more and more complicated bodies, until they ascended the shores, turning their swimming-bags into lungs and their fins into legs. For ages they then went on roaming about on all fours until they resorted to the trees, adapting their forelegs for gripping. From the trees they finally descended again to the ground, but now in an upright posture ready to conquer a world.

Compared with the oak I seem rootless; compared with me the oak seems deprived of motion. It has to take root and to stand where the seed from the mother-oak once happened to fall. It has no lungs as I have. But I can just now see how the wind is waving its branches, thus bringing to it the life-giving oxygen and that most precious of all the materials of combustion, the carbon dioxide of the air.

The oak is like a fire. It lives by the breath of the wind, but unlike the fire and like

myself it is an invisible flame which has taken that wonderful well-known shape.

The oak has no air-bags, but it has leaves in which you find air-spaces that perform the same task as the alveoli of my lungs. These air-spaces communicate with the external air by means of little valves, called 'stomata', which open as a result of the action of light. They are extremely minute, generally only 0.007 mm. in diameter. There may be as many as 13,000,000 on a single leaf.

They constitute little ovens where carbon dioxide is captured from the air, mixed with water and baked with the aid of sun-rays into starch, the real bread of life. The tree lives on this starch, which it converts into energy by means of oxygen absorbed from the air-bags, just as we convert starch into energy by the same means. But unlike the plants and trees we cannot make our own starch. Herein we depend, with the whole of the animal world, entirely upon the vegetable kingdom.

The foliage of a tree is its lungs spread out into the atmosphere, whilst our lungs are like the foliage of a tree packed into a small chest. In performing this miracle Nature had also to "pack" into the same space. the wind that moves the leaves and brings the air, laden with oxygen and carbon, to the airbags. And lo and behold! Nature did enclose the wind in our chests and also gave us the means by which to regulate its flow, from a gently-waving breeze when we are at rest, to a storm when we are running.

The total surface of our air-bags would cover a space of 120 square yards, but the aggregate area of the leafage of an oak would cover up to five acres.

Divided among the foliage of a tree this huge area is again split up into small parts or leaves, most ingeniously arranged in an architectonic way, so that every leaf is able to partake as much as possible of the air and light of the atmosphere.

Here again Nature has managed to crowd a great surface into a small volume, just as in our lungs.

One only needs to see a cast of the bronchial tubes to realise that they look just like an oak turned upside down.

I am a tree with my roots in the air and the leaves and the branches within me. The oak is an air-being like myself with its roots in the ground and the unfurled air-bags of its lungs forming its garment.

No fairy tale can ever excel the tale of Nature. I am carrying within me a tree, the leafage of which, if unfolded by magic, would robe me sixty times over. But in doing so it would also deprive me of my powers of motion.

The air and the rain must carry their streamlets to the oak, must nurse and feed it to keep it alive. I carry the roots of my being, represented by my nostrils and my mouth, to the streams of the air and the water. I am at liberty to fill my lungs with the air of the valleys and fields, forests and mountains. I can drink where it pleases me, from wells and brooks, rivers and lakes. My soil is so large and vast that I can move and live everywhere and anywhere. This has given me my supremacy over the oak and all my brothers and sisters in the vegetable kingdom.

But my freedom has also its dangers. For my feet may take me to places like the desert, where I am unable to find water and food, or to places underground where I am deprived of air, or to places where all the three main sources of my life are contaminated and poison me, as they often do in our civilised communities.

But even here kind Mother Nature has stepped in and provided means by which impurities can be eliminated as far as they exist under ordinary conditions of life.

Having, personally, suffered so much in my early life from a lamentable ignorance on this point, I was delighted to find the passages quoted below in Dr. R. C. Macfie's popular work 'The Romance of the Human Body', already referred to: -

"The nostrils, not the mouth, are the portals of the air: they contain little thin curled scrolls of bone, the so-called turbinal bones, covered with mucous membrane which are for the purpose of filtering, moistening, and warming the air. The mucous membrane of the bones presents little hair-like processes towards the interior of the nostrils, and these little hair-like processes are in constant movement and gradually flick foreign particles and germs out of the nostril. The mucous membrane is also moistened with sticky mucus, which both entraps and kills germs much as sticky fly-papers entrap and kill flies. It has been found that *if air containing thousands of germs is inspired through the nose, only two or three germs succeed in passing through*, and it has been found, too, that *most germs trapped on the mucous membrane of the nose are soon killed*. Not only does the mucous membrane, spread over the curled bones, offer an extensive surface to catch germs, but the devious, crooked course of the nostrils also offers obstacles to the passage of germs."

"The functions of the nostrils in heating and moistening the air are equally efficient. Air, 14° F. below freezing-point, is heated to 77° F. during its passage through the nose; air at 65° F. is heated to 88° F.; while dry air is always moistened with water to one-third of its capacity before it reaches the throat. People, therefore, who breathe through their noses as they should, need not fear that cold air will be bad for their throats and chests, for cold air will never reach so far."

A similar protective arrangement we find in the bronchial tubes.

"All the air tubes, except the final finest divisions, are lined with cells whose surfaces, abutting on the cavity of the tubes, have hair-like prolongations which are in constant motion, and move in such a way as to work mucus and any foreign particles gradually upwards towards the throat. The surface lining of the tubes is very smooth and glistening, and is lubricated by a secretion (the mucus) like raw white of egg, which is secreted by means of mucous glands."

When the air, after all these precautions taken by Nature, finally arrives in the tiny air-bags ready to give up its oxygen, the effectiveness of the interchange depends entirely upon the capacity of the blood to absorb it. Here again Nature has produced a miracle of efficiency.

A single drop of blood of about one cubic millimetre contains at least 5 million red blood-corpuscles. As seen under the microscope they look very much like biconcave discs, i.e. somewhat thinner in the middle and thicker at the edges. Their diameter is only 1/3200 of an inch, and their thickness 1/12000

The most remarkable thing about these cells is, however, their colouring matter, haemoglobin, which plays the part of oxygen-carrier. It is the only organic substance of the living body that contains iron. This metal has the highest specific gravity of all the elements in the animal organism, being nearly eight times heavier than water. The haemoglobin molecule is therefore of an enormous size, containing more than 2,000 atoms and with a molecular weight of nearly 20,000 times the weight of the Hydrogen atom. Of this weight, iron makes up only a three-hundredth part. Nature had to construct such a large and highly complex organic molecule, so that the iron it contains could easily float along in the blood.

The blood constitutes 7.5% of the weight of the body or about twelve pounds in a normal adult man of 160 pounds. This quantity contains approximately only fifty grains of iron. Small though it is, the work this quantity performs equals that of at least 20 pounds of iron. What would become of us if we actually had to carry that weight about in our blood when the blood itself only weighs twelve pounds?

Nature has solved this problem by propelling the fifty grains of iron dispersed in the whole quantity of blood, 120 times an hour or 2,880 times a day through our heart

and lungs. But 2,880 times 50 grains of iron are more than 20 pounds. In this way Nature was able to reduce the 20 pounds of iron to fifty grains only.

But the tale is not yet told. - By distributing this quantity of iron in 25,000,000,000,000 red blood corpuscles or barges with a total surface of 3,300 square yards, and by sending them in a line up a narrow river long enough to stretch across the Atlantic, Nature has secured a loading and unloading of the barges on a scale and at a pace, compared with which the loading and unloading of goods at the ports of London and New York seem as nothing.

For the total length of capillaries in our lungs, which these barges have to pass through, one by one, in order to arrive at the 725,000,000 air-bags or ports, is not less than 7,000 miles.

The ports of the lungs have a wharf-area of 120 square yards or 60 times the surface of our body, but the total deck-space of the barges could easily cover that surface more than 1500 times over. Arranged in a single row, 'bow to stern', these same barges would form a line encircling our globe at the equator *five times*. Pressed flat to each other they would form a bridge $1\frac{1}{4}$ times the length of the equator.

By means of this enormous flotilla man is able to take in and distribute to all parts of his body half a pint of oxygen per minute when he is resting. This amount is immediately increased if he moves from a lying into a sitting or standing position, by 20 to 30% Walking increases it by 60% and running by 90%.

If the oxygen we are using in a resting position amounts to 2500 cubic centimetres per minute, we shall find that:

Climbing increases it to 2670 cubic cm. per minute,	
Swimming	2800
Bicycling	3000
Skating	3060
Ski-ing	3750
Running	4175 - or nearly double.

Running constitutes one of the best means of heating up the body, making the blood rush to every single organ and bringing the life-giving oxygen to every cell, carrying away at the same time the waste materials and toxins of the life-processes and especially those of a sedentary life, of over-eating, over-drinking, and wrong living in general. Running acts as a bath in pure oxygen. It opens all the pores of our skin, ventilates our clothes, stimulates our nerves, brings our capillary muscles into action, oxygenates our blood, burns up all rubbish in our tissues and leaves us with a good supply of oxygen in stock for further demands. This extra store of oxygen in the human system manifests itself physically in a feeling of buoyancy and of almost boundless energy. Worries disappear like a mist before the morning sun in June. Difficulties seem to exist only to be overcome. Activity is our joy. Life is glorious ... whilst oxygen-hunger makes us languid and lazy, we gasp for air and are mentally irritable, taking a gloomy view of everything!

The great anatomist, Sir Arthur Keith, maintains in one of his admirable popular books that we should heat up our systems at least once daily, testing them, as it were, to their utmost capacity. This is surely a wise suggestion, in full conformity with sound physiology. For all the myriads of cells in our body, all our organs, muscles, capillaries, nerves and bones, cannot keep healthy and ready for any emergency unless we give them a test of this kind at least once a day.

What is old age but a gradual, involuntary and voluntary slowing down of all our bodily activities. If you always walk gently, slowly, respectably, step by step, you will be an old man at 30. But if you run at 60 and 70 and 80, at least once daily for 10 or 15 minutes, you will never know old age. You will keep young until the very last moment of your life, and you will smile at death which should come to you then, not as the result of a devastating pulmonary fire or pneumonia, but in the form Nature meant it to come, the heart suddenly going to rest with its last beat like a clock when the spring has run down. When the heart stops, everything on all the canals in the vast lagoon-city of our body also comes suddenly to a standstill. Every boatman ships his oars, every vessel hauls down its flag. The great Silence has fallen over the whole community. The time has arrived for breaking up, for saying 'good bye' and starting on a new adventure.

The fire on the hearth is extinguished, but not so the souls of all the electrons and atoms that kindled the flame and kept it going.

VIII.

THE GARDENERS' PARADISE.

England had taught me the value of fresh air.

The extremes to which this air-loving people will go in order to procure for itself the life-giving breath of Nature, would strike most continental people almost as madness.

I remember a January day in 1904 when an unusually cold north-east wind had lowered the temperature all over London several degrees below freezing-point. I was on my way to University College, wondering if the professor in charge of the English class would allow the fanlight windows below the ceiling to be kept open as usual. The windows were open when the lecture commenced, but the cold down-draught evidently proved too much for the lady students sitting right in it on the front benches. The kind-hearted professor noticed that they were shivering and suddenly stopped his lecture - as I thought to ask somebody to shut the windows. But no! He only said quietly: "Will the ladies please go and put on their coats!" The ladies did go to fetch their coats, the lecture was stopped for a few minutes, but the windows remained open!

From some years later I remember another incident. I was then a student at the famous old University of Paris, La Sorbonne. Much of what I learned during those years is long ago forgotten, but what I never shall forget is the foul air I had to breathe during my stay in 'La ville lumière'. That air finally drove me away from Paris and France. It was a saying among the English students at La Sorbonne that one had to pay for every lecture with a subsequent headache. At all events I had.

Some of the art-lectures were especially well frequented. But in spite of an unusually big hall, twenty feet or so in height, the air was so vitiated even at the beginning of the lecture that it required an unusually great interest and love of art to stand it. Once, upon entering this hall, I found to my delight that a fanlight window had - of course by mistake! - been left open by an attendant. The window was so small and so high up that a draught could not possibly be felt by anyone. But, nevertheless, the danger was soon noticed by a frightened lady in the audience, who at once drew the attention of the lecturer to this gross neglect on the part of the attendants. The famous professor stopped his lecture, evidently recognizing the danger. Hundreds of grateful eyes greeted the porter who, after some vain attempt to shut the window by a cord arrangement, finally brought in a long pole with which he managed to push the window back into its frame. The whole audience heaved a relieved sigh of vitiated, contaminated French air, and applauded.

How many diseases might not this little window have brought about, according to the general view of the audience. We were already in March, the sun was high and the spring air delightful. Walking home I counted an unusual number of ladies in mourning. I had little doubt in my mind that a least every third lady in black I met was mourning a relative who had died of consumption. No wonder Paris heads the list of big consumptive towns in Europe.

My English friends laughed at my newly acquired love of fresh air. For fresh air was to them something quite natural. But it had not been so to me. I was a convert with all the zeal and enthusiasm of a convert. Every moment I could wrest from my

philosophical and psychological studies I now devoted to physiology and medicine. I had been told something about these subjects in my school-days, but in such a way that I had found them extremely dull. They seemed to have no connection whatever with real life. I classed them among those remote Egyptian kings, who seemed to be equally useless to me in life. I knew for instance that the oldest king of Egypt then known, Menes, died because his bowels were torn open by a ferocious bull as he was crossing a field; - but of my own bowels I knew next to nothing. And what about the circulation? A most uninteresting subject to me hitherto, but now a mystery which seemed to surpass all others.

For the first time in my life I learnt how the heart was constructed and how it functioned. I was surprised to find that, in spite of its seemingly incessant activity, half its life-time was spent in resting. It upset me very much to learn that Michael Servet, who first discovered the small circulation which carries the blood from the heart to the lungs and from the lungs back to the heart, had to fly from the inquisition only to be captured in Geneva and finally burned at the stake in 1553. The famous William Harvey, who in 1628 published his discoveries about the circulation of the blood and was subsequently ridiculed by the doctors, almost went the same way. And yet these discoveries made the names of both men immortal.

What Harvey assumed was later on confirmed by the Italian physician Malpighi who actually saw, with the aid of the microscope, the blood driven from the big arteries through an estuary of capillaries to the veins, from which he found it was brought back again to the heart by the aid of ingeniously arranged valves, and the difference in air pressure between inhalation and exhalation.

You can read all this as I read it then. But you will get nothing out of it unless you are able to visualise what you read, reconstructing it in your imagination.

Without vision and imagination Nature will for ever remain a closed book.

Here is a realm where every little effort brings its reward and every reward brings new problems requiring new efforts, until finally you are carried away out of a dull and monotonous life into a world of perpetual joy and wonder. It ought to be the duty of everyone to study, for instance, his own circulation in all its details, to visualise that mighty stream, the aorta, rushing the blood from the heart at the rate of 2000 mm., or two yards per second, through channel after channel and branch after branch, into the various parts of the body, until the stream flows into an estuary of capillaries with a capacity five hundred times larger than that of the aorta itself. Here that mighty stream naturally slows down, because of the enormous spread of the estuary, from a pace of 2000 mm. per second to only 3½ mm., until, on the other side of the estuary, in the veins, the stream gradually gathers momentum again and, like many brooks flowing together to form a river, seeks its way back to its origin, the heart. Compare this circulation within your system with the great circulation of water in Nature, which, carried from the ocean into the air by heat, is brought down by cooling winds in the form of rain and torrents upon the earth, only to be gathered again into brooklets, forming streams and rivers - sometimes after having passed through an estuary of capillaries in the soil, plants, animals and men, before it is able to reach the sea again.

Here, if anywhere, knowledge is power - nay, more than power - knowledge is life.

Even as a boy I had been wondering how many breaths per minute are required to keep us alive, and what quantity of air we inhale at every breath per minute and per day, to keep the fires of our body going. A little thought devoted to this subject may lead to results which will change your whole life and life-outlook, as it certainly changed mine.

The physiological text-books tell us that in a lying position we inhale normally sixteen times a minute, and that at every inhalation we draw into our lungs 0.5 litre of air. This amounts to 8 litres a minute, 480 litres in an hour and 1152 litres (roughly quarts) in twenty-four hours. Now think what a difference it will make to your well-being whether you obtain this enormous supply from Nature's unlimited, unpolluted sources, or from a stuffy, encumbered, closed up room or bedroom inside a human dwelling.

A rigid physiological law tells us that every living being would soon succumb if shut up with its own excretions and exhalations.

If an animal is put into an air-tight chamber where it is supplied with all the oxygen it needs, all the carbonic acid it exhales being carefully removed, the animal will nevertheless succumb, get cramp and die. The same will happen if a mammal is kept in an air-tight chamber where a human being has lived for some time. In spite of a free supply of oxygen and a careful removal of carbon dioxide the effect will be the same, because of the unknown poisons the human being has left behind.

The very fact that every breath of air, containing 21% of oxygen, is exhaled with a content of only 16.5% of that element, shows to what an extent the breath deprives the air of this vital constituent. But the supply of oxygen is unlimited and will be quickly renewed in any room, even if all the windows and doors and the chimney are shut. Few people succumb because of want of oxygen in the air, as is popularly believed. It is not this want that constitutes the danger in civilized life. *The danger lies in the many known and unknown poisons with which we pollute the surrounding air.*

Take for instance carbon dioxide of which the ordinary air contains only 0.03%, but with which the air exhaled from our lungs is already loaded up to 4.7%, or more than a *hundred times* what the ordinary air contains. Of this element, of which there is so very little in the atmosphere and of which all the vegetable world is in such great need, we unload in twenty-four hours no less than 460 litres (roughly quarts) from our lungs alone. Should the air we inhale contain 20-30%, or more, of carbon dioxide, death would follow.

Though the air we inhale contains 21% of oxygen, this amount varies considerably with the temperature, *warm air always being poorer and cold air richer in oxygen.*

As we all know, air increases and decreases in volume as it rises and falls in temperature. For every degree it rises, its volume increases about one-fivehundredth and vice versa, so that if we lower the temperature of the air from 100°F. to zero, the amount of oxygen it then contains in its more compressed state would be one-fifth greater, i.e. *we should have over four pints more oxygen in a thousand cubic feet of air at zero than in the same volume at 100°F.*

The difference in the amount of oxygen we inhale at 100° and at zero is not less than 25%. (See Carqué: Rational Diet, page 32).

No wonder that cold air causes a natural exhilaration and is far superior in every way as a health- tonic compared with warm or hot air.

This discovery, which has no weight whatever with most doctors and which the majority of them, with their peculiar mentality and training, would not trouble to consider, still less utilize, has had a tremendous influence upon my life.

On my first visit to London I stayed in the North, thinking that the further North I could get the better. But I soon found that the prevailing winds in England were either southerly or westerly, bringing all the smoke northward from South and West London. I hung a towel on the line in my garden and found that it took only a few days to turn it grey-black, whilst a friend in the southernmost part of London whom I had asked to do the same thing in his garden, could easily keep his towel on the line

for weeks before it became the same colour as mine. This experiment decided my next move in London.

On settling in London again after some years on the Continent, I bought myself a house in the South-West, close to the outskirts with open fields, play-grounds, and gardens. Here I repeated the same experiment several times, which proved the vast difference in the content of impurities in the air of North and South London.

Even in my own country, so far away from the big industrial centres of the world, with a population of only six million spread over an area nearly four times that of England, the difference in the purity of air is considerable between the rural districts, the villages, and the towns. Whilst on a clear day there are only 500 particles of dust in a cubic metre of air in the open country, we may find up to 5,000 or ten times more on a day of heavy air, while small villages may have 10-20,000 and bigger towns up to 50,000.

The examination of the air in public halls has shown 175,000 particles of dust per cubic metre at the beginning of a meeting and 400,000 at the end.

But vegetation binds dust and is, besides, a great consumer of some of the most poisonous things we exhale, above all carbonic acid gas. As we all know, trees under the influence of light consume the carbon element in carbon dioxide gas, liberating, for every carbon atom consumed, two atoms of oxygen. Thus trees and plants act as air-purifiers in a double sense, robbing the air of its poison and giving back for the consumption of human beings and animals the wonderful life-giving oxygen.

The carbon dioxide a man exhales in twenty-four hours equals the amount 300 square metres of forest are able to consume in the same time. Whilst doing this the same forest area will in exchange supply man with an abundance of oxygen.

Realising this I bought myself a strip of English soil 300 square yards in area, dug it all over and planted it according to my own mind and taste, with plants and trees of various kinds. In doing so I made another discovery, I found that on this blessed island I could spend six or eight months a year living in my garden, day and night.

The garden is an indispensable part of an Englishman's home. If properly planted and surrounded by trees it is his dining-room and drawing-room, where, for more than half the year, he finds health, rest and comfort.

I planted my garden in such a way as to make it an integral part of my house, forming a big hall with many secluded retreats. Here I built myself a substantial summer-house with an open front and a projecting roof, just large enough to hold a comfortable bed and to shelter from rain my work-table and some chairs, providing it in addition with electric light, a hanging book-case, one or two pictures - in fact the few amenities necessary for an outdoor life.

Little did I know when this garden house was being constructed that I was going to become a garden dweller for the rest of my life.

In front of me on my table is a baro-thermograph record for the summer of 1933, registered in my summer-house, and a thermograph record made during the same period in my old but now deserted bedroom indoors.

The thermograph record from my garden shows seven heat waves with their climaxes on the 22nd of June, 4th, 12th and 26th July; 6th, 18th and 27th August, when the temperature reached respectively 76.1° F. (24.5°C.), 91.4° F. (33°C.), 76.1° F. (24.5°C.), 93.2° F. (34°C.), 93.2° F. (34°C.), 78.8° F. (26°C.) and 89.6° F. (32°C.).

The night temperatures in my garden touched, on the following mornings of the same days respectively 50°F. (10°C.), 59°F. (15°C.), 55.4°F. (13°C.), 64.4°F. (18°C.), 64.4°F. (18°C.), 55.4°F. (13°C.), 57.2°F. (14°C.). The hottest night, not only for this summer but for 92 consecutive summers, was that of the 2nd-3rd July when the

thermometer did not fall below 73°F. (22.8°C).

The thermograph in my old bedroom indoors registered in spite of open doors and windows with a continuous through-draught - *night temperatures only a few degrees below the highest day temperatures or on an average 20°F. and 10°C. above the night-temperature in my garden.*

This result is not surprising considering how stone walls and furniture store up heat and how difficult it is to get them cooled down during a heat-wave when the air, in spite of open windows etc., remains stagnant and almost motionless, besides being excessively dry.

Through sleeping out of doors I was able to enjoy a night temperature at least 20°F. (10°C.) below the temperature of my old bedroom indoors, so that moving into my garden was almost equal to spending my nights in the Alps. Just think of the total increase in the oxygen inhaled which, for three or four of the hottest months of the year, must make a considerable difference to health and well-being. To this must be added the benefit derived from the moist night air of a garden covered with grass and full of trees and shrubs. The moisture of the air is of great importance to the organs of breathing, especially during a heat-wave.



GARDEN ADOBE Floor 85x50 inches; backwall 35x75 inches; side-wall, front=height 85 inches; canopy height 15 inches; jutting out 36 inches. Built by the author himself. - Should be used summer and winter, especially by all the weak-chested and consumptive with access to a garden.

The amount of water transferred to the air by the vegetation is enormous. "A single birch tree with some 200,000 leaves will pour into the atmosphere 15½ gallons of water on an ordinary day, and on a very hot, dry day as much as 85 gallons. A sun-flower with a leaf-area of 5616 square inches exudes a pint and a half in twelve hours, and it has been estimated that a beech forest evaporates about 14,000 tons of water per acre during the summer months. An average acre of wheat will, from start to finish, give off during the life-time of the plant some 1000 tons of water." (Shipley).

Whilst the night air in their gardens is saturated with oxygen and moisture, the poor modern specimens of Homo Sapiens offer the 725,000,000 alveoli or air-bags of their lungs the dried-out, overheated, oven-like air indoors. Here civilized Homo sapiens

turns restlessly from one side to the other in his stuffy bed trying to get some sleep, gasping for air and awakening in the morning feeling languid and out of tune, irritable in temper and with nerves on edge, whilst the cure for his trouble is so near at hand, so simple and so cheap.

How has this state of affairs come about? - I asked myself. How has man severed himself to such an extent from Nature and the only common-sense way of spending his nights, at least in the summer? The answer has not been difficult to find.

Only a few generations ago when a man died in Scandinavia, the shutters of the chimney were opened so that his soul could find an easy escape. Outside the windows and doors hovered the devils, ready to snatch his soul. They could not get into the house through the window panes, nor through the door even when it was left open. For the door was protected by pieces of iron, generally old, worn-out horse-shoes, nailed to the threshold and hung over the entrance. Iron was something the devils could not bear, because of the lightning spark from the fire of heaven concealed in it. The soul, however, preferred the chimney - the modern substitute for the old 'wind-eye' - as the nearest escape to heaven above and as a passage generally dreaded by the devils because of the fire below. Fire as the image of the sun, and its substitute when it did not shine, was man's best protection against the powers of darkness.

The ubiquitous devils were regarded as the true causes of the diseases and misfortunes that befell human beings. Hence they had to be shut out. Thus it happened that, in guarding his house against the disease-imparting devils, man also shut himself out from the benefits of fresh air.

The eighteenth century did away with the belief in devils as the cause of disease. But by a metamorphosis in thinking, the evil was transferred to the night air instead. In trying to explain why he slept with windows shut even in the height of a hot summer, Homo sapiens now declared that it was because of "the dangerous night air". No longer did devils hover about the windows when darkness fell upon the earth, but the air filled itself instead, according to prevalent views, with miasma and noxious effluvia which carried disease in their train. Hence the windows remained closed.

Modern research has turned all this upside down. It is proved beyond question, as we have seen, that the miasma and noxious effluvia are all inside and not outside, that man gets run down in health, because he shuts himself up indoors with his own bodily emanations, away from the health-giving and miasma-absorbing atmosphere and vegetation outside.

But he shuts himself out, at the same time, from much more: from the wonderful fragrance of plants and flowers, grass and leaves; from sailing clouds, the interplay of light and shade, the delicate hues of sunrise and sunset, the morning and evening twilight, the enchanting veils of midnight with the wandering stars, the mysterious stillness of the early morning hours; and from the greatest of all wonders - the dawn.

Something seems always to wake me up for a few minutes at dawn. A faint light enters my summer-house. Out of the darkness in the garden trees and bushes gradually appear, still cloaked in their gossamer veil of night-spun filament which the gentle touch of the first morning rays gradually lifts from their shoulders. Flowers peep out, eager for the messengers of light to unfold their colours. The stars twinkle and bid good-bye, slowly withdrawing into the halls of their spacious palace. A reflex from the purple mantle of the approaching Sun-god colours the sky, broken through by rays of gold and silver from his chariot. Nature holds her breath for a few moments of deep adoration. At last he appears, the great golden disc. The orchestra of light tunes its instruments. The symphony commences with a hymn to life, followed by the andante of the early morning, rising gradually to the allegro and allegretto of noon,

from which it drops slowly into the adagio of evening and the largo of approaching night. - The Greeks spoke of the hymn of the stars, too wonderful to be heard by human ears. Our eyes guess it, and sometimes in the stillness of the night there seems to be a strange response vibrating within us when the sky unveils its glories.

Is it to be wondered at that a summer, spent day and night in a garden in this blessed island, brings man back to Nature, to a path that he has lost, and makes him look upon his house as a prison?

"The foremost of modern scientists agree perfectly with the teachings of the Old Book, which declares that man was made to live in a garden," says Professor William S. Sadler on page 318 of his book "The Essentials of Healthful Living".

"Modern biologists are coming to look upon man as an *out-door animal*. Physiologists are becoming more and more convinced that the maintenance of health and the recovery from disease are mightily influenced by *the number of hours an individual spends each day in the open air*. All students of hygiene recognise that *the more mankind lives out of doors, the better the health*, the fewer the diseases from which they suffer, and the more quickly they recover from most bodily afflictions."

"Carefully compiled statistics show that the vital resistance of any family or group of families is in an exact inverse ratio to the number of years they have been away from the soil: that is, the longer you have been away from the farm - from the outdoor life of fresh air and sunshine - the more likely you are to contract disease, and the more difficult will be your recovery. On the other hand, the shorter time you have been away from the farm - the outdoor life - the more vital resistance you have, the less likely you are to contract disease, and the more quickly and surely you will recover from any accidental infection or malady."

"Health abounds in every breath of fresh air, in every muscular movement, in every normal courageous thought of the mind. In brief, health is the natural state of the human race. Disease is something that results from wrong habits of living, or unwholesome environment."

Yes, *man was made to live in a garden*. If he cannot live there the year round in the Northern temperate zones, surely he can spend his nights sleeping in the open. Let us not forget that man spends more than one third of his life in bed. What a wonderful source of strength he misses when sleeping indoors.

Autumn, Winter and Spring have passed, years have rolled on, but I have never been able to give up my nights in the garden except for a heavy mist, or a severe London fog which is not Nature's making but man's brewing. A sleeping-bag made of warm camel-hair and an alpaca rug in reserve for extra cold nights solved the practical side of the problem. For the winter nights here are seldom so cold as in the North where the thermometer may fall to zero in your bedroom, if you leave only a single window open. Still, you can sleep in the open even in a temperature of 50°C. (58°F.) below zero, as has been proved by experiments at Spitzbergen.

I remember how I longed, whilst in England, for those wonderful winter nights at home with plenty of snow and the temperature miles below freezing point. Once called upon to deliver a course of lectures for six weeks in a village in the North of Sweden after my first visit to England, I threw my bed-room windows wide open and gave King Boreas a free entry. He at once turned the water in the ewer into a solid block of ice and burst the water bottle, often sprinkling the carpet with snow which, however, was so dry that it could easily be swept out in the morning. He decorated my pillow with beautiful snow-flowers and crystals. I slept like a log. Never in my life have I slept more deeply and soundly than in that pure mountain air loaded with compressed oxygen. Not for one day during those six weeks did I wear an overcoat in

spite of very severe frosts.

My way of defying the snow and the frost deeply impressed the rural population, among whom were many intolerant sectarians mingled with people of a broader and more modern outlook. All the members of the sects vowed that I should soon be frozen to death or die of pneumonia, whilst the opposite party looked upon even an eventual cold in my nose as disastrous to science. However, I finished my course of lectures in brilliant form and perfect health to the great joy of my modern friends and to the dismay of the sectarians who afterwards swore that I had been in conspiracy with the devil himself, whom, of course, they had actually seen hopping in and out through the open window of my bedroom.

Untold wealth of health and well-being lies waiting outside the closed bedroom-windows of Scandinavia.

But untold wealth of health and well-being also lies waiting for the English people in their gardens. For those in England who from choice sleep out of doors in the summer time are still as few as those in Scandinavia who dare to sleep with open windows in the summer months. Sleeping out of doors from choice the year round is a rarity even in England.

But where can it be done with greater advantage than here?

The Italians have to retreat into their houses in the height of summer to escape the heat of both day and night, and the inevitable mosquito nets make the night air still more stagnant.

Outside their houses the roses go to sleep by the end of May. Every lawn and field turns brown, and all the leaves at the roadside grey from a powdery dust that almost chokes vegetation. To step out from the night-like penumbra of the dwellings into the glaring sunlight is a strain upon the eyes and an ultimate cause of much blindness. When working in the open the heart beats at a terrific rate in order to counteract the excessive heat by profuse perspiration. This strain makes people grow old before their time.

But the Italians score in the early Autumn and Spring when their country is little short of a paradise, and in the winter, when the sun is more friendly disposed towards them than the English. But still, they have not the English summers with their eternally green lawns and fields and their deliciously cool, moist night air; nor have they the English winters which in spite of their excessive humidity and lack of sunshine are more like an eternal Spring than the Winters anywhere else in Europe.

If it is said that an Englishman's house is his castle, surely his garden is his Eden, and his island the gardener's Paradise.

IX.

AN ENGLISH PIONEER.

I had taken a great step forward in restoring my health. Colds had certainly diminished, but I still had them once or twice a year, though they no longer kept me in bed even for a day. Still, I had them, in spite of all the fresh air, cold baths, and exercise. This was disappointing, for in my enthusiasm I had hoped to be able to stamp them out for ever.

Another symptom that annoyed me was my old headaches. I had had them regularly once a fortnight as long as I could remember. Since my arrival in England, sleeping in fresh air had greatly diminished them, but I still counted upon at least one attack every six weeks. They generally announced their arrival by my eyes beginning to ache. The pain soon increased and travelled to the back of my head. In the next stage it spread all over my head and was sometimes so severe that I didn't know what to do with myself. To open my eyes and look at anything was intensely painful, walking was out of the question, and sitting or lying down gave no relief. And still, I felt that these headaches were abnormal and due to some cause I could not at the time determine.

Then suddenly something happened which had a tremendous influence on the whole of the rest of my life.

One day, walking home from Hyde Park along Oxford Street, with a feeling in my eyes that I had an attack of headache coming on, I stopped, as I often do, at a book-shop window and looked in. My eyes happened to fall on a little blue book, upon the cover of which I read in gilt lettering: 'Diet and Food in Relation to Strength and Power of Endurance. Haig. 4th Edition.' I went in and bought it straight away, read the preface and glanced hastily through the front pages. Within twelve hours I had read that little book twice through in spite of my almost bursting head. I was in a fever, but it was not a fever of disease, it was the fever of a man who had discovered something; the fever, I suppose, which besets a gold seeker when, after months of suffering in a desert, he suddenly discovers a gold-mine.

On the very first page I read this strange sentence: "It is a matter of little consequence whether the uric acid is driven into the fibrous tissues by cold or the action of a microbe; but it is a matter of vast importance that, if the uric acid is absent, neither the cold nor the microbe can destroy life, as they are now constantly doing." I

The original preface, also reprinted in this 4th Edition, opened with this paragraph:

"In attempting to alter people's diet so as to free them from the poisonous xanthenes and uric acid, I have met with so much ignorance and its results, prejudice and superstition, that I have been led to write these pages in the hope of making rather clearer the position that diet holds in relation to these matters of strength and nutrition."

"And I believe that I speak no more than the truth when I say that *once a clear knowledge of the facts is obtained, a workmanlike and useful grasp of the subject is attained, it will be found that in diet lies the key to nine-tenths of the social and political problems that vex our nation and time.*"

"Diet, as at present used, is often the product of a vast amount of ignorance; it is the cause of a hideous waste of time and money; which produces mental and moral

obliquities, destroys health and shortens life and generally quite fails to fulfil its proper purpose."

Never have I more triumphantly borne suffering. Through my aching eyes I saw dawn at last, dawn for myself and, as I believed, at the same time for a suffering humanity. I started at once to apply the knowledge I had gained from reading the book, and I had the joy of feeling my headache abate and leave me in half the time it would originally have taken. I believe this was my last attack of that old trouble, for I cannot remember ever having had a single one since.

Knowledge is power, and if not power it is not knowledge.

When my headache was gone I bought Dr. Alexander Haig's main work: "Uric Acid in the Causation of Disease", referred to in the small book. On the very first page of this famous work I read a paragraph which, like no other paragraph, went straight home:

"Having been all my life a sufferer from migraine it was in the autumn of 1882 that, in despair of obtaining any complete relief from drugs, and not without some fear that I was really suffering from organic disease, I gave up all butcher's meat and replaced it by milk and fish, the latter in decreasing quantities till milk and cheese formed, what they do now, my only animal food."

"I had previously tried a great variety of alterations in diet, including an increased allowance of meat and various alterations in quantity and quality of life's main constituents, such as sugar, tea, coffee, and tobacco, without noticeable result. *But on the non-meat diet a change was at once apparent: my headaches diminished both in frequency and severity, and from an average of one in a week they fell steadily, as the diet was persevered in, down to one in a month, one in three, six, eight, or twelve months, and eventually eighteen months elapsed without an attack of notable severity.*"

"Since then I have never gone back to butcher's meat, and I never intend to, because by avoiding it I obtain what is practically immunity from a disease, which at one time bid fair to cripple me and prevent completely all mental and sedentary work; not that the headache was confined to periods of sedentary work, for I have often had to give up portions of a day's shooting because my head was too bad to stand the noise and concussion of firing, and yet this was in the open air of the country, and when a book had probably not been opened for weeks, and under conditions which were infinitely more favourable to health than those in which I now exist and have immunity."

"But if I at any time forget my lesson of the past and presume on my apparent security from attack, if I dine with two or three friends in the same week, and especially if I take both meat and wine, I am practically certain to have a more or less severe headache in two or three days' time; though, as will appear further on, I can generally prevent the intense pain from which I used to suffer in former days, as more correct knowledge of causation gives me more complete power of control."

Having arrived, then, at the conclusion that leaving off butcher's meat had practically relieved me of headache, I began to ask why this was so, and at first (Practitioner 1884) I was inclined to attribute it to the formation of some poison, probably of the nature of ptomaine, in the intestines during the digestion of butcher's meat."

"But a further study of the clinical history of migraine brought out such a strong relationship to gout, that (Practitioner 1886) I began to suspect that uric acid might be the poison of which I was in search, and I therefore proceeded to examine the excretion of uric acid and urea." I

* * *

It is now about thirty years since I first opened Alexander Haig's main work and read the above quotation. What an eventful thirty years! By the aid of his methods I not only rid myself completely of the terrible and persistent headaches which had followed me like a curse, but my colds diminished to such an extent that I can safely say I no longer take them into account. Of course I have had slight attacks, colds just coming on, the bronchi seeming rather clogged, my nose stopped up in the morning and my head feeling a little dull, but these symptoms lasted, only a few hours or a few days at the most, and never interfered with my work.

Not only did my headaches disappear and my colds almost vanish, but my health improved week by week. I had attained what I saw that day, as in a haze through my aching eyes, printed in gold on a blue back-ground - *strength and power of endurance*. I could walk for hours without feeling tired. I, who had never been able to work assiduously for more than two hours a day, was now able to use all the hours of the day for any kind of work whatsoever, writing, science, philosophy, gardening, etc.

If fate had not brought me to England and to that bookshop in Oxford Street, I believe my life would have ended long ago, for vegetarianism had never appealed to me, and still less the representatives of vegetarianism I had met up to that time, so many of whom behaved in a way that could not but prejudice people against food reform of any description, chiefly by the introduction into this movement of all kinds of irrelevant ideas.

What I aimed at was something quite different. I was, above all, a rationalist and an empiric. I could have eaten toads and snails and garden worms if anybody had been able to prove to me that that was man's natural food. I felt instinctively that our whole civilisation was one built up for weaklings and apt to produce weaklings. It was obvious that a healthy, strong and robust man was looked upon almost as an anomaly or a criminal, whilst weakness and disease in any form not only had universal understanding and sympathy, but were regarded as something of great value, almost holy. Everyone seemed to notice what an invalid or a cripple thought and felt, whilst the feelings and doings of a healthy man were of no interest unless he developed cancer or became consumptive. Is not most of our modern poetry 'hospital poetry'? ...

My aim was health, but health as a means to something more: *the command of life*. I knew that it was futile to talk of the command of life unless you were able to govern yourself mentally and physically. Something within me told me that man was a born master, a god in the making. Only he did not yet dare to believe in himself and claim his inheritance.

What I admired more than anything in the English was their self-mastery and self-control, qualities of which we have altogether too little elsewhere. I felt strangely at ease among these people, each of whom seemed to go about his daily duties, doing his very best and assuming that everyone else did the same. His love of facts and of a close contact with reality had made the Englishman a realist. It was reality I myself was seeking and not dreamland, instinctively believing that the most wonderful dreamland is just reality itself.

Surely, Alexander Haig was a realist and a true Englishman.

Instead of theorising about his headaches he went to reality itself and tried to find out what caused them by changing his mode of living. This is to me science, for if science is anything it is *empiricism: the art of investigating life by observing and experimenting, only accepting what can be proved to hold good when tested in life*

itself.

My studies in philosophy and the history of science had proved to me that our Universities which so firmly believed in modern empiricism, and our Professors who all thought they were full-blooded empirics, in reality still clung, to a large extent, to the scholastic ideas of mediaeval times. The years I had devoted to modern medicine had taught me that our doctors, with very few exceptions, were not true empirics, but in their mental make-up still theorists of the old scholastic type, *not believing in the obvious result of an experiment carried out on living human beings, but in theoretical explanations to which reality had obediently to accommodate itself.*

The more I have got to know doctors since then, the more firmly has this conclusion come to be established in my mind.

Alexander Haig was one of the first and best instances proving this. He had succeeded not only in curing himself of his periodic headaches, his chief trouble, but in vastly improving his health, turning himself from a cripple into a man able to enjoy life in its fullness. Hundreds and thousands of people following his ideas can testify to this, and I among them. But all this was of no value so far as the medical profession was concerned, simply because he, in trying to account for the practical results he had obtained, put forward an idea: his 'uric acid hypothesis' which he firmly believed would explain these results, but which ultimately proved fallacious. The medical profession saw the theory only and disregarded the most important thing of all, *the facts* that the theory was meant to explain. No one speaks of it now. *But the facts he obtained remain untouched by his theories.* Yet the medical profession buried these vital data as if they were of no importance, thereby proving that they were at heart still mediaeval scholastics and not modern empirics.

Alexander Haig made a lot of discoveries, but they were all of an empiric kind. He found out that owing to the increased acidity or alkalinity of the blood, health conditions would change greatly, and thus he laid the foundation of the modern theory of a general acidosis as the cause of a host of troubles. In a practical way, using himself for a test, he found out which kinds of foodstuffs were likely to produce this acidosis, and his discoveries still hold good. He resolutely discarded tea, coffee, cocoa, vinegar, highly acid drinks, and even acid fruits, as the probable cause of this acidosis. He was puzzled to find that eggs had the same effect, though he was at a loss to arrive at any explanation. He was the first to use the capillary reflux as a simple test of the efficiency of the circulation and the purity of the blood. He finally discovered that the rise and fall of the toxic conditions of the human system are periodic, pointing out that owing to a general physiological law and various modes of living, toxæmia is greatest in the morning, gradually abating towards evening and the early part of the night only to increase again in the early morning, reaching its culminating point about the time of awakening.

Most of the practical researchers following in his footsteps have corroborated his findings, only giving them other names. We now speak of toxication, auto-intoxication, acidosis, stasis, bowel toxæmia, intestinal putrefaction, intestinal fermentation, and so on. Alexander Haig was on the road to discovering it all, but he was impeded by his uric acid theory, which we can now discard with a smile as the least important part of his work, giving him his full due for his many far-reaching discoveries.

Alexander Haig had been brought up in the mesh-work of all kinds of dead theories at his University. His professors had sent him out in life a scholastic with his head full of ephemeral hypotheses about diseases, *but without any knowledge of, or interest in, the laws governing health.* This spelt in his case, as in so many others, disaster. He

was tracked down by disease which he, like most of the scholastic doctors our universities produce, could not cope with. In his despair of finding a cure he did something most "undocorlike", he started experimenting with such a 'ridiculous' thing as food. Of course, all his colleagues thought he had become insane. And so, in all probability, he would have become because of his headaches, unless he had lit upon this very queer, unprofessional idea. He not only cured himself, but found at the same time that he had gained an unusual control and command over health and disease, far beyond that of ordinary doctors. It was now that, unfortunately for his great practical achievements, the mediaeval scholastic reared in him during his University training, got the upper hand and produced the highly theoretical uric acid theory, which of course delighted his colleagues. By means of this theory the medical profession was able to bury all his findings, so practical and yet so disquieting to their habits of life, and their professional prejudices, under the débris of the once magnificent edifice of his uric acid hypothesis.

Today it is easy to put a finger on the very point where he went astray. We find it on page 2 of his main work 'Uric Acid in Causation of Disease'.

Alexander Haig says: *'I began to ask why this was so, why the leaving off butchers meat had practically relieved me of headache? I was inclined to attribute it to the formation of some poison, possibly of the nature of 'ptomaine' in the intestines during the digestion of butcher's meat.* But a further study of the clinical history of migraine brought out such a strong relationship to gout, that I began to suspect that *uric acid* might be the poison of which I was in search, and I therefore proceeded to examine the excretion of uric acid and urea."

Thus Dr. Alexander Haig's mind got entangled by his 'Uric Acid theory'. If he had followed up his first "inclination", as indicated above, it might have led him to investigate more thoroughly Bouchard's great 'Auto-Intoxication theory' and perhaps also to anticipate Lane's famous discovery of 'Intestinal Stasis'. For the research workers who have come after him, and who are now regarded as the great pioneers of a new science and of a new outlook upon human life, all attribute the cause of his headaches to the *"formation of ptomaines and other poisons in the intestines during the digestion of butcher's meat,"* - and a consequent 'stasis' or slowing down of the activities of the great bowel with accumulation of faecal matter and poisoning of the whole system.

HIDDEN REVOLUTIONS.

Alexander Haig had brought about a complete revolution in my life. By one stroke that little book of his had cut me loose from the ordinary way of living as far as food was concerned.

My philosophic mind at once realised the magnitude of the change. I was faced by a problem of the most far-reaching consequences.

If Dr. Haig's health had improved to such an extent as a result of his practical experiments with food upon himself, if an immediate change in my way of feeding had had the same wonderful effect upon my own health, if hundreds of English athletes, doctors and laymen could testify to the same results, it was obvious that a great truth lay hidden in these changes far surpassing Dr. Haig's own findings. Whether his Uric Acid theory was right or wrong did not matter a whit to me. It was the *results* I went by, and they were only too obvious to be disputed.

The first conclusion I came to was that the diet I had been brought up on was radically wrong and in all probability the very cause of the appendicitis that had nearly ended my life.

The second conclusion was that man's constitution was evidently made for a quite different kind of diet. But what kind of diet, and why?

I turned to history for an answer - not the history of wars and politicians, but to that much neglected history of the changes in the daily life of human beings. It is here that you will find the great revolutions which ultimately decide the fate of man, overthrow empires and stamp out whole nations.

A few months of study taught me how greatly man's mode of living had changed during the past 50 years, not to speak of the last few centuries.

Only three centuries ago the whole of the European nations fed upon the products of the soil. They were 99% farmers, restricted in their food supply to what the soil produced. They lived on unadulterated food, on coarse bread, on porridges made of whole grain, on soups boiled in big kettles containing a mixture of all the best that the gardens and the fields could produce, plus all that was best and most nourishing in slaughtered animals. There were whole grain, whole cabbage, lettuce leaves with stems, peas with their pods, roots such as potatoes in their jackets, carrots and turnips, and parts of animals with their bones and blood and the best of their entrails. Nothing was thrown away, and above all, certainly not the water in which all these good things had been boiled.

But what a change since then! Wholemeal bread, the coarse black bread, is nearly stamped out all over Europe except in Finland, some parts of Scandinavia, and in Russia.

My father lived to a large extent on black bread. He loved it, and from him I caught the habit. Up to the age of twentyfive he had never tasted coffee or tea, white bread or white sugar. At the age of fifty he did not know what tooth-ache was. I still remember his astonishment when we, his children, were crying and feeling miserable because of our aching, carious teeth. He had never in his life experienced that sensation and could not, therefore, understand it.

A few years later, one evening when he came home, he looked at me and said:

"Now I know what tooth-ache is at last; how you must have suffered!" I was then sixteen years old. For the first time in his life he had had to go to a dentist.

The Russian peasants, who live largely on black, wholemeal rye bread and onions, retain their teeth intact to the end of their lives. A relative of mine who served many years as an officer in the Russian army often said, speaking of the teeth of his soldiers: "A dentist would starve to death in this country".

Webmasters comment: Before 1918 Finns did their military service in the Russian army.

The inhabitants of Dalarna in Sweden, once considered the healthiest in the whole country because of their wholesome, frugal way of living, and amongst whom you can still find old men of seventy and eighty with all their teeth intact, are now suffering to such an extent from carious teeth that you often meet young girls and boys with a whole set of false teeth.

The same thing has happened to the people of Yorkshire, once regarded as among the healthiest, who in their physical appearance and way of living are most closely connected with Scandinavia. I am told that a large percentage of young girls in that county have false teeth already at the age of sixteen.

And yet, the teeth are so marvellously constructed by Nature that they would easily last for a whole life-time if man only understood how to live.

That strange being who has so proudly named himself 'Homo sapiens', the *knowing* human, seems to me, in the light of my recent experiences, the most stupid and ignorant of all the animals in the kingdom of Nature.

Dr. Geil, a famous African explorer who visited the Pygmies, once asked one of their chiefs: "How do you know what to eat when you visit a new forest and find food you have never seen before?" The little Chieftain replied: "When I find a new nut I put it where a monkey can see it - then I hide and watch the monkey. Pretty soon he picks up the nut, smells it, tastes it, and then if he eats it I eat it. If he drops it on the ground I know it is not good food and I do not eat it."

I have thought of that story many times. It has haunted my mind through many years, and the more I have thought of it the more that little Chieftain has gone up in my estimation, until now I unhesitatingly put him before all our University professors whose business it is to teach our medical students. For their way is not that of science at all. Medical Science ought to be something more than vague theories about health and disease. Its true basis is *facts*, arrived at by experiments *not* only in laboratories and mortuaries, but primarily *on living human beings*. That Pygmy Chieftain was a true empiric and a true biologist without knowing it. He no longer trusted his own instincts, and therefore he left the decision to the animal most closely connected with him, in which all these instincts were still intact. We modern Europeans have cut ourselves entirely loose from Nature and lost almost all our instincts for what was once the right way of living, by the introduction of fire, our modern means of communication and our town life.

The machinery of the great industrial revolution gave us means by which we could reduce distances, decade after decade, by leaps and bounds until it became possible to put on our dining-tables, morning, midday and evening, foodstuffs from all the corners of the whole Globe. For the first time in the history of the human race, man, who had hitherto fed upon a restricted area of land, could turn the whole Earth into his dining-table.

The result has been disastrous. We have gone heedlessly ahead, grabbing foodstuff

after foodstuff. Meat, which to our farmer forefathers was a luxury they could allow themselves but sparingly, can now easily be indulged in to any extent by everyone thanks to an unlimited supply drawn from far-off countries.

The annual consumption of meat in Great Britain alone has increased in 50 years from 3 lbs. to 50 lbs. per head.

Whole populations who formerly lived on wholemeal bread are now using bread from which the husks and the germs, so rich in food minerals, have been carefully removed.

A hundred years ago coffee was a luxury very moderately indulged in by the wealthiest part of the population, but unknown as a drink for the people. Now it is the national drink of the peoples of Scandinavia, consumed by everyone, not once or twice a day, but morning, midday and afternoon, half a dozen cups a day being an average in the rural districts. And what coffee? - Made very often from the residues accumulated for a whole week or more and consequently full of tannin and other poisons! ... The same with tea in England! Without having the slightest notion of how the Arabs, from whom we have imported the coffee, and the Chinese, who send us the tea, make and enjoy these drinks peculiar to their countries, we have gone on allowing whole populations to make deadly decoctions of imported tea-leaves and coffee-beans in their own way, thereby ruining their teeth, digestion and general health, and undermining the future existence of the whole white race.

Add to this all the manufactured foods and preservatives, made by those who, almost without exception, can be called food adulterators, who force upon the civilised white populations, by means of their seductive advertisements, products and concoctions which in most cases are ruinous to health, and the danger incurred will be obvious. I

Surely a tremendous revolution with the most far-reaching consequences has been going on almost unnoticed during the last few centuries, only accelerated in the last decades.

I said 'almost unnoticed', for the astonishing thing is that the very profession whose business it should be to look after the health of the people has not only entirely neglected to watch and study these changes, but loathes and despises any attempts in that direction. As a consequence, these most important of all modern investigations upon which, ultimately, the fate of the whole civilised world hangs, have been left to laymen - in most cases to laymen who have suffered a great deal from ill-health, many of whom, in consequence, have had their nervous systems wrecked and their mental equilibrium upset. In despair of restoring their lost health by the means ordained and sanctified by the medical profession, they have instinctively turned to a change of food and often found relief, as Dr. Alexander Haig did. But most of these attempts have soon been spoiled by the introduction of all kinds of absurd and irrelevant ideas.

It has for centuries been obvious to many laymen that the omission from their diet of certain foodstuffs, especially meat and fish, soon delivered them from many of the diseases they had suffered from, making them to some extent immune to colds and headaches, and endowing them with more power of endurance and a better vitality on the whole. But instead of turning to Nature itself, to anatomy, physiology and biology for an explanation, they jumped to conclusions of either the old well-known scholastic or of a religious kind, looking out for something 'absolute' *) to free them from any further investigations or troublesome questions.

*) By 'absolute' I understand an emanation that could not - or should not - be further questioned.

Most food reformers of a religious type believe that their improved health is conferred upon them by unseen ethical powers as a reward for refraining from eating the flesh of slaughtered animals.

"Man should not kill living beings," they say. "His misery comes from the killing of animals, and diseases are his punishment."

It is obvious that the whole idea repudiates itself. For life cannot be maintained but by taking life. We cannot go on for a single second, without unconsciously taking the life of myriads of beings. A single glass of water from the purest well is swarming with life, which the hydrochloric acid and the juices of our stomach and intestines destroy to a large extent.

I need hardly refer to the well-known story of the Hindoo who prided himself on never having taken life, or subsisted on foodstuffs from slain animals. Greatly perturbed when shown under a microscope the busy life contained in a drop of water taken from the glass he had just used, he stood silent for some moments, ultimately finding relief in smashing the microscope.

The same applies to all food reformers of this type. They do not slay the microscope, but they slay truth and often their own relatives and progeny, of course with the very best intention of helping them.

It is all right as long as these 'non-slaying' food-reformers allow milk and eggs in their own diet and the diet of their children and relatives, though you cannot eat butter and cheese or drink milk and consume eggs without robbing the hen of its chicken and the cow's offspring of its proper food and, in most cases, of its life. If we are going to drink the cow's milk the calf will have to be slain by somebody.

Most food reformers of the 'non-slaying' type appear not to see this consequence, hiding their heads, as the ostrich does in the sand. But there are others who see it and consequently cut out of their diet milk, cheese, eggs and butter as the last remnants of animal foodstuffs. The result is generally disastrous to their babies and children who have to pay with their health, and sometimes with their lives, for the sake of the purity of the principle. I know instances where babies brought up in this way in cold climates have been crippled for life, and I also know instances where adults have died prematurely.

'Vivat principium, pereat mundus'! (Webmasters comment: something like *May the principles live even if the whole world would vanish*).

But this non-slaying principle can be saved in many other and less disastrous ways. I know an old lady in Stockholm who, when she caught a mouse alive in a trap in her larder, let it loose in her neighbour's garden. If the mice were religiously disposed they would certainly have appointed her their patron saint. - What does not man do for the salvation of his soul? ...

There are others who seek their salvation in eating exclusively what has grown 'above the soil', discarding potatoes, carrots, turnips and a host of other things because grown 'below it'. 'Fruit and greenstuff!' is their slogan.

Another class of converts, of a less rigid outlook, eat raw food only, excluding cooking; whilst others allow cooking to a certain extent but are dead against grain-food or cereals, supposing them to be too acid; others delight in grain-food but discard fruit for the very same reason.

In certain diet-reform movements we are met with a jumble of facts and ideas huddled and muddled together and presented in a way that may appeal to people who prefer 'believing' to 'thinking', but most certainly desecrate the whole diet-reform movement in the eyes of the rest of the world.

The indifference of doctors to food reform is largely responsible for the way in

which all these factions have, through their obvious mistakes and fanaticism, obscured the importance of food reform in the minds of most onlookers, actually scaring away many who in their choice between ridicule and ill-health refer the latter.

Only in the hands of comparatively healthy people, endowed with common sense, who realise the abysmal ignorance responsible for our present haphazard way of feeding, will a reform of our diet command general respect and carry the field in all the civilized countries.

Thanks to Alexander Haig, food-reform in England was rescued from drowning in the morass of faddism, and brought into the sunshine of rational research upon the rock of modern empiricism.

On this firm foundation the 'Temple of Health' will ultimately be erected by the joint creative efforts of the laymen-researchers and the health-loving medical workers of the future. Over the entrance to this Temple will be inscribed:

PREVENTION IS BETTER THAN CURE.

XI.

WHAT HISTORY AND STATISTICS TELL US.

I was packing my books and getting my trunks ready to go away. I did not know where I was going, but I had decided to cut myself off from civilisation, and especially from big towns, for some time.

It was already the middle of August, and London was sultry and sometimes as hot as an oven although there was no actual heat-wave. I felt greatly in need of a change. It seemed to me that I had found so many means not only of regaining health but of building up new health for the rest of my life, that there was no temptation civilisation could offer to keep me from realising this purpose. Here in my English garden I had wonderful dreams, dreams of a new life, a new race, a new humanity. I wanted to convert my dreams into a system of well-defined ideas, to the realisation of which I was prepared to devote my life.

I had bought all the books I could find on the subject I was going to study, somewhere in seclusion among the Alps of the eternally blue and summer-like Mediterranean, only regretting that I could not take with me that wonderful store-house of knowledge, the British Museum. Its luminous dome kept me, however, a prisoner in London for some weeks longer, delving for knowledge in books describing old ways of living in Europe.

Life is full of coincidences. One day on my way to the library I met my dentist, a tall, fine-looking Englishman of Irish extraction, who, upon hearing of my work, told me that his forefathers in a certain district of Ireland all *lived to be a hundred and twenty years old* on a diet consisting chiefly of potatoes, oatmeal, butter, milk, and home-grown vegetables. *They never ate meat or fish.* Their porridge, he told me, was made from coarse oats, soaked over night and brought to boiling point, then a handful of fresh coarse oats was thrown into the pot and mixed with the porridge, the whole being left to stand with the lid on for about a quarter of an hour before serving. He also confirmed the conclusion I had reached, that the favourite dish among country folk in both Ireland and England used to be soup, made in a cauldron in which all kinds of ingredients were boiled together, and served without anything having been discarded or thrown away.

Scarcely had I arrived at the reading room in the British Museum, when an attendant brought me a book by Plutarch, ordered the day before. In opening the book casually, my eyes at once caught the following sentence: "*The ancient Britons began to grow old at 120*". A few minutes later I recorded the following observation made by a well-known traveller, Malcolm, who wrote: "The finest specimens of the human body I ever beheld I saw in Ireland, and they had never tasted flesh food". - There seems to be some secret magnetism in facts, or in a research-worker to attract these facts.

The very same day I came across Stubbs' book 'Anatomy of Abuses', in which he says that most of our forefathers in the sixteenth century "fed upon graines, corne, roots, pulce, herbes, weedes, and such other baggage, and yet lived longer than we, were healthfuller than we, of better complexion than we, and much stronger than we in every respect."

Macaulay tells us that in the seventeenth century, "Meat was so dear in price that

hundreds of families scarcely knew the taste of it", and that half the people of England, then numbering about 880,000 families, "ate it not at all or not more often than once a week".

I believe it was the Norman conquerors who first introduced meat-eating on a large scale. But whilst whole oxen were slaughtered and roasted in the kitchens of the Norman castles, the Saxon peasants went on living in their old way on a diet from which meat was almost excluded. It is interesting to note that *the English names of meats are of Norman origin whilst those of vegetables are all Saxon*. The leek appears to have been the principal vegetable among the Anglo-Saxons as it still is with the Russian peasants. Among green-stuffs, cresses and other herbs were in general use as they still are today. Nuts and plums were universally grown and appreciated. Another favourite fruit was the cherry, which seems to have been grown all over Europe in the Middle Ages. The king of all fruits was the apple.

But what of the ancient Britons who lived here before the Angles and Saxons entered the country? The Hon. K. Russel relates in his excellent book 'The Strength of Diet' that when Queen Boadicea was about to engage the Romans in a pitched battle, she encouraged her armies with a pathetic speech in reference to the wrongs and outrages they had suffered at the hands of their foreign oppressors, and urged in particular the following considerations:

"The great advantage we have over them is that they cannot, like we, bear hunger, thirst, heat, or cold. They must have fine bread, wine, and warm houses. Every herb and root satisfies our hunger, water supplies the want of wine, and every tree is to us a warm house." ...

"Our fathers," says Russel. "were robust both in mind and body, and could bear without much pain what would totally overwhelm us."

Yes, so it was. But how is it now? Ask the doctors! They immediately tell you that the human race has never been in a better state of health. In order to prove this they refer to its longevity, corroborated by statistics. Unfortunately there are no statistics available of Queen Boadicea's time or of the following centuries up to the sixteenth when the hygienic conditions of Europe were in an indescribable state, creating a veritable inferno of disease. If humanity had not been able to improve upon the sixteenth century it would simply have become extinct. It is of this improvement that doctors are so proud. Undoubtedly man lives longer now, on the whole, than in the Middle Ages. But the question is what kind of man? You can keep a cripple alive in bed for sixty years or more by waiting upon him hand and foot. This fact does not, however, prove that the race has improved in health, strength and vigour.

There is a sect in Asia, the members of which allow themselves to be closed up in a horizontal position in hollows and niches in the mountains, leaving only a small hole for ventilation, the intake of food, and the clearing out of their pigeon-holes. Yet they seem to be able to go on living up to an age of sixty years or more. But I am sure that an examination of their physique would prove the holy men to be in a state of lamentable weakness. Still, they would help to bolster up any of the longevity-statistics the doctors are so proud of.

The fact is that man seems able to get along somehow and reach a considerable age if he is protected and nursed, just as vines may grow and bear fruit under glass in the immediate proximity of the polar circle. But leave a single window open on a frosty night and the vines would succumb.

The same applies to these holy men of the East. Take one of them out of his pigeon-hole. His eyes would not be able to stand even the twilight, much less the light of a cloudy day. Blazing sunlight would for ever extinguish the last spark of sight in

his eyes. If you asked him to walk a few steps with you he would fall down, his muscles being unable to support him because of all the years spent in a lying position. The slightest exertion would almost kill him. - Yet you are quite entitled to include his life-record in any statistics proving the longevity of the human race.

I know people, relatives and friends, who are between eighty and ninety years of age. But none of them is well, and none of them would be able to live a single day unless very well cared for. Their days are extremely well regulated, the slightest deviation registering itself almost immediately in physical complaints and upsets of various kinds.

As a matter of fact I do not know a single person in my immediate surroundings who is quite well and who does not suffer now and then from stomach complaints, heart attacks, skin troubles, frequent headaches, colds, foetid breath, flatulence, disturbed sleep, irritability, bad temper, and nerves ... nerves ... nerves ... Still, modern life in well-built, glass-protected, stone houses with carefully regulated temperature and a never-ceasing supply of water and food, may easily keep them alive to a much greater age than the miserable town-dwellers of the Middle Ages. For modern times have taught us at least one thing of great value: *the vital importance of external hygiene.*

By *external* hygiene I mean clean and well-ventilated houses, clean court-yards and streets, a good supply of fresh food and uncontaminated water, airy larders, a quick and complete removal of kitchen refuse, human excrement and waste-stuff of all kinds.

The longevity the doctors are so proud of is due chiefly to this *external* hygiene which, however, has been brought about by *laymen*, not only without the sanction and support of doctors but to a large extent in opposition to them. The same applies to most of the great medical discoveries which have not been made by the medical profession but outside its ranks, by laymen and workers in the field of science, the doctors having nearly always fought against these discoveries and ridiculed them, only afterwards changing their attitude when they found the current of scientific and public opinion too strong.

When we turn from the statistics of longevity to the figures disclosing the physical conditions of our civilised race, the whole outlook is at once changed.

In his excellent book: '*Good Health And Happiness*' the well-known English writer, *J. Ellis Barker*, summarises the Report of the Registrar-General for England and Wales regarding the deaths which took place in 1924 as follows:

All deaths in England and Wales in 1924 473,235

Deaths from epidemic and infectious diseases 77,787

Of these there were - tuberculosis 41,103
 influenza 18,986
 measles 4,834
 whooping cough 3,983
 diphtheria 2,501

Deaths from:

Heart disease	60,650
Cancer	50,389
Pneumonia	38,970
Bronchitis	37,786
Cerebral haemorrhage	26,785
Old age	25,735
Diseases of early infancy	21,235
Diseases of the arteries	17,910
Nephritis, chronic	11,164
Diarrhoea and enteritis	7,860
Diabetes	4,254
Ulcer of stomach and duodenum	3,018
Anaemia	2,803
Appendicitis	2,656
Chronic rheumatism and gout	2,475
Cirrhosis of the liver	1,756
Rheumatic fever	1,663
Miscellaneous diseases	78,339

Total 473,235

"It will be noticed," says Mr. Barker, "that the most important diseases causing death are tuberculosis, cancer, heart disease, cerebral haemorrhage, arterial disease, etc. These most important killing diseases and numerous others are practically unknown among primitive races, and may be described as *diseases of civilization*."

On page 35 of his report, *The Health of the School Child*, Sir George Newman, the Chief Medical Officer, says: -

"In 1921, approximately 2,500,000 children were examined in England and Wales,

and upwards of 40% were suffering from physical or mental defect of some degree, major or minor, as compared with 47% in 1920. In 1922, 2,400,000 children were examined, and the routine inspections showed 42.2% to be defective in some degree. An estimate of the incidence of defect under the principal headings may be made from a consideration of the figures given in the table of returns furnished by the Local Education Authorities of nineteen of the largest representative areas in the country, based on the routine medical inspection of 707,346 children".

Defect	Number of Children with defects	Percentage of Children with defects
Malnutrition	15,282	2.2
Skin disease	14,611	2.1
Defective vision (of all forms)	145,521	20.6
Eye disease	11,759	1.7
Defective hearing	7,899	1.1
Ear disease	11,503	1.6
Nose and throat disease	90,832	12.8
Enlarged cervical glands (non-tubercular)	34,211	4.8
Defective speech	3,580	0.5
Dental disease (routine medical inspection)	241,052	34.1
Heart disease - organic	5,773	0.8
Heart disease - functional	9,043	1.3
Anaemia	14,482	2.0
Lung disease (non-tubercular)	21,284	3.0
Tuberculosis, pulmonary, definite	694	0.1
Tuberculosis, pulmonary, suspected	1,895	0.3
Tuberculosis, non-pulmonary	1,796	0.3
Disease of the nervous system	4,718	0.7
Deformities	19,940	2.8
Other defects and disease	24,004	3.4

This 'tableau' may be completed by another extracted from an article in Volume 32 of the Encyclopaedia Britannica written by Dr.H.W. Kaye, Director of Medical Services of the Ministry of Pensions, and late Personal Assistant to the Chief Commissioner of Medical Services at the Ministry of National Service during the Great War. In discussing the medical examination of the 2,425,184 men who came forward between the 1st November, 1914, and the 31st October, 1918, this high authority stated:

"The 2,425,184 examinations resulted in 871,769 men being placed in Grade I, 546,276 in Grade II, 756,859 in Grade III, and 250,280 in Grade IV."

"In other words 36% were placed in Grade I, i.e., were judged to have attained the full normal standard of health and strength and to be capable of undergoing physical exertion suitable to their age; 22% were placed in Grade II, i.e., were judged to be capable 'only of undergoing such physical exertion as did not involve severe strain; 32% were placed in Grade III, i.e., presented marked physical disabilities or such evidence of past disease that they were not considered fit to undergo the degree of exertion required for the high grades; 10% were placed in Grade IV, i.e., were judged to be totally and permanently unfit for any form of military service."

	Disease or Disability.	No. of men placed in Grades III and IV	Percentage of numbers examined	Percentage in Grade IV	Percentage in Grade III
1.	Valvular disease of heart	12,562	7.9	1.6	6.3
2.	Deformities, congenital and acquired (including flatfoot, hammer toe, kyphosis etc)	8,605	5.3	0.0	4.3
3.	Diseases of circulatory system (other than V.D.H.), including varicose veins	6,275	3.9	0.6	3.3
4.	Diseases of lungs and bronchi (other than tuberculosis) and respiratory system	6,188	3.8	0.6	3.2
5.	Pulmonary tuberculosis	4,327	2.6	2.0	0.6
6.	Functional diseases of heart	3,385	2.1	0.1	2.0
7.	Wounds, injuries, etc., including traumatic deformities, amputations etc.	3,335	2.0	0.3	1.7
8.	Diseases of ears	3,162	1.9	0.3	1.6
9.	Diseases of nervous system (other than insanity and epilepsy)	3,066	1.9	0.5	1.4
10.	Poor physique	2,967	1.8	0.2	1.6
11.	Detective vision	2,620	1.6	0.2	1.4
12.	Rheumatism	2,445	1.5	0.1	1.4
13.	Hernia	2,179	1.3	0.2	1.1
14.	Diseases of digestive system	2,170	1.3	0.2	1.1
15.	Diseases of eyes	1,886	1.1	0.5	0.6
16.	Deafness	1,708	1.0	0.2	0.8
17.	Epilepsy	1,265	0.7	0.5	0.2
18.	Haemorrhoids	1,140	0.7	0.05	0.65
19.	Skin diseases	1,053	0.6	0.15	0.45
20.	Diseases of generative organs and of genito-urinary system (other than venereal disease, albuminuria and glycosuria)	893	0.6	0.075	0.525
21.	Albuminuria	951	0.5	0.3	0.2
22.	Tuberculosis (other than pulmonary)	911	0.5	0.3	0.2
23.	Insanity	656	0.4	0.3	0.1
24.	Syphilis	556	0.3	0.1	0.2
25.	Glycosuria	214	0.1	0.1	-
26.	Venereal disease (other than syphilis)	162	0.1	0.02	0.08
27.	Other diseases	3,219	1.9	0.375	1.525
		77,900	48.5	11.1	37.4

To these disclosures, so distressing to the doctors in view of their statements as to the excellent standard of health reached by the people, may be added some most interesting findings concerning the supposed increase in longevity, by Sir Bruce Bruce-Porter, published in *The Evening Standard* (Lunch Edition) Monday, November 20th, 1933.*)

*) This article, so contrary to the general belief nursed by the doctors, was withdrawn from the more widely read Evening Edition. Evidently somebody had pressed the alarm-button.

"Sir Bruce Bruce-Porter, the eminent physician, *described today some of the reasons why people of middle age - in spite of many improved conditions - are dying at about the same age as their fathers and grandfathers.*

Sir Bruce said:

'There is no difference of opinion between my friend Sir George Newman, Chief Medical Officer of the Ministry of Health, and myself.

When Sir George says that for the child today the expectation of life has gone up, he is perfectly right.

He said, quite correctly, that the child born today has expectation of living 12 years longer than the child born 40 or 50 years ago.

But that was because in those days the death-rate among children was enormous. *In the first year of life 170 children died out of every 1000.*

Welfare work, care of the mother and other conditions have so improved that *this terrible death-rate has now dropped to under 70.* Therefore, 100 children in every 1000 who would then have died in the first year are now living to be 20, 30, 40 or 50, so that the average expectation for the child has gone up.

Nevertheless, people of middle age are dying at just the same age. The man of 50 has not very much greater expectation of life than his grandfather. It would be false security to imagine that everybody born to-day will live 12 years longer than his ancestors. But I do not say that the baby has not a greater chance.'

Sir Bruce, however, maintained that the middle-aged today have very little greater chance.

"The stress and strain of modern life in our great cities are nullifying a great deal of the benefit we are giving people at the other end in better food, pure water, improved drainage and other social services," he continued.

"How are people harming themselves and reducing their lease of life? Well, for one thing, *they eat too little natural food.*

We are not using the foods Nature intended us to use, and bodies are not standing up to the strain they used to. How many middle-aged men are sure they are capable of holding on to their jobs?

We have to travel with the stream of modern life - we cannot avoid it - but *we can conserve ourselves.*

We have certain toxins of worry and strain, but we should not add to those toxins the toxins of unsuitable food that can be avoided.

The average person's diet is radically wrong. Feeding should be a deliberate thing. Happily, the most valuable foods are not the most expensive."

XII.

KING AUGEAS' STABLE.

My early schooldays taught me very little about life but I learned a vast number of things for which I have had no use whatever. My headmaster had had an old-fashioned education and lived entirely in the past. He was antiquated both in appearance and mental make-up, and his ideas as to what we boys should learn were exceedingly foggy.

Among all the irrelevant knowledge my mind was stuffed with, nothing appealed to me so much as the *Twelve Labours of Hercules*. Hercules was a terribly strong man, and a strong man always appeals to a boy of six or seven. My Headmaster saw to it that I learned those twelve *labours* by heart. Most of them I have now forgotten, but one has, for some strange reason, remained with me through life - Hercules clearing out the stables of King Augeas, or as he was called in Greek, 'Augeias'.

In the first place King Augeas' wealth of cattle was fabulous, and so was the size of his stables. But the stables were not easy to clean out and consequently the dung heaps grew until, after thirty years' neglect, the cattle could neither get in nor out. It was then that Hercules arrived upon the scene, promising to clear out the stables single-handed. And so he did in a single day, to the amazement of King Augeas, by turning the rivers Alphaeus and Peneus through the stables.

There is far more in the tale than I ever dreamed of as a boy, and perhaps that is one of the reasons why I have not forgotten this *labour*. In studying the life of our forefathers in the sixteenth century, I could not help thinking of King Augeas' stables, for, really and truly, in those days Europe was little else than huge piles of dirt everywhere, among which our poor forefathers had to manoeuvre.

Let facts speak for themselves.

* * *

There is a little town in Scandinavia, Elsinore, on the beautiful channel of Öresund which separates Sweden from Denmark. The town is famous to all English-speaking peoples, as most of the scenes of Shakespeare's 'Hamlet' are supposed to have taken place at the magnificent old castle of Kronoborg, still in existence. The remarkable thing about that town is, however, neither its beautiful situation nor its historic Castle, but its Law Court records which rank among the most well-kept and well-preserved legal documents of those days that any country possesses, and thanks to which we can study in detail the internal affairs and conditions of the town almost week by week.

Before proceeding further let me tell you that the total town population of any country in the sixteenth century amounted only to about 5% of the whole, and that this was the century when towns sprang up everywhere and began to grow. The whole town population of Norway in 1769, two hundred years later, numbered 65,000 souls or 9% of the total population, showing an increase of 4%, whilst in 1889 it had grown to 333,000, an increase of 18%, i.e. it had more than trebled. In 1900 it had reached 635,000, a 35% increase or seven times more. The total town population of Denmark amounted in 1911 to 1,100,000, or half a million souls less than the rural population,

1,600,000, whilst in England the rural population at present constitutes only about 15% of the whole.

In the sixteenth century there were 70,000 farms in Denmark, a number which has remained stationary up to the present day.

Four hundred years ago Bergen in Norway was the largest town in the whole of Scandinavia, with a population of 15,000 inhabitants. Copenhagen followed next with 13,000 and Stockholm was a good fifth with 7,000. Elsinore, in which we are specially interested, numbered in 1570 only 2,500 inhabitants. The latest figures obtainable are: Bergen 98,303 (1930); Copenhagen 617,069 (1930); Stockholm 514,333 (1931) and Elsinore 13,990.

But now to our story!

* * *

In the year of our Lord 1577 the Burgomaster and Aldermen of Elsinore invited King Frederic II with Duke Ulrik of Mecklenburg and several other august persons, to lunch in the Town Hall, on the occasion of the baptism of the Crown Prince who became Christian IV. Having sent the invitations, the Town Fathers suddenly realised that their royal guests would scarcely be able to find their way to the Town Hall unless the streets were cleared. This proved a very costly affair, however, and it is from the bill for this undertaking that we learn a great deal about the condition of the streets.

According to law and regulations the streets were cleaned every Friday by those citizens who possessed carts. There were no dust-bins in those days. All the refuse of every house was merely thrown straight into the street and left there for a week. The pigsties were conveniently placed under the front windows and when they were cleaned out by the owners the contents were dumped in the thoroughfare. We must remember that no streets in those days were paved, and that they were generally full of holes in which most of the dirt gathered. There was often a stream running down the middle which, when swollen by rain, carried refuse from one dump to another.

All the inhabitants defended, as one of their most sacred privileges, the right to keep pigs under their front windows and to throw anything whatever into the street. In consequence the thoroughfares of Elsinore were full of human and animal manure, kitchen refuse, dead dogs, cats and rats in a state of decomposition, all kinds of broken furniture, worn-out clothes, utensils, etc. The streets were supposed to be cleared every Friday by the cart-owners, but this was done only in a very superficial way. Besides, the Town Council, composed of citizens who each 'had a finger in the pie', were all conservatively disposed and did not like any new-fangled notions to interfere with the picturesqueness of their streets. In 1574 they issued an order according to which a dung heap lying in front of a house and "obstructing nobody's passage" could be allowed to remain a fortnight. Of course most dung heaps were considered as "obstructing nobody's passage", so the conditions grew worse and worse until finally, in 1576, the Magistrate had to make an appeal to the citizens to keep at least the street through which the King used to ride to Kronoborg in such a condition that His Majesty could get through with his suite. But the order had no effect. Because of the dung heaps, with all their more or less edible offal, the streets of Elsinore were full of pigs and stray dogs, roaming about and holding their own against any attempts to drive them away.

Once when King Frederik II arrived on horseback at Elsinore to supervise some

work going on at Kronoborg, a number of these pigs came rushing towards him and his suite, frightening the horses which bolted and threw their august riders. The King and his courtiers made a great splash which, however, did not seem to impress the quadrupeds in the streets. This 'nose to nose' encounter with the pigs in the bottomless muck of the Elsinore streets led to new and severe regulations which were read four times in all the churches. In the name of the King, pigs without domicile were ostracised from the town.

Whether the pigs were able to read the King's proclamation or not, in days when even *homo sapiens* himself was so illiterate, history does not tell. Evidently the pigs excused themselves for not having heard the King's proclamation in church, for they stuck stubbornly to the streets which they considered nothing but a pigsty and therefore rightly and justly their domicile. From here, neither the King nor the Magistrates could move them. On the contrary, the King's proclamation, which gossip carried everywhere, seemed to have infuriated them, for, in response to all attempts to drive them away, they finally invaded the King's Castle itself, in a bolshevist fashion, and held their own. The stray dogs which swarmed in the streets soon joined the pigs. And though, in a special proclamation, a price was put on their heads and the general executioner was granted a handsome reward for each dog he succeeded in killing, they nevertheless managed to hold their own, establishing themselves masters of both streets and Castle in company with the pigs.

No wonder the King always complained, when riding about his realm, of the constant obstructions in his way. How costly a royal visit might be is easily understood when it took no less than eighty cart-loads to clear a small street in the village of Skelskor in 1563. In 1678 a manure heap was removed from one of the streets in Copenhagen in no less than 214 cartloads. Until 1584 the sewage water running in the streets of Copenhagen had no other outlet than the moat. In 1591 a royal proclamation was issued forbidding the citizens of Middelfarts Street, who were the wealthiest in Copenhagen, to throw their refuse into a cul-de-sac called Mørkegyde, or the "dark pot." This practice had gone on for more than thirty years, completely blocking the road.

Troels-Lund, the greatest authority on conditions in Scandinavia in the sixteenth century, writes:

"What gathered and filled the streets in those days had its effect not only upon the feelings and the vision. Whilst it certainly saved the ears from any sound of rattling wheels in the street, the poor human nose was ever so much more affected. From early spring until late in August the odour from the street rose continuously, until finally in the middle of the summer it became not only unbearable, but a real danger. What made conditions still worse, if possible, was the strange way in which the human excrements were looked upon and hidden."

The country population in the sixteenth century still lived, as far as their own natural demands were concerned, in a primitive state, openly using their courtyards and fields for the purpose. When the towns grew up, a certain sense of decency forbade man to exhibit himself in public when attending to this daily demands in this respect. A separate little house was finally constructed in every courtyard to protect anyone from being seen in what always seems to have been considered a most 'unaesthetic' posture. At the door of this house, however, all further steps towards reform and improvement stopped. For no one even dreamed of removing the waste products of human life from the little house itself. For their reception a hole was dug, or an empty wine- or beer-barrel was sunk into the ground under the house. Once the hole or the barrel was filled, there was nothing else for it but to move the little house

to another spot in the courtyard, where the same procedure was repeated. Thus the little house ambulated in the courtyard like a revolving planet, describing all kinds of irregular and mysterious orbits, always leaving its secret contributions behind, which naturally saturated the soil and with every rainfall were carried underground in all directions. generally to the wells where they contaminated the water. It is obvious that there could not be fresh air, either indoors or out, or good drinking water for the town population of the sixteenth century.

If we turn to the castles and the royal palaces, we find to our amazement that the conditions, even here, were much the same. No one in those days dreamed of drains or sewers for carrying away to a suitable place outside the town or castle the waste products of human and animal life. This problem, which to the people of the sixteenth century did not seem a problem at all, was solved within the castles and palaces in the simplest way possible, by arranging, generally in the middle of the complexity of buildings, a cesspool - of course with no outlet - where everything could be dumped. These dumping places, where dirt and refuse were allowed to gather not only for decades but for centuries, sometimes assumed the proportions of actual underground meres, subterranean pools or lakes as, for instance, in the Castle of Erfurt to which the Emperor Frederik Barbarossa summoned a gathering in the year 1183. This was perhaps the greatest assembly of princes and knights the mediaeval age had seen. The splendour and magnificence of the decorations and dresses filled the whole of Europe with wonder and awe. But the end was destined to eclipse everything in awfulness. For just when the whole assembly had gathered in the big hall, it so happened that the beams supporting the floor suddenly gave way, rotted by the fumes and moisture rising from a century-old accumulation of manure in a semi-fluid state of decomposition in a cellar below. It seemed, to those who were able to save themselves from the calamity, as though a secret power had suddenly pulled the floor down, dragging eight princes, numerous noblemen, over a hundred knights and many more of lower rank into the main sewer of the castle where they met a terrible death. The Emperor Frederik Barbarossa was able to save his life by quickly jumping on to a window-sill, from where he was let down to the ground by means of a rope.

'Sic pereat gloria mundi.'

What is so amazing about this event is that no one present seems to have suspected the existence of a cesspool below, though the atmosphere in the hall must have been saturated with the smell arising from this century-old accumulation of human and animal refuse. The only explanation is that all these princes and noblemen, including the Emperor, were so used to this ubiquitous odour that their noses had long ago ceased to react. Besides, the big hall was in all probability filled with the aromatic smoke of juniper, spruce, and other fragrant woods, burning in specially-made earthenware pots to dope what was left of the sense of smell.

A certain step towards better conditions was attempted when, by the end of the century, pigeon-hole-like chambers of commodity were built, jutting out like small protuberances here and there from the uppermost part of the outer wall of a castle. Seen from a distance, they looked very much like cupboards overhanging the ground. They generally rested upon two heavy blocks of granite and were provided with small windows on all sides. The roof was often decorated with a little spire and weather vane. They can be seen in illustrations of old castles of this period. The inside was simple and certainly very airy, being provided with a seat and a hole through which the wind constantly blew upwards, the waste products of human life having a long, airy fall downwards until they reached the ground where they accumulated against the wall, gradually forming veritable mountains of manure, until they assumed such

proportions that finally some energetic king or governor had to take steps to clear them away. That this was a costly affair is proved by accounts still in existence.

King Christian III of Denmark, however, was one of the first, though not one of the last, to find a way of avoiding this expense by a very simple device. When the royal castle of Copenhagen was partly renovated and extended, he commanded that the ground separating the walls of his castle from the moat should be excavated beneath the points where these nest-like places of convenience jutted out, so that the moat itself could act as a receptacle. This was considered a great improvement. If anyone in those days had suggested that perhaps the moat itself might be contaminated and so become a danger to the inhabitants of the castle, his suggestion would certainly have met with ridicule.

The pigeon-holes along the outer walls had relieved the cesspool inside the castle to some extent, but the improvement from a sanitary point of view remained doubtful. For, to the stinking odour indoors were now added equally offensive emanations from the accumulations against the wall, vitiating both the surrounding atmosphere and the stagnant water in the moat. Besides, these outer houses of commodity were only meant for the lords of the castle and their guests, the common people having to find their own accommodation, or, as that great authority, Professor Troels-Lund, expresses it: "Now, as in olden days, the great majority of the people within the castle, from the pages and soldiers down to the most humble women of the kitchen, were forgotten. Debarred from the commodities in the outer wall, shut up in the 'everyday' rooms from which in case of necessity they were obliged to retire, most of them tried to find a secret place in any corner and dark passage in the day-time." The night, of course, removed all restrictions in times when modern means of lighting were unknown and a primitive oil lamp was considered a great luxury. "These conditions prevailed even in the foremost castles of Europe *until the end of the eighteenth century*, neither Versailles in France nor Windsor in England forming any exception."

A conspicuous, heavy odour seemed to penetrate everywhere, clinging to the walls, furniture and clothes, hanging about the passages and the courtyard and surrounding the castle like an invisible, suffocating and depressing mist. A contemporary writer, being quite aware of its origin, of which he could not help taking a pessimistic view as being something "*in the divine order of things*", expresses himself symbolically in the following way: "The necessities of the people lay heavily upon the mind of the King."

In fact, this mysterious mist, of which no one dared to speak or appear to take notice, in conformity with the customs and views of the time, lay heavily upon everybody's mind. As it could not be dispelled, the only means of fighting it was the utilisation of earthenware pots in which aromatic woods were constantly kept burning. The smoke from these censers added itself to all the other emanations, veiling the atmosphere indoors and hanging in clouds along the passages and staircases, inflaming the eyes and making people shed involuntary tears over all their miseries.

In the Victoria and Albert Museum we have an opportunity of studying a kind of "over-soles" of iron, called 'pattens', on two supports three inches high to raise them from the ground. They are made very much in the same way as the sandals worn by Japanese women, and were used by fine ladies who were anxious to avoid soiling their golden shoes in passages and on staircases. For, even in the day-time one had to proceed cautiously so as not to make a false step, which, on those slippery paths would have led to an unavoidable catastrophe. "A very good training school for the polished parquet floors indoors", as Troels-Lund humorously remarks.*)

*) Pattens were necessities to women of all classes in the uncleaned and unpaved streets of the sixteenth, seventeenth and eighteenth centuries. (Encyclopaedia Britannica).

"The patten now supports each frugal dame." Gay (1685-1732).

The nest-like refuges on the outer walls did not remain long in vogue. They constituted an attempt at something better, but were soon scrapped because of the danger they afforded during a siege and the easy way of escape they offered to prisoners. Many a prominent prisoner had had little to fear from an airy drop down, being always softly received by the manure heap or the moat below.

The pigeon-hole-like commodities were now replaced by special towers, as, for instance, at the castle of Marcoussi in France where a tower-like container was built for all the sewage within the stronghold. In other places, for instance in England, a number of small sewers were constructed within the main building but, of course, without an outlet.

All these devices did not, however, help much to improve the insanitary conditions, which were terrible and quite beyond our comprehension. Speaking of England in the sixteenth century Troels-Lund says: "Both in the castle of King Henry VIII at Eltham as well as at Queen Elizabeth's at Greenwich, there was a constant and general complaint that those intolerable fumes did not rise in the air, but lay like a heavy vapour under the roof and in the lungs, clinging like dew to everything, to clothes and to the tapestry on the walls."

Man is ruled by fashion. It was fashionable not to appear to notice these things, still less to talk of them. Kind Nature came to man's rescue allowing the organs of smell to be dulled by the fumes, else life would have been intolerable. Thus the ubiquity of the deposits of human life was officially neither seen nor felt. Only the lowest type of humans were entrusted with their removal, as for instance the general executioner. There was, in the eyes of those generations, no greater degradation than to notice and make personal efforts to remove them.

An incident from this delightful little town of Elsinore bears witness to this.

It so happened that a Dutch immigrant by the name of Bernt had built himself a house in Elsinore. Not being, however, sufficiently good-mannered and well-behaved to disregard and endure the dung-heaps in his courtyard, he finally decided to remove them. The act was done by night, but the result was too obvious not to be noticed. This undertaking sealed his fate.

The rumour of his achievement spread like wild-fire all over the town, causing a great sensation. It was considered a shameful insult to the whole community. One of their own citizens had lowered himself to animal level and had taken upon himself the task of the executioner! A special Court was held where the case was examined before the Burgomaster and Aldermen, and it was unanimously decided that *"by no means would the citizens of Elsinore consent to have as a fellow-citizen a man who had lowered himself to the rank of the general executioner by removing the dirt from his courtyard."*

The Dutchman was expelled from Elsinore. Human excrements were taboo. They had to be left alone everywhere and anywhere, not to be touched except at night, and then only by the most despicable class of people. Nothing can better express the general view on this delicate matter than a Danish Royal Proclamation in 1647 which ran as follows: *"Should anybody be caught carrying human excrements in baskets, barrels or pails, or allowing somebody else to do it, depositing it in the market place, on the shores of the river or in the moat, or throwing it in front of the houses of*

neighbours, he will be subject to heavy penalties as a first offender. In case of a second or third offence, whosoever it may be shall be regarded and treated as a scavenger in the service of the chief nightman and expelled from the community."

* * *

One of the worst features of the time was the general fear of water which arose on account of the contaminated state of the water in the wells. People instinctively found they could not use it for drinking. To all the miseries of the time was thus added a general, often unquenchable, thirst, to which people tried to become accustomed, just as in the case of the evil smells in streets, houses and castles. If there was anything the people of those days needed more than anything else except fresh air, it was water to flush the tissues and cleanse the alimentary canal, especially the big bowel or colon, of the poisons with which they were saturated. Without free access to drinking-water constipation was bound to set in, and there is no doubt that the people in those days suffered severely from this disease, now considered the cause and origin of so many troubles. According to the general view of the time there is also little doubt that the defecation process was considered beneath human dignity and regarded as something that should be given way to as seldom as possible.

No one dared to drink anything but milk, beer and wine. According to the records of the time beer and wine were consumed by wealthy people in astounding quantities. Six quarts of beer was considered the minimum per day, eight to ten quarts being regarded as normal for a healthy person. To this amount a few quarts of wine were often added. But wine was too expensive, and even beer could not be made regularly because of the general lack of good drinking-water, many a brew being spoilt by heavy rain washing down the dirt from the courtyard and the streets into the wells.

Water, unfit for drinking because of its evil smell and bad colour, offered no enticement to wash. Hence, washing was gradually dispensed with and finally, was not only avoided but even considered a danger. In a book called 'The Law Book of Gallantry', printed in 1640, we read: "A very unpleasant necessity is to wash the hands every day, but the face should be washed as little as possible and very sparingly the head ... It is advisable to wipe the dirt from the hands with a white linen cloth every morning, but it is not advisable to wash the face with water because this makes the face very susceptible to cold in the winter and to overheating and sweat in the summer."

When Queen Christina of Sweden, the daughter of the famous King Gustavus II Adolphus, visited France, her hands were described as "unrecognisable as human hands because of the dirt".

These people, of course, did not know the use of forks, which were introduced a couple of centuries later. Everyone ate with his fingers, using a knife only for cutting or mincing the food. The acme of table manners is described in the following passage from a book written by the Headmaster of a school: "When you take a piece of meat from the big bowl, do not take it with your fingers or with your own knife, but with the big carver. You must not lick your fingers clean with your tongue, neither is it advisable to dry them on your jacket. Do not put more than three fingers at a time in any dish. Do not dip food, of which you have eaten, in the general saucer, and when you are dipping a fresh piece be careful not to dip your fingers also."

Every age has its standard of cleanliness. If anybody had accused these people of being dirty they would have been very much astonished and felt grossly insulted, for

they considered themselves paragons of cleanliness. Even if they did not wash their hands, faces and bodies, they wore next to the skin clean linen which was washed instead of the body. In this they considered themselves superior to and more advanced than their ancestors, who had had no linen underwear, but washed their bodies instead. If it was considered common, low and degrading to wash the hands and the face, and certainly not fitting for the nobility and people of breeding, surely there were some very strong reasons for it. For everyone put a fresh covering of paint and ointment on his face and hands daily, so that he looked much cleaner than, and far superior to the common people, who could not afford this make-up and had therefore only their own skin to show in all its crudeness as it appeared after an ordinary wash.

In order to give another mark of superiority and distinction to the whole appearance 'mouches' or beauty spots were introduced as an additional adornment to the face, a fashion which even the clergy adopted and defended by pointing out that neither the Holy Fathers nor the Holy Scriptures had anything to say in the matter. Of course the doctors followed suit, defending vigorously all the habits and fashions of their time and even the dirt in the streets, as justified and conducive to the health and welfare of the community.

To make the picture of our forefathers in the sixteenth century complete we must not omit the hair. Even in this respect they considered themselves cleaner and more advanced than their predecessors. For no part of the human body afforded such excellent shelter and nourishment for all kinds of vermin, from which, of course, no one ever dreamed of being able to free himself, for once removed they immediately returned. The only means of combating the invaders was to cut down the forest, i.e. to shave off the hair or to pluck it out by the roots - a very painful procedure - to which, however, many submitted, priding themselves on their love of cleanliness. This custom was largely responsible for the introduction of the wig, with which the head could be most wonderfully adorned in various artistic ways. At the same time it became the despair of lice and fleas and all kinds of vermin which could find nothing to feed upon in its artificial meshes.

Only a man in a wig, well painted, powdered and 'mouched', wearing washable linen to keep his skin clean instead of washing it with water, never appearing to notice dirt, and still less touching it in any form, was considered a clean man; whilst a man who washed his hands and face daily and his body weekly, and wore his own hair and no linen next to his skin, without paint and 'mouches' on his face, was considered a dirty, low fellow who might even be suspected of removing his own faeces.

Thus, from all these various conditions of human life in the sixteenth century emerges an image of man, bald, with a thick, artificial coating of paint over face and hands, devoid of the sense of smell, fearing water and fresh air - in fact, more like a marble statue than a human being.

XIII.

THE DEATH DANCE OF EUROPE.

The scenes revealed in the previous chapter must have given every reader some apprehension of an impending catastrophe. The conditions under which our forefathers in the sixteenth century lived were too appalling not to invite disaster. Outraged Nature revenged herself in the most terrible form that humanity has ever experienced.

In order fully to understand all the causes that led to this disaster, we must pay a visit to the churches, the churchyards, and the dwellings of the peasants.

The churchyards were quite unlike the beautifully planted, well-kept and peaceful resting places for the dead we know in these days. Troels-Lund describes them in the following way:

"The churchyards of the sixteenth century would have aroused a feeling of extreme disgust in any of us. No one seemed to care for the graves. They were trampled down and covered with weeds. The children of the town used them as a playground. Stray pigs and dogs favoured them as a refuge. Anybody, could ride or drive over them. They were looked upon and used as convenient dumping-places for all kinds of rubbish, and for storing timber and various materials. Besides, the population used them for their necessities in those days when there were no public lavatories. We are told that the church yard of Our Lady in Copenhagen, situated right in the heart of the town, had to be cleared of human manure at least twice a year by the general executioner. In the churchyard of Elsinore, sheep and dogs used to play, hungry pigs even going so far as to rout up the corpses. Bishop Paladius complains bitterly of these conditions, pointing out that a churchyard 'should not be a stable for the cattle of the town, and that all the weeds should be removed and grass grown over all the graves, to be cut two or three times in the summer'."

These conditions seem to us almost incredible, especially when we take into consideration the fact that the people of those days were intensely religious, all, without exception, believing in the Church and adhering to their religion. There were no sects or dissenters among the common people, much less any free-thinkers to question the authority of the Church. How then, we ask, could these people allow their churchyards, where their dead lay buried, to be desecrated in such a way? The explanation is that none but the poorest people were interred in the churchyards, everyone who could possibly afford it being buried under the floor of the church.

It was horrible to most people to think of their dear ones lying in an open place exposed to all kinds of weather and to dogs, pigs, sheep, cattle and human beings, all of whom found the churchyards useful in various ways. Besides, no burial service was ever held in the open, nor any gathering of relatives at the funeral. The loss of a relative or a friend through death was then, as now, a heavy blow for which the bereaved found consolation in the thought that those they mourned were only asleep beneath the floor of the church, where they could hear the singing and take part in the service, well protected by the saints and holy ones. Thus it happened that none except the poorest and most despicable people were buried in the open. The churches became packed with dead people to the utmost of their capacity. This will be better understood by an illustration.

In the year 1564 only about sixty or seventy bodies were buried in the churchyard of Our Lady in Copenhagen, whilst in the church itself during the same period not less than 700 or 800 were laid to rest under the floor. This made an average of not less than two a day. As a result of these views and customs, hundreds of corpses were lying in a constant state of decomposition in their coffins immediately below the church floor. The churches were crowded with the living, not only on Sundays but very often on weekdays.

It is easy to imagine the terrible stench which must have arisen from all those corpses. Although bad even in the middle of the winter, it must have been quite unbearable in the heat of the summer - even to those accustomed to all kinds of malodorous emanations everywhere. However much some of the more sensitive might suffer, complaints were out of the question. Even the slightest remark would have been considered sacrilegious, for the Church did not only protect the human soul and show it the way to heaven but, according to the ideas of the people in those days, the Church also had unchallenged power over life and death and consequently also over diseases. Everyone went to church, not only for the sake of being absolved and of saving his soul, but also to seek protection from various kinds of misfortune, above all from the evil powers causing ill-health.

As all diseases were believed to be caused by the ubiquitous devils, there was no better protection against them than the Church. Hence *"What the Church declared to be right could not possibly be considered wrong or dangerous from any hygienic point of view."*

As to the country population, they were in many ways better off than the inhabitants of the towns. The farms lay scattered all over the country, exposed to weather and wind. The main building, where everyone slept and dined, was fortunately so constructed that the fresh air had free access. The walls were made of timber caulked with moss, the ground itself constituting the floor, and the 'wind-eye' in the middle of the roof was the only window in the house, as already described in a previous chapter. The fire on the hearth in the middle of the floor kept the air circulating, warming and cheering the inhabitants day and night, winter and summer, protecting them from midges and flies as well as the hovering devils. There was a singular charm in sleeping on the benches along the walls within a comfortable distance of the fire, looking through the wind-eye at the changing sky and the journeying stars which gradually faded in the growing light of approaching dawn. In day-time the sunbeams passed along the walls, where knots and cracks in the timber marked the hours of the day, thus constituting the only timepiece available, whilst the water in the pail served as a mirror.

Thanks to these conditions there was no lack of air indoors in those days as compared with modern times, especially in Scandinavia. The water was fairly good, the wells often being situated at some distance from the house where they could not be so easily contaminated as in the towns. The only drawback was the manure heap, which was allowed to grow year by year, generally in close proximity to the house. People in those days had no idea of the value of manure as a fertiliser. It was merely looked upon as a nuisance which it was degrading to touch or remove. Hence it was left to accumulate - often to such an extent that ultimately it completely filled the farmyard, debarring people from going in or out. Then at last people had to think of removing it, which was generally done by the combined efforts of all the available men in the village.

Except when 'commanded by necessity', a great clearance like this was only undertaken before weddings, when the space in the farm-yard was needed for the

guests and their horses. A record from southern Sweden tells us exactly how many men and weeks it took to clear a farm-yard for an impending wedding, adding that all the manure was transported on wheel-barrows and dumped in an adjoining river. In another record we are told of the deliberations on a farm where the manure heap had grown to such an extent that something had to be done at once. The question as to whether it would be less expensive and more convenient to remove the manure heap or the house, was ultimately decided in favour of moving the house!

* * *

In the house itself, a step backwards from a hygienic point of view was taken when specially built beds, with plenty of straw to sleep on, were introduced, hung with curtains or shut up in more or less air-tight closets. These beds were undoubtedly breeding places for consumption and, in addition, for all kinds of vermin including rats and mice. We are told by the Rev. A. Laessoe of Gulton that when he visited an elderly woman who was laid up for some time with a wasting disease, a nest of polecats with a half-grown litter was found in the bed.

As to diet, there can be no doubt that in spite of their ignorance the country people lived in a far healthier way than their descendants at the beginning of the twentieth century. But what did it avail when the towns and churches were spreading disease germs all over the country?

One of the most important discoveries of modern times, as we shall see later on, is that a comparatively innocuous form of microbe may develop into a virulent disease-breeder if fed upon foul food or anything in a state of decomposition. There were numerous decomposing corpses lying everywhere, within and without the houses and under the church floors, not to speak of all the refuse of man and beast, which it was considered an indecency to touch or remove.

Europe in the sixteenth century could be likened to a huge cauldron of disease containing a brew from which arose, night and day, heavy, stagnant, clammy vapours containing all kinds of disease germs. They spread everywhere. Human beings inhaled them. They were consumed with food cooked in the water from the contaminated wells. Even if cooking destroyed the microbes themselves, it still left their poisonous excretions behind together with their spores, which could easily withstand the heat of ordinary cooking, ready to breed a new and more virulent form of microbe as soon as the heat of the summer made the brew in the cauldron rise to its height. No lungs, no human digestive organs could in the long run withstand all these poisons.

The evil spread as if carried in the air by unseen wings from the towns to the country, and finally to the animals in the fields and the birds in the forest. No wonder people dreamed of disease-carrying, devils flying about everywhere,

The three Scandinavian countries, so highly favoured by Nature in many ways, were nevertheless ravaged within fifty years, from 1550 to 1600, by no less than thirteen great plagues. Several of these lasted two or three years. Altogether thirty years, or two thirds of that half-century, were plague-stricken.

The first great scourge started in A.D. 1550 and slew so many in Denmark that it was said: "everyone feared there would not be a living soul left". The court had to flee from Copenhagen which looked like a dead city. The pestilence lasted four years and reappeared after a brief interval as a second plague, making its way slowly from the South to the North, only to be followed in 1563-66 by a third and more virulent one.

We are told that the toll of life this time was still greater. The King fled, but the Army and the Navy had to stay. The Army numbered not less than 300 dead in a single day. One of the Danish islands, sparsely populated in those days, lost no fewer than 13,000 people.

The days were not long enough to bury the victims. All through the night the rattle of cartwheels was heard, as the dead were carried to a burial place outside the town. Here the corpses were thrown into large, common graves. Finally, there were not enough people left to remove the bodies, so that the air throughout the town was saturated with such a stench that birds were often seen suddenly to fall dead to the ground in their flight. The animals went mad and tore each other to pieces.

The plague spread gradually over the whole of Scandinavia, making a halt only at the Dylta sulphur factory in Nerike, Sweden, where the sulphurous fumes seem to have been a protection, and where, therefore, the King himself with his Court and many of the Swedish nobility took refuge.

After a pause of only two years Scandinavia was again visited in the year 1568 by a fourth, and in 1572 by a fifth plague of a somewhat similar character. But they were soon to be eclipsed by a sixth.

A south wind blowing continuously for several months in the summer of 1575 brought about the most terrible scourge that Scandinavia had ever experienced. It is easy to understand that a continuous south wind, heating up the air all over the country and turning every heap of dung into a reeking volcano of poisonous fumes, would breed a plague of unusual virulence. The scourge lasted four years, 1575-78, during which time the University of Copenhagen was closed almost continuously. The feature especially noticeable about this plague, was that *it finally developed into a kind of smallpox*. The poison seems to have spread even to foxes, dogs and cats, which often fell dead as they ran. The fish in the rivers came up to the surface dead. Even the birds fled, deserting the countryside. "Silence and death reigned everywhere."

After two years' breathing-space a new plague, the seventh, devastated the North in the years 1580-81. We are told that in Nordstrand one third of the population died.

Again a year's breathing-space, and the eighth plague set in, 1583-85. The hottest month of the year, August, brought a toll of fifty dead per day to Copenhagen, then a town of only 13,000 inhabitants. In Elsinore the devastation was particularly severe. In Veile not less than 500 people, or more than half the population, succumbed.

The ninth visitation came in 1588, when so many died in Stockholm that King John III had to postpone the building of his Palace for want of skilled workmen.

The tenth plague, in 1591, again *ended in a very bad form of smallpox*.

The year 1592 brought the eleventh, intensified by a very hot summer as in 1575.

The twelfth, 1596-98, visited Sweden especially, and the thirteenth, in 1599, Denmark, where in Copenhagen alone not less than 8,000 people, or three-fourths of the population, were wiped out.

With this plague the sixteenth century made its exit, having provided a record of disease and death in full conformity with the insanitary conditions of the time.

Because of the excellent official records kept in the three Scandinavian Kingdoms, we have here a better chance of studying the ravages of the plagues than anywhere else in Europe. As to deaths and births, no country has older and more complete statistics than Sweden.

If we turn from Scandinavia to the rest of Europe, we find more or less the same conditions prevailing everywhere. Perhaps the exuberant sunshine in the South did more to dry up and sterilise the deposits of human and animal life - just as ubiquitous

there as in the North. It may be that the longer and colder winters of the North invited a more reckless accumulation of manure which in its frozen state did little harm, - but where, again, decomposition was accelerated from the early Spring until the height of the Summer, to such an extent that the plagues became not only intensified, but of longer duration.

Again, in comparison with the North, where the population was sparse and spread over vast areas separated by forests and mountains, the more densely populated districts of middle and southern Europe offered the ravages of the plagues a much freer scope. Here, the annihilation amounted to one third of the population, as in the North. When at its height, it carried off one half and even three-fourths of the population.

The pestilence, which in 1348 broke out in Northern Italy, Southern France and Spain, and is described by the famous Italian poet Boccaccio in his immortal work, carried off not less than 60,000 people in Florence, 100,000 in Venice, 70,000 in Siena, 60,000 in Avignon, the residential town of the Popes, and 50,000 in Paris. London lost no fewer than 100,000 of its population which cannot at that time have amounted to many more. The whole of Europe with its 105 million inhabitants lost twenty-five millions or just about one fourth. Whole regions were entirely depopulated. Italy undoubtedly lost half its population.

The effect of all these terrible diseases, in their lightning onslaught slaying the humanity of Europe as if by an invisible whip, made an indescribable impression upon the minds of all, high and low. People stood aghast, unable to find any explanation but in the teaching of the Church. Of course, they were slain for their transgressions. But what sins could have been so appalling as to call forth such a chastisement?

The terror-stricken people ransacked every corner of their hearts, conjuring up in their feverish minds all kinds of imaginary sins which they might have committed and for which they were called upon to do penance in order to avert the wrath of heaven. Strange sects, undertaking to rid Europe of the scourges, sprang up like mushrooms in swampy ground. Most famous of these were the *Flagellants* or 'whippers' who walked in procession through the towns preceded by the Master of the Order and followed by sinners. Each wore a cloak of sombre colour with a red cross on the breast, another on the back and a third on the top of the head. They proceeded in a deep, ominous silence with an expression of sorrow and despair on their features, carrying in their hands a flagellum or whip of knotted cords to which were attached small sharp-pointed iron crosses. Wax candles and gorgeous standards of velvet and gold made a strange background to the spectacle. All the church bells were rung and the people streamed from their poor dwellings to meet the procession, to pray at the roadside and to listen, weeping and in deep awe, to the chanting and the gruesome confessions.

The Flagellants wandered from town to town, and when they arrived at the place assigned for their penance, they stripped themselves naked to the hips, lying on the ground in various positions, so as to form an enormous circle. The Master of the Order now went round whipping everyone, some more, some less, according to the sins they confessed or had taken upon themselves. His round finished, a pandemonium of general whipping, singing and praying arose, imploring the Heavenly Host to deliver humanity from the curse of the plagues.

But heaven seemed closed, and the Powers to whom they appealed, deaf. The scourges went on disappearing and reappearing, striking recklessly at high and low, the righteous with the sinner. Even the most holy and self-sacrificing of all, the poor monks who went about bare-foot winter and summer, were more severely affected by

the wrath of heaven than common sinners. They died like flies, strewing the roadsides with their corpses. Of the bare-footed monks in Germany not less than 125,000, or nearly the total number, succumbed.

Why, and for what cause, were these pious men so severely stricken? What sins had they committed? They examined themselves, unable to find an answer. All their prayers seemed in vain. And yet, how easy would it not have been for the heaven to which they appealed, not only to give an answer but to rescue the majority of them? A single order or the advice not to walk bare-foot but to put on shoes or sandals, would undoubtedly have reduced their death-rate by 50% or more. For there is little doubt that walking bare-foot in the streets and roads amid the filth, to which were now added the dangerous deposits of the sick and the stinking bodies of the dead, gave the best possible opportunity for the infection to enter their bodies through the inevitable cracks and sores in their raw feet. But heaven remained indifferent and closed, as if the saints and holy powers had all fled from the pestilence.

In no time of European history have there been so many or such spacious and beautiful churches and cathedrals. At no time were there more men and women sacrificing their whole lives to religion, shutting themselves up for a life-time in monasteries and cloisters solely to serve those Powers they so whole-heartedly believed in, and who so whole-heartedly deserted them. But their faith was unabated as were the scourges, until the deliverer came silently, unexpectedly and unassumingly. He was no Hercules in outward shape, but nevertheless he was a Hercules, the servant of a god other than the gods, goddesses and saints of the churches. He was the servant of the unknown god whom humanity has yet to discover.

XIV.

HOW THE EUROPEAN STABLE WAS CLEANED.

The helper is nearest when the need is greatest.

For thirty years dirt accumulated in King Augeas' stables, so that finally his horses and cattle could get neither in nor out. For centuries filth accumulated in Europe, even more in lofty castles, gorgeous palaces and wealthy towns than in humble cottages, so that, to bear out the simile, people could get neither in nor out. Filth was everywhere, and filthiest of all were perhaps the human beings themselves with their unwashed, dirty, but gorgeously painted and decorated hands and faces, and with hair and beds full of vermin. In their many churches were statues and images consecrated to various saints, divine helpers against all kinds of misfortunes but one, the goddess of cleanliness or hygiene. And yet this missing goddess would have been the only one in the whole assembly to deliver Europe from the scourges. But no one thought of her and no one cared for her. Those who became her servants and ultimately wiped out the plagues were, generally speaking, unassuming people who did not know her and cared very little about the salvation of their souls. But they did her work.

One of these was 'the water craftsman', *Master Hans*. It was he who built the first waterworks in Denmark, and the town which was so favoured was none other than our beloved Elsinore, which had expelled the Dutchman, Bernt, for clearing his courtyard of dirt.

Kronborg Castle had always been the apple of the eye of the Danish kings. Its dominant position at the narrowest part of the channel of Öresund made it, in those days, the key to the capital and one of the foremost defences of the realm.

In the year 1570, Frederik II tried to persuade the citizens of Elsinore to build waterworks, very much in his own interest for he badly needed a water supply for his much cherished castle. But the citizens did not comply with the king's proposal, especially as he had taxed them heavily. It was not until 1576, when the King promised to relieve them of the taxes, that they finally yielded, and the Burgomaster, Henrik Mogensen, and Aldermen agreed to join in the undertaking which was going to supply their town and Kronborg Castle with an unlimited amount of fresh water.

The water craftsman, Master Hans, was entrusted with the work. And lo and behold! One day fresh water, good and wholesome for drinking and most excellent for cooking, brewing and washing, began to flow from the well '*Hestekilden*', or Horse Well, in the forest, through a system of pipes into the village where, right in the middle of the market place, a fountain with a tap provided everyone with this precious liquid. Eight of the foremost citizens were granted the privilege of having special pipes laid from the main into their courtyards.

What a sight it must have been to see the water, the pure clean, wholesome water from the forest flow into the town. What a strange feeling it must have awakened in all the citizens. The first effect made itself evident in the more frequent washing of their clothes. A clean shirt has always been an unmistakable mark of dignity. People began to change their linen more and more often. The habit spread from high to low. But a shirt could not be kept clean unless the neck and the hands were clean, hence it brought the cleaning up of the neck and hands in its wake: The clean hands and the clean neck made the face blush for shame even through the paint, and thus water

gradually worked its way up to the top of the head, baptising high and low in the name of the new goddess, until finally, baths were provided for immersing even the whole body.

Instead of the Hercules of the legend, Master Hans and his fellow-craftsmen led the river of the goddess of cleanliness into the mediaeval European stable, where it was broken up into streamlets in the courtyards, finding its way into the houses, forming real pools in the baths, in the basins of the bedrooms and in the pails and tubs of the kitchens. The maids brought it in bottles, jars and jugs to every part of the house, where it finally quenched a century-old thirst and, in flushing the system, opened its outlets and made man unconsciously take the first steps towards the clearing of the 'Augean Stables' within him.

It was water that did away with the disease-breeding heaps of dirt which the Saints, like the Magistrates and Aldermen of the good old town of Elsinore, disdained to touch for fear of soiling their fingers. It was the waterworks of Europe, built by men who were neither doctors nor saints, which opened to a sorely-tried humanity the gates of the new temple - *the Temple of Health*.

These men believed little in the Church but a great deal in common sense and in the yet unknown God who reveals himself, not only in legends and theories woven by man's imagination, but, above all, in the great book of Nature, the very Nature which people in mediaeval times looked down upon and tried to get away from, and which the East still regards as a prison from which the soul must be delivered at all costs.

It has always seemed to me preposterous to endow the Creator of the Universe with all kinds of superlative qualities such as omnipotent, omniscience, infinite love and infinite goodness, and, at the same time, to despise and look down upon his creation as a complete failure. How can a Creator, omnipotent and omniscient, fail so utterly as the mediaeval believers appear to have thought, judging from the way in which they despised and outraged Nature?

It was nevertheless the wells and lakes of this 'cursed Nature', that saved the European peoples from the plagues and all their consequences.

But what about the doctors? If priests are entrusted with the saving of souls and the absolving of man from his sins, a doctor's task is surely to save the body and deliver man from his diseases?

But the doctors, like the clergy, have always been the children of their own time, full of all the prejudices and committed to all the mistakes of the ordinary man. If it be true that we have the government we deserve, it is also true that we have the doctors we deserve. A doctor's knowledge and mission have hitherto been ruled by the habits of thought current in his time.

In searching for old records illustrating the views expressed above, I found in the journal of the famous English explorer, Captain James Cook, October 1769, the following interesting description of the habits of the natives at Tolago Bay, New Zealand, with a comparison of European habits of that time. Though nearly two hundred years had elapsed since Master Hans built the first waterworks in Denmark, Captain Cook's interesting observations reveal a state of affairs in one of the foremost European capitals similar to those in Elsinore in the sixteenth century. We find the doctors, as a body, not only upholding and defending these conditions, but actually opposing an attempt at reforming them made by no less a person than the king himself.

Describing the habits of the natives at Tolago Bay, Captain Cook writes:

"Every house, or every little cluster of three or four houses, was furnished with a privy, so that the ground was everywhere clean. The offals of their food, and other

litter, were also piled up in regular dunghills, which probably they made use of at a proper time for manure.

"In this decent article of civil economy they were beforehand with one of the most considerable nations of Europe; for I am credibly informed, that, till the year 1760, there was no such thing as a privy in Madrid, the metropolis of Spain, though it is plentifully supplied with water. Before that time it was the universal practice to throw the ordure out of the windows, during the night, into the street, where numbers of men were employed to remove it, with shovels, from the upper parts of the city to the lower, where it lay till it was dry, and was then carried away in carts, and deposited without the gates. His present Catholic Majesty, having determined to free his capital from so gross a nuisance, ordered, by proclamation, that the proprietors of every house should build a privy, and that sinks, drains, and common sewers should be made at the public expense. The Spaniards, though long accustomed to an arbitrary government, resented this proclamation with great spirit, as an infringement of the common rights of mankind, and made a vigorous struggle against its being carried into execution. Every class devised some objection against it, *but the physicians bid the fairest to interest the king in the preservation of the ancient privileges of his people; for they remonstrated, that if the filth was not, as usual, thrown into the streets, a fatal sickness would probably ensue, because the putrescent particles of the air, which such filth attracted, would then be imbibed by the human body.* But this expedient, with every other that could be thought of, proved unsuccessful; and the popular discontent then ran so high, that it was very near producing an insurrection; His Majesty, however, at length prevailed, and Madrid is now as clean as most of the considerable cities in Europe." (Cook's Voyages of Discovery, edited by John Barrow, F.R.S., F.S.A., London 1893, page 85-86.)

Here we actually see the physicians of the eighteenth century struggling in vain to preserve the prevailing insanitary conditions against attempts at reform, made by none less than an absolute Monarch in one of the oldest and most famous capitals of Europe. "If filth was not, as usual, thrown into the streets, a fatal sickness would probably ensue!" - Doctors, as a body, will use exactly the same phrase dressed up in more modern terms, to ward off any attempt at altering any of our modern civilized habits which are the true causes of toxæmia and "inner filth", causing in their turn a host of diseases and modern scourges as, for instance, cancer. Doctors defend meat-eating, coffee- and tea-drinking, and tobacco-smoking; sleeping with windows shut winter and summer in Scandinavia where everyone sleeps with them shut, and sleeping with windows open in England, where most people sleep with them open; consumption of liquor where people are fond of liquor, and total abstinence where the majority of their patients are total abstainers, and so on. And they will postulate all kinds of 'Mephistophelean' hypotheses and theories to defend these habits, just as the doctors in Madrid put forward, as a plea for the filth in the streets, the preposterous idea that it attracted "*putrescent particles of the air, which, imbibed by the human body, would cause fatal sickness*".

Learning is dangerous in the hands of fools!

But let us return from this deviation into the eighteenth century to a study of the methods by which the doctors of the sixteenth century tried to relieve suffering humanity from its ailments.

In the first place, the doctors of the sixteenth century were just as clean or just as dirty as their patients. They seldom washed their hands and still less their faces which were covered with a paste of paint and decorated with beauty-spots. When their hair was full of vermin - a usual condition - they, like their patients, knew of no better

means of getting rid of the parasites than having the hair plucked or the scalp shaved. They did not wash their bodies, believing, with their patients, that water applied to the face or body was the cause of many evils. But they did believe in washing their linen, and their only mark of distinction as doctors was, perhaps, that their linen was more frequently washed than that of ordinary people.

In the second place, their prescriptions were fully in conformity with the general trend of thought and current belief of the time. Dr. Christian Pedersen, a practitioner in the middle of the sixteenth century in Copenhagen, published a book on how to cure diseases, printed in Malmö 1533. For stitch in the side he prescribes as follows, "Take dung of all sorts, i.e. from cows, horses, dogs, cats, hens, pigeons, sheep, rams and people. Mix all these together with vinegar and old beer and warm it up; take a bath therein until you get thoroughly heated."

Perhaps a visit to an apothecary's shop would give us a better insight into the means by which not only the doctors but those of their patients who did not quite believe that all the diseases came either from God or from the devils, tried to cure themselves. In France, during the reign of Henry IV, every apothecary was supposed to have in stock, above all, the following items: whole Spanish flies, wood-lice, hog-lice, millepedes, garden worms, lizards, ants, vipers, scorpions, toads, lobsters, leeches, and a great variety of commodities of a similar character. Doctors thought that the various parts of these animals were possessed of different healing powers. Especially powerful, if applied in the right way, were the skull of a dead person who had not been buried, a bone which had been stuck into the heart of a stag, the brains of a sparrow or a hare, the teeth of white pigs and elephants, the heart of a frog, the lung of a fox, the intestines of a wolf and the skin of a snake.

All kinds of fat, especially taken from human corpses, human blood and that of pigeons and rams, hoofs of elks and buffaloes, sperm, and the shells of all kinds of snails, were much sought after.

But worst of all, every apothecary was supposed to stock excrement or faeces of sheep, dogs, storks, peacocks and pigeons as being specially useful for certain diseases.

In China excrements are still applied to wounds to drive out evil spirits which are supposed to have caused the wound and prevent it healing unless exorcised by this terrible means.

In Pierre Pomet's work 'Hist. generale des drogues' 1694, fol. II 7-8, which Franklin quotes, the following account is given of English apothecaries in London: "They sell the skulls of dead people on which there is a thin greenish layer of moss, which is called "Usnea", on account of its likeness to lichen which grows upon oaks. But the skull of a recently executed criminal, well washed and dried, and, of course, scraped bare, was thought ever so much more powerful."

Fat from human corpses was considered an excellent preventative of rheumatism. The following advertisement used by a French apothecary, gives us a striking insight into the ideas of those days: "We sell fat from human corpses which we procure in various ways. But as it is well known that the general executioner in Paris is selling such stuff to whoever is in need of it, the consequence is that we apothecaries get a chance of selling very little thereof. May we therefore point out that the human fat we keep in stock, and which we prepare with all kinds of aromatic herbs, must necessarily in every way outclass the fat offered by the general executioner?"

Pure urine "especially procured from young people who have been drinking wine" was considered as an excellent preventative of apoplexy and cramp; it was also used as a well known and a well proved internal medicine for flatulence. The famous

Madame de Sevigny writes to her daughter as late as the 13th June, 1685, the following advice: "For my vapours (flatulence) I take eight drops of urine..."

Niels Mikkelsen of Aalborg recommends for apoplexy a medicine which he calls "King Christian III:s advice against apoplexy" and which is made according to the following prescription: "Take the skull bone of a man who has not died from any disease, preferably that of a hanged thief because it is considered to have the most powerful properties. Put the skull into a heated oven and keep up the heat until the skull turns entirely white. Then pound it into a powder, take of the powder one kvintin, or as much as the weight of an Hungarian gyllen, and three pips of pears, well pounded, and give of this to the diseased to drink on an empty stomach in the morning in lavender water or in heated wine, and leave the fate thereof in the hands of God."

As a very good cure for nose-bleeding the following is recommended: "Let the diseased keep the bone of a human corpse in the hand until the hand begins to feel warm, then put some moss, which has been growing upon a skull, into the nostril, and the bleeding will cease."

The people of those days had a craze for trying to cure themselves with extracts of the very filth in which they wallowed. Filth evidently attracts filth.

But there were also other means of a less disgusting kind. Dr. Johan Megabachus, a famous German, discovered in the year 1545 that an oil made from amber was a wonderful means of curing diseases. Only a few drops in a chalice of wine had a most extraordinary effect upon almost all kinds of ailments, but it was very costly, one loth (13.3 grams) costing not less than a Guinea. The expense of this medicine was nothing, however, compared with some other kinds, as for instance pearl tincture and amethyst water, which cost over £ 10 a loth. When Pope Clemence VII became very ill in 1534 the doctors agreed that, as nothing seemed of any avail, the most expensive medicine, powder of diamonds, must be tried. In a few days the Pope was given £ 600 worth of powdered diamonds, whereupon he died.

* * *

Yes, so it was 400 years ago, but now we are more enlightened. Therefore we may be shocked and feel horrified, or laugh at our ancestors of those days. But what if our descendants after 400 years should, for some reason, have similar feelings towards us? - We at once discard any such possibility as out of the question, but so, too, would our forefathers have done 400 years go had anybody ventured to suggest that their descendants, 400 years later, would be dismayed and would deride them because of their repulsive way of living. Yet there is every probability that after a few generations our position will resemble theirs, that we shall be looked upon as similar monsters with regard to our way of living and treating disease. For, if we have succeeded in clearing up the Augean stable of our forefathers of the sixteenth century, the Augean stable of the twentieth century still remains, created internally, where, on account of our reckless way of living, the large intestine or colon forms a veritable cesspool which poisons the whole system with all its billions of cells and various organs, very much in the same way as the cesspools of the mediaeval castles poisoned all who lived within their walls. Modern 'dietetic' hygiene, when put into practice, has already proved to be of the greatest importance in producing health and preventing and stamping out many of those diseases which may now be looked upon as a result of inner dirt, just as the mediaeval plagues were the result of outer dirt.

'Inner Hygiene' is a new science which is only just beginning to be established. But,

once established, it will prove to be chiefly the result of the efforts of laymen fighting for their own health and the realisation of this great ideal, in the teeth of a persistent and stubborn resistance from the majority of the doctors, who are already pooh-poohing the first steps taken in this direction, and who will leave no stone unturned to find means of wrecking the whole movement once they realise all its far-reaching implications. For the majority of the doctors of the present day are just as much the children of our mode of living as those of the sixteenth century were, in their views and prescriptions, the children of all the dirt and filth of that time. Humanity in those days could not possibly look to them for deliverance from its scourges any more than to the priests.

Time moves slowly.

In a famous book, 'Chronic Constipation', by J. Ellis Barker, printed in the year A.D. 1927, we read on page 22 the following account, which to this very day no doctor has been able to refute: - "The medical profession as a whole opposed for years the use of antiseptics, of anaesthesia, of disinfectants, and even the use of common cleanliness. Puerperal fever killed in the past an enormous number of women in childbirth at public institutions, largely because physicians inserted their dirty hands into the lacerated insides of women in labour. Medical students coming straight from the mortuary and the dissecting room, where they had handled putrid corpses, were allowed to do likewise. Between October 1841 and May 1843, of 5139 parturient women in the maternity department where Dr. Semmelweiss was employed, 829 died, giving the terrible death-rate of 16 per cent., not counting patients transferred to other wards. Mothers would often *die in rows, while in other rows of beds no puerperal deaths occurred*. Young Semmelweiss soon discovered that *these unfortunate women were killed by medical dirt*. Startled by the fact that puerperal fever was 'epidemic' in hospitals and public institutions, and little prevalent elsewhere, he clearly proved in 1847 how this disease was caused, and he was hounded out of Vienna two years later by the irate, reactionary doctors whom he had ventured to blame. He died broken-hearted and poor in a lunatic asylum, driven mad by his medical enemies, in 1865, when only 47 years old, but a monument was erected to him 41 years later. Pioneers in medicine and surgery have only too often been not only martyrs of science, but also martyrs of the profession."

We are concerned in this quotation with the middle of the nineteenth century, not the sixteenth. Those doctors who hounded poor Semmelweiss out of Vienna considered themselves clean, as did their colleagues in the sixteenth century. Although Semmelweiss could prove that by the simple method of carefully cleaning his hands he was able to reduce the death-rate of women in parturition, his findings, based upon observation and experiments alone, counted for nothing with the doctors, whose established custom of treatment went on in the same dirty groove as if Semmelweiss had never existed.

We can put down as a rule governing most doctors, that they are obsessed by the established habits of living and by the customs of their profession, to such an extent, that any man suggesting improvements borne out by experiments upon himself or other human beings, will not only be ignored but thoroughly hated, especially if he does not belong to the ranks of the medical profession. He would, if possible, be hounded from country to country if it were not for public opinion, modern law courts, and above all the modern press.

I quote again the same writer:

"Representatives of practical medicine and medical science frequently tell us of the 'miracles' wrought by modern medicine and surgery, and they point with pride to the

striking reduction in the death-rate, as if doctors and surgeons between them alone had done it. In reality, this great saving of human life is due, not to the medical profession, but to the despised and persecuted outsiders who have done *all the pioneer work in sanitation It is due not to medication but to sanitation. Scientific sanitation was introduced by 'outsiders', by amateurs, in the teeth of the passionate hostility of the medical profession which thought its interests threatened.*"

Anyone who likes to corroborate this statement will find ample proofs in studying the history of medicine. The facts cannot be refuted. They are so abundant and well known that even the Chief Medical Officer of the Ministry of Health in England, Sir George Newman, stated in his presidential address, reprinted in the journal of the Royal Sanitary Institute of August 1926, the following:

"It was

Jeremy Bentham	1748-1832
William Cobbett	1762-1835
Robert Owen	1771-1858
Edwin Chadwick	1800-1890
Lord Shaftesbury	1800-1890

who were the men who moved England to undertake sanitary reform. None of these men were doctors."

Dealing in the same address with the progress of medicine, Sir George pointed out that in medicine also *the most important discoveries, inventions and reforms were made by non-medical men:*

"A significant feature of the progress of medicine, which we are liable to forget, is the extraordinary contribution which has been made to its advance by scientific workers *who have not been medical men.* When Hippocrates died in 377 B.C., Aristotle was seven years old. He grew up to be the pioneer of philosophical and biological works, described by Dante in 'The Divine Comedy' as 'The master of those who know'. He became the pupil of Plato at Athens and subsequently the tutor of Alexander the Great. *His influence on medicine remained dominant for centuries.* Then, in the thirteenth century, Roger Bacon, the English Franciscan Monk, born at Ilchester, founded the experimental method of science and *gave to medicine his supreme mode of research.* Galileo, in his wonderful eighteen years at Padua, *introduced into medicine the laws of physics.* Boyle, in the seventeenth century, and Black, in the eighteenth, *brought chemistry into association with medicine and threw new light upon the whole question of respiration.* Indeed, it has been well said that "The development of the physiology of respiration was almost exclusively the work of three mathematicians, two physicists and five chemists.

"Two famous artists, Albrecht Dürer and Leonardo da Vinci, advanced anatomy and even pathology by their accurate depiction, a matter of special importance when dissection of the human body was rare, and other great painters followed in their footsteps. Charles Darwin, like Aristotle, came of a scientific family and, though he never became a medical man, altered the whole biological outlook of medicine in his generation ... The last and best example of all is Louis Pasteur, the French chemist, who discovered the origin of fermentation and invented processes and created a new centre of gravity in medical science ... I have spoken only of the great thinkers and master workers who have altered the science of medicine. Of the non-medical men and women who have made enduring contributions to this art within the last century, I

need only mention as examples *Sir Humphry Davy, Michael Faraday, John Dalton, Dumas*, the French chemist, and *Cuvier and Gaygen, Sir William Ramsay, Sir William Perkin, Ehrlich and Madame Curie*. Many of their inventions and discoveries, - both social and physical - *have revolutionised the art of medicine* as the great thinkers and explorers defined the principles of *this science*."

It is very brave of a doctor to admit all this and to tell his own colleagues a truth which they hate to hear and love to forget.

"Although we are told every day by men, possessed of the laboratory mind," says J. Ellis Barker, "that only by laboratory research we can hope to vanquish cancer, influenza and many other diseases, it must be stated with emphasis that all the greatest medical discoveries were not made by scientific researchers but by observant, plain men in the distant past who possessed to a high degree *the power of observation* which is vastly more precious than all the intricate machinery of the modern laboratory. Thousands of years ago Chinese, Hindus and other primitive races discovered that many transmittable diseases, among them smallpox, could be staved off, or cured, by inoculation and vaccination. Primitive savages, not Pasteur and his followers, evolved serum treatment. Primitive savages discovered quinine, the great specific against malaria; chaulmoogra oil, the great specific against leprosy; quicksilver, the great specific against syphilis, which has been used since the earliest ages; cocaine and many other of our most valuable drugs. The ancient Egyptians and Hindus protected themselves against the malaria mosquito with mosquito netting; tuberculosis was treated most scientifically by the ancient Greeks and Romans by fresh air, sunlight and a milk diet. All savages practice psycho-pathology."

Roger Bacon founded the experimental method of science upon observation. "*The whole art of Medicine lies in observation*." Observation is common to all, but the bulk of doctors think that, so far as human health is concerned, no one should be allowed to observe, experiment and think but themselves. And yet, health is our most precious possession. My health is my own, and when once gone cannot be replaced by all the doctors in the world.

The fact remains and cannot be refuted that the filth of the sixteenth century and all the scourges it brought in its train, were removed *not by doctors*, for they wallowed in filth just as much as everybody else, but by common men outside the medical and religious professions, people who observed and longed for cleanliness and health ... people who did not care whether disease came from heaven or hell, but quietly began to clear up the terrible Augean stable of our ancestors. This clearing up is not yet finished. It is going on every day. And yet, the most formidable task still remains, as we shall see further on.

XV.

WHEN THE DEVILS WERE CHRISTENED.

I was having tea with a celebrated professor of medicine and his wife, when in rushed little Peter.

"How is his cold to-day?" asked the celebrated professor with some anxiety.

"This is the first day," his wife exclaimed triumphantly, "that Peter has not coughed." - Having said this she suddenly stopped, looking rather frightened and embarrassed. - "Excuse me," she added, "I really must touch wood," and she touched the table. Her husband, the famous professor, said nothing.

Time moves indeed very slowly, I thought to myself. In spite of my host being a celebrated professor of medicine and a rationalist, the old devils still seem to be hovering about. His wife even "touches wood".

Why did she touch the table? If asked, she could not have offered any further explanation than that it was a precaution against the recurrence of her boy's cold, but her great-, great-, great-grandmother might easily have provided the mental background.

"Evil spirits are everywhere," she would have said, "It is they who cause all kinds of diseases. If little Peter has not suffered from his cold to-day, it is only because the evil spirits have forgotten him. But they are present everywhere and may be listening just when you are mentioning that his cold is better, If they overhear your remark, they are sure to see to it that his cold will be worse to-morrow unless you touch wood, but if you do they will flee in terror because Our Saviour was crucified on a cross of wood and thus some of His divine powers were imparted to this substance."

Of course, her pagan great-, great-, great- etc. grandmother would, again, have told a quite different story. Accustomed, as she was, to making fire by rubbing pieces of dry wood against each other, she would have inferred that fire was concealed in the wood and that touching it would at once make the devils stampede, thinking that you were going to make fire. For devils are never able to stand sunshine or fire.

If you say "pepper and salt" the effect of these words may be the same, as evil spirits loathe those spices. But you cannot speak without attracting attention, whilst the touching of wood can be done surreptitiously.

The famous professor of medicine was quite unconcerned about the incident. The very fact that his own son had taken cold was a proof to his wife that he was powerless to ward off this common disease, one of the minor scourges, remaining from the Middle Ages. Hence she put her faith in the ritual of ancient magic.

Whilst the theologians of the sixteenth century were quarrelling as to whether disease came from the devil, in which case medicine was of little avail, or from God, in which case all secular cures must be considered blasphemous, the laymen did not seem to hesitate as to the real origin of the ailments they suffered from. It was the devil and all his legions of minor demons who were the true causes of all disease, from the great scourges down to headaches, toothache, etc. Against the powers of evil God himself and his angels were apparently powerless. Because of this common-sense conclusion the powers of good have always been of less interest to people at large than the powers of evil, or, as an Indian Chief recently put it to a missionary: "The good powers will always do us good, but it is the evil powers we must try to

placate because it is they who bring us all the evils." This is simple and irrefutable logic. Our forefathers of the sixteenth century acted on this principle and it has been acted upon down to our own times.

Nothing has impressed this truth more vividly upon my mind than the following experience.

In Dalecarlia in Sweden it so happened twenty years ago that an old and very religious woman, living in a neighbouring village, saw a strange object moving in front of the door of her house. It was twilight, and it might have been an animal - a cat or a fox - but in her frightened state of mind she inferred that evil spirits were attacking her home.

I had seen her going to church on Sundays, well-dressed, with her prayer-book in her hand. There was no doubt she was a Christian, but nevertheless she immediately sought help from those versed in what is known as 'black magic'. She soon fell into the hands of witches who knew how to deliver a house from the plots of the evil powers. It proved a costly affair. In the old woman had spent not less than £ 20 on witchcraft, the county police stepped in and the whole case was brought before the Court.

Meeting the old woman one evening, I asked her why she did not appeal to the Minister for help in her trouble. "Surely," I said, "he would have expelled the devils." She looked at me in amazement as if my question had been very stupid or entirely beyond her comprehension. Scoffingly, she exclaimed: "The Minister! - he doesn't understand anything about this, he only understands what belongs to the Church."

We are still living in the old cleft of mediaeval times, nay in the rift the East has caused in our way of looking upon life. Two powers have divided the world between them, the power of good and the power of evil. But if so, if good and evil are two separate entities with nothing in common, how can they possibly contend at all, because every combat presupposes common ground to fight upon, common tactics, common weapons and, to a certain extent, a common mentality. If there is nothing in common, there can be no fight, for the two powers can never meet.

Again, if the two powers are really contending, they must necessarily both be fundamentally of the same kind, fighting on a common ground, in which case a truce with both would seem the best way of avoiding conflict. This was the common-sense view the old woman took. She went to church regularly every Sunday to please the powers of good and win their favour, and she used witchcraft in order to placate the powers of evil when attacked by them. For, if a fight is real and not a pretence, the powers must necessarily contend with each other until one has gained the upper hand, in which case it is nonsense to speak of the Power of Good as just tolerating the Power of Evil as theologians do. For if the Good could exterminate the Evil but does not do so, it makes itself responsible for the Evil by allowing it to continue. Driven to this point, the theologians retire, declaring the whole to be a complete mystery. But why make an assertion about something they finally admit that they cannot understand at all?

However, the rift remains and has penetrated deep into the minds of the European people, constituting the chief cause of the mental and moral weakness of our age. People still live in fear of 'something'. And fear is a mental, moral and physical poison.

From this fear, as far as many diseases are concerned, the great Pasteur, the celebrated French chemist, tried to deliver humanity. It was he who discovered the microbes, those tiny little elementary beings, 'biologically speaking', composed of one cell only, which swarm in all fluids and are found especially in what is edible. A drop

of water, taken from one of our best wells or waterworks, is full of them. And yet they do us no harm as long as we are healthy, but when we are run down, improperly fed or clad, in want of exercise or sleep, they attack us and bring about a host of those disturbances we call disease.

Pasteur discovered the microbes, and the doctors ridiculed his theories, as they have always derided almost every revolutionary innovation in medicine. They considered his ideas preposterous and all talk of microbes as utter nonsense. That was eighty years ago. But now there are no firmer believers in microbes than the doctors. After having laughed at Pasteur, they have not only accepted his ideas, but carried out their belief in them to such an extent that we are justified in speaking of a 'microbe craze' obsessing not only the minds of doctors but of the people at large, to almost the same extent as the 'devil craze' obsessed the minds of our ancestors in mediaeval times. Instead of the devils we have now got the microbes. The only difference is, as the famous historian Troels-Lund points out, that "*the devils have been christened*".

Indeed they have been christened, with hundreds of different names!

The things in which we believe change their names, but it seems as if the old ground upon which since remotest times systems of belief have been erected, still remains.

Man, as he is mentally constituted, requires a heaven and a hell, a God and a master devil, angels and small devils, a paradise which was lost and a paradise to be regained. This scheme can be applied to any kind of belief. In socialism the god is Marx with a host of major or minor prophets and apostles in his service, the hell is the capitalistic system, the devils are the capitalists, and the new society to come is the paradise to be regained, a paradise lost to humanity when the modern capitalistic system was introduced.

The microbe mania has conquered the minds of people so easily and so completely because the microbes fitted so well into an old form of belief. Microbes merely replaced the old devils.

But there are already signs and tokens everywhere that their sway is gradually coming to an end.

* * *

Perhaps the ablest pathologist of his time was the late *Professor J.G. Adami*, who in 1918 issued a book 'Medical Contributions to the Study of Evolution' in which he put forward a theory according to which *all bacteria change with their environment*, that is to say, the ground they are feeding upon affects them to such an extent that the most virulent, disease-creating microbe, fatal to humanity, may develop into a harmless or perfectly innocuous one, and vice versa, by maintaining it upon different foodstuffs or in different surroundings.

Professor Adami actually says: "We can take a culture of streptococci so weak that only the most susceptible animals are influenced by it, and then by careful passage from selected animals so augment the virulence that eventually the 100th or 1000th of a drop of a twelve-hour culture, or even much less than this, may cause the death of strong adults in six hours or less."

He points out that at the beginning of 1890 three of the principal hospitals in Calcutta contained cholera cases not differing from one another in symptoms or virulence, but that later on, other cases were observed, sixteen in all, differing from each other in their symptoms. From these, ten new species of cholera bacilli, named

subsequently by the ten first letters of the alphabet, A to J, were obtained. In only four of the cases was the form of bacillus 'A' recovered. In some of the cases three different bacilli were present at the same time.

The cholera plague in Calcutta in 1890 was evidently caused by only one kind of bacillus. However, this kind of bacillus acted as a progenitor, giving birth, in time, to not less than ten different kinds of cholera bacilli, by breeding on a different soil or by living in a different environment. By different 'environment' as far as human beings are concerned we understand people living under different conditions, on different food, in a different state of health, etc. If the health of all the people of Calcutta in those days had been equal to those who remained immune, it is certain that the cholera microbe would have gained no foothold at all.

The new theory which this great pathologist put forward and defended can be best expressed as follows: *"It is the soil that creates the disease and not the disease that creates the soil."*

Surely no one who has read the preceding chapters would ever believe that it was anything other than the soil which created all the scourges in the sixteenth century, i.e. that the human body was so weakened by the prevailing insanitary conditions of the time that it offered a suitable soil for microbes which, thanks to lowered vitality, could break through the natural defences of the body and breed generation after generation of microbes more and more virulent, to the merciless attack of which finally not only the healthiest succumbed, but even the animals of the forest and the birds of the air.

Yet, in the teeth of irrefutable facts, the majority of doctors still persist in putting the cart before the horse, blaming the microbe and disregarding the soil that invites the invaders, as for instance, in the case of common colds and influenza.

They are just as loth to give up their microbes as the clergy and laity of the Middle Ages were loth to give up their devils.

XVI.

THE SOIL IS MORE IMPORTANT THAN THE SEED.

If a pinch of weed seeds be dropped in the country, hundreds of square miles may be weed-infected within a few years. If a ton of the same seed should be dropped in front of the Bank of England no weeds would spring up."

"If an absolutely healthy strain of human beings should settle on an island where no disease germs are known to exist, they will remain healthy and strong as long as they lead healthy lives. If they should live in filthy, airless huts and feed on unsuitable food, they will undoubtedly rapidly fall ill and die of disease, and 'specific bacteria' of disease, hitherto unknown in the island, will, of course, appear among them, for *disease and disease germs are always found in company.*"

"The healthy men in the germ-free island would, by their degeneration, *evolve their own disease germs*. Of course, even the healthiest man may succumb if he receives a larger dose of disease germs than his body can deal with. Still *it cannot be doubted that disease-favouring conditions lead to the appearance of disease germs*, exactly as a foul soil leads to the springing up of foul weeds." (J. Ellis Barker. *Good Health and Happiness.*)

In mediaeval times disease was thought to be caused by the ubiquitous devils. According to the notions of the time, these devils were stable beings, unchangeable, invariable, firm in their evil intentions. According to prevalent ideas about microbes, they, like the mediaeval disease-causing devils, have also permanent qualities, i.e. they are unalterable, they do not change. A cholera-producing 'comma bacillus' is thought of as always being exactly the same, bent upon the same mischief and capable of doing the same harm as soon as it gets into the human body. Nothing could, however, be more erroneous or more out of keeping with the latest findings of modern biology and bacteriology.

Life is constant change, and nothing changes more quickly than the lives and qualities of these microbes. A single day or week in the lifetime of a strain of bacilli, may be as full of events and changes as, comparatively speaking, the history of Rome, - nay, even as a geologic age of millions of years. For we so easily forget that life in the microscopic world, in a microcosm, passes at quite a different rate compared with that of the progress of life in the human world.

Breeders know how to develop new traits in pigeons, dogs, pigs, cattle, horses, etc. by careful selection of specimens and change of environment, until finally, quite new types of animals are produced, forming new species, the like of which the world has never before seen. Nature herself often performs the feat under our own eyes in a comparatively short space of time. A very good instance is offered in the case of the English pigs which were taken and set free in New Zealand late in the eighteenth century by Captain James Cook, to whom reference has been made in a previous chapter. They were let loose in the woods and had to adapt themselves to their new surroundings. The new environment acted very strongly upon these animals which for generations had lived the sheltered life of English farmyards and pig-sties. They had now to fight, not only for their living, but also against other animals. Kindhearted Nature assisted them most magnificently in this task by providing them with huge, formidable tusks both for fighting and routing. Their short snout, thinly covered with

hair, was changed into the long snout typical of the wild pig, and their skin, which before leaving England was covered only with thin hair, soon assumed a thick coat of dark bristles.

If all these changes could be wrought by Nature in the common pig within a century, what alterations might not take place in micro-organisms which are so extremely short-lived? Here generation follows generation within half an hour or less. If countless generations are feeding on a healthy human soil, an innocent microbe may remain an innocent microbe, and possibly it may become a beneficial, health-creating organism. On the other hand, if an innocent or health-creating microbe should, through countless microbe generations, be feeding on foul human tissues and body juices, it may degenerate and become an extremely dangerous disease-creating factor. In the same way healthy cells may degenerate and start feeding as separate new growths on the surrounding tissues, if the human body is being poisoned year after year through the dietetic and hygienic faults we make in our modern civilised way of living.

The English biologist, *J.T.C. Nash*, published in 1915 a most interesting work, *Evolution and Disease*, in which he pointed out that a few hours in the life history of a bacillus may easily be equivalent to a thousand years in the life history of man, and that, through the fault of man, an innocent and health-giving bacillus may be converted into a creator of disease.

Addressing the Epidemiological Society, Dr. Nash stated:

"My own view is that an untrapped scullery, defective drainage, or an accumulation of stable manure or other refuse will generally be found to be one of the evolutionary factors which help to convert a harmless Hoffman bacillus of the mouth into a rampageous individual, running amok with distorted morphological features, distilling its virulent chemical toxins."

Does not this quotation seem to have a direct bearing upon the Middle Ages we have been studying, with their "untrapped sculleries", "defective drainage", or no drainage at all, and with their "accumulation of stable manure" and human manure contaminating the air inside and outside the houses, their court-yards, gardens, and wells, and above all the streets - where in addition all kitchen refuse, pigsty manure and dead animals were left for weeks to decompose and vitiate the air?

Modern experimental biology has, in a surprising way, demonstrated the truth of these views. Countless experiments have been made showing that certain disease bacteria injected into healthy animals are quite harmless, because the healthy tissues and juices destroy them. However, if, at the same time, certain chemicals are injected which weaken or poison the tissues, the injection may prove fatal.

As early as 1896 *Dr. A.A. Kanthack* contributed an article to *Allbutt's System of Medicine*, Volume 1, in which he states on page 551:

"There are many experiments to prove that bacteria, absolutely or relatively harmless to animals when injected in pure cultures by themselves, become intensely virulent when at the same time we inject certain chemical bodies at the site of lesion."

In other words if, by the aid of certain chemicals, we paralyse or destroy the means by which the tissues of our bodies defend themselves against invaders, the latter at once get free scope and plenty to feed upon. They grow tremendously in strength and vigour, leaving the tissues they are attacking filled with their own poisonous excretions. In the same way the streets and courtyards of *Elsinore* were filled with poisonous excrements 400 years ago but with this difference, that whilst the streets in *Elsinore* were supposed to be cleaned every Friday, no removal whatsoever of poisonous bacterial excretions from paralysed tissues seems to take place.

The above quotation from Dr. Kanthack's paper seems to forebode a complete revolution in the bacterial outlook of our time.

Thirty years later the *British Medical Journal* published an article by Dr. W. Cramer, *A New Outlook on Cancer*, in its issue of the 30th January, 1926. Dr. Cramer makes the following statement:

"If the bacteria of gas gangrene or their spores had by repeated washing been made completely free from all toxins, they had become non-pathogenic (innocuous) and could be injected into animals in large doses without producing any effect whatever. But if a small amount of a soluble calcium salt was injected, not necessarily together with the bacteria, but even when it was given several days afterwards and at a different site, gas gangrene developed at once and killed the animal.

He also states that Dr. Gye repeated his experiments a few years later in the following interesting way. He washed the spores of vibrioseptic gas gangrene bacillus and injected them into the tissues of animals, but *no gas gangrene had developed even after six months had elapsed*. Then he injected calcium salt at the same sites where he had injected the spores, and now at length *gas gangrene was produced as soon as the calcium salts had broken down the natural defences of the tissues*.

Further investigation showed him that *'The calcium salt produced in the tissues a specific visible lesion of such a nature that the normal defences of the subcutaneous tissues against the bacteria of gas gangrene were broken down and the bacteria could proliferate (spread) at the site of the lesion*. He called this phenomenon *"kataphylaxis" or "defence rupture"*.

Dr. Cramer showed later on that the same holds true in the case of injections of the tetanus microbe and even of streptococci. He, furthermore, found that other substances like strontium salts, some colloids such as colloidal iron or colloidal silicic acid, have a similar effect.

Gye and Kittle showed that tubercular infection could be induced in animals usually resistant to it by the injection of colloidal silicic acid.

Dr. Cramer concludes his interesting article in the following words:

"Orthodox bacteriology has taken no notice of this striking phenomenon; it is not even mentioned in the chapter on 'Gas Gangrene' in the Official Medical History of the War."

Of course not!

"If micro-organisms derive their characteristics of virulence or of innocence from the food on which they live in the laboratory, it is only logical to assume that their characteristics may be changed equally by the food on which they subsist in the human body. Logic, common-sense, and actual scientific experiment combine to show that the food is more important than the germ, that the soil is more important than the seed. Very likely the whole fundamental conception, which is fashionable at present, that the micro-organism 'creates' the disease, on which the huge building of modern bacteriology has been erected, is utterly and preposterously wrong, for it may be that, in absolute opposition to this conception, the disease creates the micro-organism. (J. Ellis Barker, 'Cancer, the Surgeon and the Researcher.')

The history of the evolution of the higher animals and plants shows us how a single species may give origin to any number of variations and how from these, during countless ages, owing to the change in environment, food supply, etc. new species may crop up entirely unlike their ancestors.

If the history of microbes could be written, it would in all probability be found that all our present variations of microbes have originated from some single species of

harmless, innocent organisms. Through change in environment, changes in temperature, through feeding on different fluids and food, on different plants and animals in different states of health and consequently of resistance, the original species of microbes must, through countless ages, have evolved innumerable species. The facts of modern bacteriology tend to prove that all these different species of bacteria to which modern bacteriologists have given various names, *easily revert to the previous harmless types of microbes from which they have developed.*

This is, briefly, a survey of the tendencies in modern bacteriology. These tendencies seem to be so entirely in keeping with all the facts of evolution and all the facts established by modern breeders, that it is a puzzle to any thinking man how doctors can still adhere to the old opinion that the characteristics of bacterial species are permanent. The only explanation is that as bacteria easily revert to an old type as soon as they are deprived of certain foods and delivered from their own poisons, so evidently the doctors, as a body, revert in their thinking to older and more rigid views if they are deprived of wholesome public control and criticism, and if their brains are left to grow stale in the poisons of their professional conceit and antiquated scholastic ideas.

By all means let us stick to the old disease-brewing devils, especially when they have been properly christened and baptised by the high priests of the medical profession!

A very good instance of 'stale thinking' is offered by the vaccination mania.

The sanitary conditions in Europe improved very little until the beginning of the nineteenth century. We have seen what conditions prevailed in Madrid as late as 1760. It was only from the middle of the nineteenth century that the results of modern sanitation began to make themselves felt in civilised European communities. In the sixteenth century, plague after plague *hatched smallpox epidemics.* These epidemics continued to reappear with reduced intensity and at longer intervals until the middle of the nineteenth century. Then they seemed to die out more or less spontaneously.

When the plagues were at their worst, even cows developed a kind of pox, called cow-pox. I am sure you have all heard the story of the milkmaid who, in milking the cows became infected with cow-pox. She laughingly told a doctor that she was not a bit afraid of smallpox because the cows were a protection to her. An English physician, the famous Edward Jenner, was well acquainted with "a popular belief he had found current in Gloucestershire as to the antagonism between these two diseases." It was the wide-spread, popular belief that no one would develop smallpox who had been infected with cow-pox, that had directed Jenner's attention to this supposed relationship.

The Encyclopaedia Britannica says: "After he began practising in Berkeley, Jenner was always accustomed to enquire what his professional brethren thought of it (this supposed relationship); but he found that, when medical men had noticed the popular report at all, they supposed it to be based on imperfect induction."

We are all well acquainted with the method by which Jenner was finally able to establish and prove this relationship, and how vaccination spread first all over England and then throughout Europe, "*being urged principally by non-professional persons of position*". (Encyclopaedia Britannica). It made rapid progress in the United States where it was introduced by Benjamin Waterhouse, then Professor of *Physics* at Harvard.

A special society for the propagation of vaccination, the Royal Jennerian Society, was finally established in London. More than 12,000 persons were inoculated in the first eighteen months of its existence, and with such effect that deaths from smallpox,

which, for the latter half of the eighteenth century had averaged 2,018 annually, fell in 1804 to 622, i.e. within a quarter of a century. But *sanitation also made progressive strides within the same quarter of a century*, though half a century had to elapse before the full effect of modern sanitation, as we know it, could make itself really felt.

However, *"in 1818 a severe epidemic of smallpox prevailed and fresh doubts were thrown upon the efficacy of vaccination*, in part apparently owing to the poor quality of the vaccine lymph employed. This caused Jenner much annoyance... (Encyclopaedia Britannica)

No one fears smallpox in these days. But is this exclusively due to vaccination? I do not think there is a single doctor nowadays who would venture to answer that question unhesitatingly in the affirmative. Smallpox has been stamped out, *not because of Jenner's vaccination, but because of modern sanitation*. Whenever there is the slightest danger of an outbreak of smallpox, doctors at once urge everyone to be re-vaccinated, because the efficacy of the previous vaccination may have lost its strength or 'faded away'. Consequently, almost the whole of the European population over fifteen years of age may be considered, from a medical point of view, as practically unprotected, and yet we no longer have smallpox epidemics. But doctors nevertheless persist in inoculating poisons into the tender systems of babies, regardless of the fact that many have become cripples for life not only *"owing to the bad quality of the vaccine lymph often employed"* but *to the criminal fallacy of the whole system*. To what extent this wholesale introduction of bacterial poison into the civilised races interferes with their normal development and lays the foundation for future ailments, is difficult to establish. It may quite well be one of the causes contributing to the cancer plague.

Sir Almroth Wright, the leading English bacteriologist, quite recently issued the following grave warning to the members of his own profession: "Our deterrent in using vaccine therapy may be the possible flaring up of the local infection. The graver kinds of risks, those of a spread of microbes into the blood and a generalisation of the infection, should be constantly present to the mind. *There is reason to believe that much harm may be done by giving massive doses of vaccine in therapeutic treatment.*" - But doctors act as if we were still, everywhere, wallowing in dirt; as if our streets were dumping-places for all the refuse of every house, and our gardens filled with hidden cesspools, our drinking water contaminated and the space under the floors of our churches filled with human corpses in a state of decomposition.

The very fact that the charge for inoculation against smallpox is 5/-, rendering the medical profession a huge income every year, may, to a certain extent, explain why doctors are loth to give up the vaccination mania.

The most surprising fact about it is that *the microbe, the supposed cause of smallpox, has not yet been found.* *) The strongest microscopes have not been able to reveal it to the human eye. Doctors have no knowledge of it, they have not even been able to name this supposed microbe to which they owe so much in reputation and in cash.

A sense of gratitude ought at least to make them erect some kind of memorial or perhaps a tombstone - because for aught we know there may be no bacillus at all - with the inscription:

"To the unknown microbe from grateful doctors".

*) Webmasters comment: this was written in 1934 and apparently one had not invented the electron microscope then. The development of the first electron microscope allowed the visualisation of viruses for the first time.

XVII.

HOW THE MICROBES ARE INVITED.

The human body has been likened to a sponge filled with the most luscious food, surrounded and assailed on all sides by billions of microbes waiting for a chance to enter it. During the Roman rule the ever green and fertile England was watched in the same way by the Picts, the Scots and the Vikings who were all waiting for a weakening of the Roman defences to allow them to enter the country. When the Romans withdrew, England was immediately invaded by various tribes, and so it went on for centuries until the descendants of the strongest invaders proved themselves superior to the attacking forces. Napoleon contemplated an invasion at the beginning of the nineteenth century, the Germans another a hundred years later.

Every living body, whether that of a man or an animal, is placed in exactly the same position. It is constantly surrounded and watched by legions of hungry microbes awaiting their chance to enter the tissues. Whether they get their chance or not is entirely dependent upon the strength of the defending forces which, in their turn, seem to vary fundamentally with the amount of poisons retained in the system.

The above explanation was first put forward by the famous Dr. Charles Jaques Bouchard, Professor of Pathology and Therapeutics in Paris and member of the French Academy of Medicine, in his book: *Lectures on Auto-Intoxication in Disease or Self-poisoning of the Individual*, translated into English by Dr. Thomas Oliver, Professor of Physiology and formerly examiner in medicine, Royal College of Physicians, London.

"What renders possible the development of an infective disease is not the chance meeting of man and microbe," says Bouchard. "This meeting is constant, but it is generally without result. Microbes, even the most dangerous, assail us. They are spread around us with the same prodigality with which Nature distributes developing matter, and yet infection is uncommon. Infectious disease, too, is only an accident, because the morbid agent finds only exceptional circumstances favourable.

"The healthy man is not attractive to the microbe. While almost constantly invaded by infectious agents, he reacts against them, and in this contest he generally keeps uppermost so that often the disease does not even become apparent.

"It is not thus with the man whose vitality is weakened; then his means of defence diminish. Just as we see rushes become covered with soil where certain unusual circumstances cause an obstruction to the natural flow of water, so certain microbes may invade the human organism, whose health breaks down whenever the chemical constitution is modified.

"The physician ought not to allow himself to be solely absorbed in the search for a microbe. He ought to occupy himself with the infectious agent, but he ought also to retain a good deal of his anxiety for the study and research of the circumstances which disarm the organism against the invasion of that agent."

The chief causes which disarm the organism and make an invasion possible are, according to Bouchard, an increased toxicity of the body.

This toxicity is never constant. It rises and falls according to a number of various circumstances such as, for instance, the quality of the air we inhale; the amount of exercise taken daily; the amount and quality of sleep; the state of our nutrition; the

quality and quantity of our food; the amount of toxins contained in the food or produced by it in the alimentary canal; the efficiency of our organs of elimination, for instance, the kidneys, the liver, the stomach, the intestines, the lungs and the skin.

Wherever heat is developed, we have a combustive process going on, producing substances which are inimical to that process, and would put it out if accumulated. The end products of a fire, carbon dioxide and water, are at the same time the best means of extinguishing it.

"Too many ashes put out the fire," says Shipley.

The same rule applies to the invisible fire which heats the human body.

If products of combustion are allowed to gather in our tissues and blood, the human body is poisoned, the resistance of the cells is weakened, the chief defences of the tissues - the white blood corpuscles - are paralysed, and the microbes have their chance; invasion takes place, and all kinds of disease symptoms crop up in various organs.

Bouchard regards the toxicity of the urine as the best indicator of the toxicity of the blood.

The blood is, as we have seen, an agent by which all the cells of the body are nourished. But it is also the chief agent by means of which the cells are delivered from their waste products which would otherwise poison their activities. By carrying the blood in a continuous stream to the kidneys, the liver, the stomach, the intestines, the lungs and the skin, our system gradually rids itself of these poisons which are ultimately thrown into and absorbed by the atmosphere, the soil and the sea. In these elements they enter into various simpler chemical combinations, i.e. they are again brought back to their natural state.

Of all the detoxicating organs Bouchard considers the kidneys the most important, as is shown by the highly poisonous qualities of the urine. He introduced urine into the veins of various animals, especially rabbits, and measured its toxicity by the symptoms produced in these animals.

"Having introduced normal urine into the vein," he says, "I have been able to demonstrate that its toxic action bears especially upon the nervous system. The movements of the respiratory muscles are quickened, those of the locomotor muscles weakened. The loss of the reflexes in the advanced phases of intoxication, somnolence and coma, still show that the brunt is borne by the nervous system. It is in the same sense that the disturbances of the secretory apparatus are to be considered: the frequent emission of urine, the salivary hypersecretion, and lastly, the fall of the temperature by diminution of heat production. That is the first fact, and it is the fundamental one in the phenomena of intoxication.

"The blood is continuously being traversed by a current of toxic material. It is true that the poison is never found in it except in harmless quantities. If blood is not toxic, it is because normal urine is, and is incessantly removing toxicity from it. There is less toxic matter in the blood than in the organs. The anatomical elements (the cells) form substances which, if retained, would fetter their life; but these substances leave them, little by little, in order to penetrate into the blood. The quantity of toxic matter eliminated by the kidneys in twenty-four hours is, without doubt, one-half of what is necessary to kill the whole of the body, and the blood has really received that quantity in twentyfour hours; but the elimination is incessant, and at every moment of the day the blood never contains at one time more than a small fraction of poison.*)

*) "A man weighing 65 kilograms expels in twenty-four hours 1350 cubic centimetres of urine, of which a dose of 45 cubic centimetres would kill one kilogram of rabbit. This man eliminates, therefore, in twenty-four hours, by this urine alone, a sufficient amount of poison to kill $1350/45 = 30$ kilograms

of living matter. The total quantity of blood of this man is $65/13 = 5$ kilograms, the blood constituting the thirteenth part of the total weight of the body. The 5 kilograms of blood of this man are thus traversed in twenty-four hours by a quantity of poison capable of killing 30 kilograms of living matter.

"The number of complete circulatory revolutions is 1850 in twenty-four hours, counting for a complete revolution of the blood about forty-seven seconds, taking into account certain slower revolutions which take place in certain departments of the vascular system. In each complete revolution the kidneys remove from five kilograms of blood a quantity of poison capable of killing $30/1850$ kilograms or 16.216 grams of living matter in a man weighing sixty-five kilograms. From one kilogram of blood it removes a quantity of poison capable of killing $30/1850.5$ kilograms or 3.243 grams. It is certain that there is in the blood more toxic material than this minimum portion which leaves it during the forty-seven seconds of the complete revolution, and that there is a reserve of toxic material in the tissues."

"In order that death may be produced by auto-intoxication, it is sufficient that the amount of the poisons of the blood should become two and a half times greater than the normal quantity.

"So long as the toxicity of the urine is at its maximum the individual is free from the risk of auto-intoxication. In the permeability of the kidneys by poisons there is safety."

Bouchard held that the most virulent poisons are eliminated in the colouring matter of the urine. "The colouring substances belong to the group of those organic substances to which we ought to attribute nearly one half of the toxicity of urine."

Next to urine in toxicity comes bile.

Bouchard measured the toxic effect of bile upon animals by injecting it into their veins, and found that five cubic centimetres of bile equalled forty-five cubic centimetres of urine, each quantity being sufficient to kill one kilogram of living matter. "From this fact we may conclude that bile is nine times more toxic than urine, as far as volume is concerned; as to time, the toxic activity of the hepatic (liver) secretion is six times greater than the renal (kidney) secretion."

"If all the bile which the liver secretes passed directly into the blood, man would be poisoned by his own bile in eight hours and fifty-five minutes (8 hrs 55 mins). If all the urine that the kidneys secreted passed directly into the blood, man would be poisoned by his own urine in two days, six hours, and thirtytwo minutes (54 hrs 32 mins)."

"We may estimate at about one kilogram the quantity of bile produced in twenty-four hours in man.

"A man weighing from sixty-five to seventy kilograms eliminates on an average in twenty-four hours, 1350 cubic centimetres of urine, or about 20 grams of urine per kilogram. Of bile he eliminates 941 cubic centimetres or 13.45 grams per kilogram of bodily weight."

"It is easy to understand the danger which would result from any impediment placed in the way of the elimination of bile or from its absorption," says Bouchard. The danger is so much the greater as bile is excreted at the upper end of the alimentary canal or more than twenty feet from the exit. Some of its constituents play an important part in the digestion, others are laxative. The main part is eliminated in the water of the faeces which, even in a constipated person, contains about 400 grams of bile. If man led a natural life, i.e. if he had as many and as complete bowel-actions as he has meals a day, and if his stools were of the right consistency, i.e. that of porridge, the daily excretion of bile would not constitute a serious problem. But civilized man is decidedly constipated, having, at the most, one bowel-action a day and hard stools. This means that the poisonous substances of bile are only

insufficiently eliminated with the faeces and are, to a large extent, retained in the intestines, from where they are reabsorbed by the blood and carried by the portal vein to the liver. Here they are partly neutralized by oxidation processes and partly secreted anew.

"Bile plays, without doubt, a part in digestion," says Bouchard, "but it is a constituent of the excreta, and it undergoes in part, absorption. Schiff has told us that we can find bile in the blood just come from the intestine, but not in the general circulation. He has admitted that the bile is seized again by the liver, then secreted anew, and again re-taken without cessation. If this perpetual circle is true, the liver would, therefore, act as a protector to the general circulation, as regards bile and other poisons. G.H. Roger has proved experimentally in my laboratory that the alcoholic extract of rotten meat is twice less toxic when we inject it into the portal vein (leading from the intestines to the liver) than when introduced into the general circulation. It appears, therefore, to be certain that the liver arrests or transforms toxic substances which originate in the intestinal canal. Blood drawn from the portal vein of the dog kills a rabbit in a dose of from thirteen to fourteen cubic centimetres per kilogram, whereas it is necessary to use twenty-three cubic centimetres of blood removed from the liver."

There is no doubt that reabsorption of bile takes place, especially in constipated civilized man. The result is a greatly weakened liver, liver troubles, manifesting themselves in persistent headaches, biliousness and, in extreme cases, jaundice.

In jaundice the protective powers of the liver have momentarily broken down and the biliary salts are over-running the whole circulation, being deposited in the skin, the hair and various tissues of the body.

Bouchard thinks that in the case of jaundice the tissues play a protective role: "They consume and transform the minute portions of bile which have penetrated into the general circulation. They fix bilirubin (the colouring matter and the most poisonous part of the bile). The blood consumes the biliary acids."

Certain jaundiced urines are toxic, according to Bouchard, at the rate of thirteen cubic centimetres to a kilogram, i.e. thirteen cubic centimetres of bile will kill an animal weighing one kilogram, whilst it takes, as we have seen, not less than fortyfive cubic centimetres of ordinary urine to kill the same amount of living matter, i.e. the toxicity of jaundiced urine has increased three times, sometimes even up to five and seven times.

The third source of the intoxication of the blood is, according to Bouchard, putrefaction.

"The digestive canal is a veritable putrefactive apparatus," says Bouchard. "Moisture, heat and the germs coming from the atmosphere concur in producing putrefaction. The alimentary residues which have not been digested, and the peptons not yet absorbed are transformed, without any alteration, into infectious agents. Thus do we find the small intestine, on the one hand, and the large intestine particularly, on the other, capable of passing products of putrefaction into the blood. Gaspard established, as early as 1822, the fact that putrid substances are toxic, and that they are actually more so than substances arising from disassimilation (the products of combustion). He injected into the veins of animals liquid arising from putrefaction of blood or of meat and induced faintness, diarrhoea and vomitings, hyperaemia of mucous membrane; then death."

Putrefaction in the alimentary canal is chiefly caused by proteins, i.e. albuminous food such as the white of egg, meat, fish, poultry, etc., but seldom, if ever, by vegetable food. "The extract of 2.5 grams of putrified meat is sufficient to kill."

"It is certain," says Bouchard, "that true intoxication may result from the eating of tainted meats. Gaspard and Panum have shown that the putrefaction of meat develops a poison capable of inducing accidents both serious and fatal. But in these cases the symptoms are quickly developed; they come half an hour after the ingestion of tainted meat. Besides, in a general way, we do not eat meat actually putrefied and already capable of intoxicating by itself. We ingest meat which is only beginning to putrefy, in the depth of which microbes are at work determining a putrefactive process, which goes on, under conditions particularly favourable, when the meat has found its way into the digestive tube."

Constipation is chiefly caused by food that putrefies in the intestines. People living on much meat are always constipated, to which fact the foul odour of their stools, skin and breath bears witness. People living chiefly on vegetable food are seldom constipated; their stools are never offensive. "Constipated people have headache, migraines, and vertigo. Hypochondriacs*) are constipated.

*) Sufferers from hypochondria, a nervous malady, tormenting the patient with imaginary fears.

They experience a number of nervous disorders of sensibility, buzzing in the ears and physical troubles. All the insane are constipated, and alienists endeavour especially to guard against constipation."

"It has been shown that in constipation the red blood-corpuscles become diminished in number and less resistant to the action of destructive agents."

The result of Bouchard's investigations concerning putrefying food agree thus, in the main, with the results of the practical experiments Dr. Alexander Haig made upon himself.

If microbes are the chief cause of disease it is obvious from what has been said in the previous chapter that their chances of attacking us depend almost exclusively upon the healthy or unhealthy state of our tissues.

"It is when the vitality of the tissues is reduced that microbes find conditions most favourable for their development. A healthy man can resist the action of microbes. It is when he gets run down in health that he becomes a prey to them," says Professor Oliver.

The state of health of the tissues is again, as we have seen, dependent upon the condition of the blood. The blood, in its turn, is a composition manufactured by the living cells of the glands of the body, of the alimentary canal, the lungs, the skin, the bones and the kidneys. The lungs require an unlimited supply of fresh pure air and the alimentary canal a supply of fresh and pure food of the kind for which it was originally intended, and by which it was gradually built up.

Given all these conditions, the blood will be of the right kind and keep all the various organs of the body in a healthy state. If, however, the quality of the blood is not up to the highest mark, then all the cells and organs of the body will suffer accordingly. Waste products will accumulate and paralyse the activities of the cells in the same way as the injected chemical bodies referred to in the description of Dr. A.A. Kanthack's, Dr. Cramer's, Dr. Gye's and Dr. Kittle's experiments in the previous chapter.

An increase in the toxicity of the blood seems to produce a general "kataphylaxis" or "defence rupture" in the same way as colloidal silicic acid, when injected, facilitates tuberculous infections in animals, and calcium salts give the gas gangrene microbes a chance they would otherwise not have had.

Experiments made during a period of more than thirty years have convinced me

that common colds are produced in no other way. A gradual increase in the general toxicity of the system towers the vitality of the tissues and consequently diminishes the resistance of the cells to invaders.

Thousands of laymen have discovered long ago that colds generally diminish on a diet from which meat, fish, poultry, cheese and eggs are excluded. It is true that many vegetarians have failed to a certain extent in their attempts to stamp out colds in themselves. But this is due to the fact that most of them have relied upon diet alone, forgetting the enormous importance of exercise and fresh air. My own immunity to colds seems in the last analysis to depend upon my nights in the garden. When forced to sleep indoors, whilst travelling, and to spend days and nights in stuffy railway-carriages and steamship-cabins, my resistance to colds seems to be gradually lowered. This manifests itself chiefly by my nose getting clogged occasionally in the mornings. No symptoms of colds have ever developed beyond this point and have quickly disappeared as soon as I have been able to resume my usual daily habits of long morning walks and sleeping in the open.

Bouchard considers a good daily supply of oxygen as one of the best means of fighting toxæmia.

"Those things which are especially toxic," he says, "are the products of life without oxygen. Increase the free oxygen and you will only moderately increase disassimilation, but the products of this disassimilation will be much less toxic. I have seen exposure in compressed air diminish by more than one half the urinary toxicity."*)

*) "Bouchard's main contention is that it is through the eliminating powers of the emunctories (the excretory organs) that auto-intoxication is prevented. To this safeguard we might add the influence of chemical changes determined by processes of oxygenation and de-oxygenation, that are normally occurring within the organism. By means of these processes poisonous substances are deprived to a large extent of their toxicity.

"Taking i n d o l as an example of a putrefactive toxin formed in the intestines during digestion, this is known to possess poisonous properties. After absorption indol in its passage through the liver is primarily oxydized by the hepatic (liver) cells into i n d o x y l, which, subsequently with sulphuric acid, is converted into indoxyl sulphate of potassium: a body not only less toxic than indol, but one more easily thrown out by the kidneys." (Oliver).

Now, cold air acts very much in the same way as compressed air, sometimes, as we have seen, containing nearly 25% more oxygen per breath than warm air. Hence the three most powerful means of keeping toxicity at bay are a non-putrefactive diet, plenty of exercise and an out-door life.

"Muscular effort in the open air suppresses 3/10 of the toxicity of the blood." (Bouchard).

"One day of great muscular activity, spent in the open air, in the country, diminishes the toxicity of the twenty-four hours by one-third, and on that day the toxicity does not diminish only during the time devoted to muscular exercise. The toxicity, which diminishes during exercise, remains less during the repose which follows this work and during the sleep which succeeds this day of muscular activity." Bouchard puts these facts down to "organic substances, incompletely oxydized, whose toxicity diminishes in proportion as oxydation is more completely effected."

This is what many have experienced over and over again after a day of muscular exercise in the open. The best means of inducing sleep is not drugs but out-door life, fresh air, plenty of exercise and an anti-putrefactive diet. These means will never fail, except when the ruin of the human system through wrong living has gone too far and brought about irreparable damage, manifesting itself in organic troubles and chronic

disease.

Bouchard's highly interesting researches and findings, so grossly neglected and wantonly overlooked by those whose business it is to lead and guide us in our daily life, will be fully dealt with in a further volume - "How We Are Poisoned".

XVIII.

THE AUGEAN STABLE OF THE TWENTIETH CENTURY.

Bouchard's appeal to the doctors not to let themselves be absorbed in the search for microbes only, but also to study the circumstances which disarm the body against invasion by them, fell upon stony ground as far as the bulk of the doctors was concerned. Only a minority has ever seemed to realise the momentous importance of his findings, among them *Dr. John Harvey Kellogg*, Superintendent of the Battle Creek Sanitarium, U.S.A. - the largest in the world, where more than a quarter of a million patients have been treated - and England's foremost surgeon, *Sir W. Arbuthnot Lane*.

Lane's career is remarkable. In the firmament of fame his star must be classed among those of the first magnitude. *Dr. Victor Pauchet*, one of the leading surgeons of France, calls him "the greatest surgical genius England has produced". - Due to him is an entirely new principle in the operative treatment of fractures: "the principle of internal splints" or the adjustment and fixation of broken parts of bone with screws and plates instead of outward splints and bandages. "Until April 1894," states *Sir Arthur Keith*, "surgeons sought to maintain apposition and immobilization of fragments by means of external splints. Arbuthnot Lane conceived the idea of internal splints." - *Dr. Rudolph Matas*, president of the American College of Surgeons, writes: "Lane gave us a metallic plate, and the mechanical implements which, modified in many ways, have been instrumental in transforming the old methods of bone-setting into a finished osteoplastic art. He gave us a new outlook on the treatment of fractures, and created a veritable renaissance in the history of the traumatology (injuries) of the skeleton. He taught us new methods by which to overcome many hitherto insuperable difficulties in the cure of cleft palate. He taught us how to save lives that would otherwise have been lost, from the migration of acute ear infections, by the timely ligation and excision of the jugular vein. He taught us the secrets of a new technique, based upon a mastery of anatomical detail, which made the extirpation of the entire colon a feasible and legitimate operation."

Ask ten Continental or American surgeons about Lane and they will all tell you as much. But perhaps not even one in ten will know anything about Lane's greatest discovery, that of a cesspool inside the human body poisoning all its organs and cells and breeding disease, very much in the same way as the poisonous emanations from the cesspools within the palaces and castles and in the streets, court-yards and farm-yards of the sixteenth century produced the great plagues and innumerable minor scourges which slew the town populations and laid waste the country-side.

It was perhaps the result of the excision of the entire colon, in which Lane was a recognized master, that led him to his great discovery. In case after case he found this operation led to the most miraculous results. All kinds of troubles in the various organs of the body, especially of a tubercular and rheumatic kind, disappeared as if by magic a few weeks after the extirpation of the big bowel. Here is an instance described on page 90 of his volume: "The Operative Treatment of Chronic Intestinal Stasis":

"A man, age twenty-two years, was sent to me in order that I might amputate his hand and wrist.

"For six or seven months the right wrist had been very much swollen and very painful. During this time it had been treated by absolute rest, diet, and drugs without its steady increase in size, pain, and uselessness being at all influenced by treatment. Colectomy (excision of the colon) was performed. *He made an uninterrupted recovery, left the hospital three weeks after the operation, and was shown at the American Congress of Surgeons in July, 1914, when the swelling of the wrist had almost entirely disappeared.*"

The work just referred to is full of similar instances.

"What can be more startling," says the author on page 86, "than the effect of colectomy upon a case of acute rheumatoid arthritis! One sees a patient who has lain on her back in agony for many months, or even years, dreading any movement in her swollen and painful joints. *Within twenty-four hours after the colon has been removed the patient is able to move every joint in which bony ankylosis*) had not previously existed, with great freedom and with absence of pain.*

*) A diseased condition of a joint in which the movements are restricted by fibrous bands, or by malformation, or by actual union of the bones.

"To see these patients rapidly regain freer and freer movements in those diseased joints, to see them progressively restored to health and happiness, and to watch their weight go up by leaps and bounds is a joy to the surgeon.

"A girl of ten and a half years, a helpless cripple, weighing 49 lbs. was operated upon (short-circuited**) in November 1911 and *completely cured. In December 1912 she weighed 87 lbs.*"

**) Colon completely removed and the lowermost end of the small bowel joined to the rectum.

A boy of six and a half years, suffering from Still's disease, showing glandular and splenic changes - stiffness in the neck with painful and tender joints, unable to walk, extremely wasted, with an adherent pericardium, *showing X-ray evidence of chronic intestinal stasis*, was operated upon in a similar way, and improved steadily, both as regards his joints and his general health. This boy was also shown to the American surgeons at the Congress in July, 1914, where he delighted his audience by describing *how he saved the reputation of his school by making a large number of runs.*

"In spite of this success cases of Still's disease are allowed to progress to the post-mortem room without being afforded the only known means by which they can be cured," says Sir Arbuthnot Lane.

Raynaud's disease is a condition in which the circulation becomes obstructed in outlying parts of the body. It manifests itself in the occurrence of "dead fingers", the fingers or the toes, ears or nose becoming either white, numb, and waxy-looking, or swollen, purple, and tingling. In advanced cases the circulation becomes so much cut off that the part dies and a localised gangrene results. In a case of this advanced condition, where the hands were without feeling, very swollen and fixed in a bent position, so that the patient was unable to grasp or hold anything, and the tips of three fingers had been lost from dry gangrene, colectomy was performed. *"The hands recovered at once, and seven weeks after operation were in perfect condition."* The man, who was twenty-four years old and had suffered from this disease for nine years, went to a convalescent home and then resumed his old occupation as a printer.

Perhaps the most remarkable results of all have been obtained in cases of exophthalmic goitre, a disease in which there are various forms of enlargement of the thyroid gland in the front of the neck.

"The thyroid plays the part of the governor of an engine and regulates the functions of the body," says Sir Arbuthnot Lane. "It frequently becomes enlarged because of the unusual work entailed in people who suffer from constipation, when its tissues undergo various degenerations. In uncomplicated stasis (stagnation of the bowels) the thyroid wastes till it may be imperceptible to the finger. *It gradually but slowly increases in size after colectomy.* What the organisms or toxins are that determine the development of general hypertrophy (increase in size as the result of an increased amount of work) of this gland, of exophthalmic goitre or of adenomatous changes (a destruction of tissues) in this organ, I do not pretend to explain, but this I know, *that in every case suffering from these conditions in which we have performed colectomy the disease has disappeared completely.*"

"To treat this malady simply by removal of a part of the thyroid gland by a surgical operation, or by partial destruction of the gland by the X-ray without giving attention to its cause, is certainly irrational, since the enlargement and activity are the effects, no doubt, of the absorption of toxins from the intestinal canal," says Dr. John Harvey Kellogg on page 512 of his excellent book "Colon Hygiene"; and he adds: "I have seen numerous cases make excellent recoveries without operation, by rest, a strict anti-toxic diet and change of the intestinal flora."

According to Sir Arbuthnot Lane and other prominent surgeons and physicians, almost every chronic disease known is directly or indirectly due to the influence of bacterial poisons absorbed from the intestines. "The colon may be justly looked upon as a veritable Pandora's box, out of which come more human misery and suffering, mental and moral as well as physical, than from any other known source."

"The blood is the universal provider and purifier of the tissues and organs," writes the eminent radiologist *Dr. Alfred C. Jordan*, C.B.I., in an article "Constipation; causes and results". (New Health, March 1929) "But if the blood conveys poisons in its stream, the tissues, instead of being fed and purified, will be damaged and finally destroyed. Who can then foretell where a sudden breakdown will occur? It may be at some point in the diseased system, but it may equally well be anywhere else: in the joints, producing various painful rheumatic complaints; in the nerve-sheaths, causing sciatica or other painful neuritis; in the lungs, causing asthma, bronchitis, etc.; in the heart, with alarming symptoms; in the eyes, the ears, the reproductive organs, the brain, etc. - *no organ or tissue is safe.*"

When the tissues of the body have been degenerated by prolonged bowel poisoning or intestinal auto-intoxication, cancer is finally produced.

How has all this come about? - The answer is given by Lane in a masterly little book, a chef d'oeuvre of popular writing and scientific reasoning: "The Prevention of the Diseases peculiar to Civilization."

"No Bolshevist has yet written so revolutionary a pamphlet," says Mr. George Bernard Shaw, referring to Lane's exposition of the anatomical influences which our surroundings exert on us.

After devoting years of study to the ways in which different occupations transform the anatomical structure of the bones in modern civilized man, Lane turned his attention to the intestines and other viscera, expecting that he would find them subject to similar modifications owing to the great changes which have taken place in our mode of living during the last few centuries. His labours were soon rewarded by the discovery of what is now called *Lane's Bands and Kinks*. These are a kind of new growths or formations which impede the movements of the big bowel and keep its contents back, thus turning this great organ into a veritable cesspool, where all kinds of disease-breeding microbes flourish and whence their poisonous excretions spread

all over the body. This state of affairs Lane describes as "*chronic intestinal stasis*" which, in plain English, means "*habitual intestinal stagnation*". - "Lane only saw and explained what thousands of anatomists and surgeons before him had had under their eyes but did not understand," says Dr. Jordan.

"Lane gave us a new view of the mechanism and effects of chronic intestinal stasis," writes Dr. Matas. "In doing this, he pointed to hitherto undescribed *anatomical anomalies* and *pathological membranes* which retarded the faecal (excremental) circulation, now familiar to us as Lane's kinks. But, more than this, he created a new clinical picture of chronic intestinal toxæmia (poisoning), which is known as *Lane's disease*."

This disease is described by Lane himself, on page 49 of the above mentioned booklet, as follows:

"The matter collecting and stagnating for an excessive period of time in the big bowel or cesspool becomes permeated by an excessive number of the micro-organisms which normally inhabit this portion of the bowel and which tend to assume an unusually virulent type; or other more dangerous micro-organisms may develop in the decomposing contents. These micro-organisms irritate and inflame the mucous membrane, causing painful spasms of the muscle wall, and this inflammatory process readily involves that little worm-like body, the appendix. Indeed, it is not unusual for the symptoms resulting from inflammation of the appendix *to be the first serious evidence of the effects of constipation*.

"This infection of the stagnating contents of the colon by virulent micro-organisms is most marked in its commencement where the contents tend to stagnate longest. These micro-organisms readily escape from the large bowel and, entering the end of the small intestine, grow there rapidly in its sterile contents. In proportion as the level of infection of material in the small intestine, from which the body obtains its nourishment, rises, in that degree is there picked up by the blood vessels and lymphatics a larger amount of micro-organisms and of deleterious matter than the liver is able to deal with effectually. *In consequence of this impregnation of the blood, there is carried by the circulation to every cell in the body blood impregnated more or less extensively with micro-organisms and with the toxins or poisons they produce*. These annoy and irritate the cells in the kidney by which they are eliminated and the surface of the lining membrane of the bladder and kidneys over which they pass, and much disease arises in consequence.

"The thyroid and other ductless glands become more active in order to stimulate the several tissues to deal with these by-products. The thyroid plays the part of the governor of an engine and regulates the functions of the body. It frequently becomes enlarged because of unusual work entailed, and its tissues undergo various degenerations. The impure blood supplied to the several cells composing the body, and the consequence of their impaired drainage, lowers their vitality and resisting power, so that they are very liable to become invaded by micro-organisms and toxins which could not for an instant affect or secure a foothold in a healthy soil, and disease and degeneration result in consequence.

"The particular part of the body which suffers most from the results of imperfect nutrition of its component cells varies greatly with the age of the individual. Such evidence of malnutrition as is comprised under the term 'rickets' occurs very early in life. In later life arise infection of the lymphoid material of the nose, throat and tonsils, of the middle ear, and of the lungs; pyorrhœa and rheumatic infections with associated heart troubles; tuberculosis commencing most commonly in the glands draining the infected end of the small bowel; colitis, appendicitis, ulcers of the

duodenum and the stomach; degeneration and inflammatory changes in the prostate, kidneys, heart and blood vessels; rheumatic gout; and finally, *when the tissues of the body have been supplied for a sufficient length of time with foul blood, some degenerated organ or tissue forms a soil suitable to become infected by cancer.*"

"Lane's disease" has in reality turned out to be "the disease of diseases". No wonder the excision of the big bowel or colon seemed to affect the clinical picture of the whole body, causing deep-rooted diseases of long standing to disappear in a few days or weeks - making "the blind see, the lame walk, the deaf hear", etc. No wonder that Pasteur's successor, Professor Metchnikoff, proclaimed that "the big bowel was not merely useless, but a dangerous encumbrance which should be cut out, as a routine measure, at the earliest opportunity", and that his assistant, Dr. Distaso, actually stated: "Every child should have its large intestine and its appendix surgically removed when two or three years of age. My experiments have proved that we should all of us be better off without a large lower intestine, which is nothing more or less than an ideal breeding place for disease germs. *Almost every chronic disease may be traced back to the harmful action of these germs.*"

Lane himself, however, in spite of having taught the surgeons of the world "the secrets of a new technique which made the extirpation of the entire colon a feasible and legitimate operation," did not subscribe to these views. A fact that struck him most forcibly was the almost total absence of all these diseases in savages and people who had not adopted the modern civilized way of living. He quotes *Colonel McCarrison*, employed by the Indian Government to study food in relation to health and disease, whom he considers "one of the most able and practical researchers in the world, combining a very thorough laboratory knowledge with an extensive medical experience - a combination which is as ideal as it is rare among researchers".

McCarrison writes: "For nine years of my professional life my duties lay in a remote part of the Himalayas, among isolated races, far removed from civilisation. Certain of these races are of magnificent physique, preserving until late in life the characteristics of youth; they are unusually fertile and long-lived, and endowed with nervous systems of notable stability. During the period of my association with these people (nine years) I never saw a case of asthenic dyspepsia, of gastric or duodenal ulcer, of mucous colitis, or of cancer, although my operating list averaged over 400 operations a year."

Lane considers this statement irrefutable, and supplements it with some corroborative evidence by *Dr. Ernest H. Tipper* from his book "The Cradle of the World and Cancer - a Disease of Civilization":

"The average daily number of cases seen during my twenty years' service in West Africa was about sixty, exclusive of official rating, yet *I only saw six cases of cancer altogether*; five of these were in coast stations, the other one away in the grass country, but *not one amongst those two million people in the heart of the Niger Delta; and I only once came across a case of appendicitis when in charge of a coast station, and that was not a clear case.*"... "The Equator is the cradle of the world. Amongst the race of which I write, where conventionalism is absent and food perfectly natural and abundant, where the natives have never lost touch with the first principles of feeding, *and there is no such thing as constipation, there is no cancer.* At the first dawn of civilisation amongst them this disease makes its appearance; *where civilization is advanced, cancer is rife.*" ...

"In the case of cancer, *constipation and excessive meat eating should be the two suspects, when they are present cancer is rife, where absent there is none.*"

In quoting this statement Sir Arbuthnot Lane adds: "The association between meat-

eating and cancer is well shown in civilisation by the prevalence of cancer among the short-lived butchers and its comparative rarity among the long-lived clergy and farm labourers who eat very little meat. These same natives of Africa when placed in intimate association with members of a white race gradually acquire their diet and habits, and in proportion as they do so they become affected by the diseases which may be best designated as the *diseases of civilization*. In Chicago the coloured population suffers from cancer in the same ratio as do their white brothers."

McCarrison and Tipper are not isolated cases. A host of other medical men and researchers all over the world have, as J. Ellis Barker has so ably shown in his two thorough and comprehensive volumes on Cancer, observed the same facts and come to exactly the same conclusions.

The truth is, that during the last few centuries something like a complete 'landslide' has taken place in the habits of the European peoples in living and, above all, in feeding. If the consumption of meat per capita in Great Britain alone has increased within the last fifty years from 3 lbs to 50 lbs a year, it is not to be wondered at that the death-rate from cancer has, according to the report of the British Ministry of Health in 1923, increased *seven times* since 1838. In a single State, Massachusetts in the U.S.A., the cancer death-rate increased more than five-fold between 1856 and 1913. In Boston alone the cancer death-rate has advanced from 65.4 in 1881 to 119.9 in 1914 per 100,000 of the population. In Europe, Switzerland stands foremost among the cancer stricken countries with a death-rate of 124.3 per 100,000, followed by Holland with 106.4, Scotland with 103.0, Sweden 98.3, England and Wales 97.6, according to statistics available for 1908-1912.

In races and people who exclude meat, fish, poultry, etc. from their diet and subsist chiefly on vegetables, fruit, milk and milk products, the cancer death-rate is correspondingly low, or non-existent. The same applies to all the other so called "diseases of civilization".

Is this to be wondered at? - A poisoned cell cannot possibly perform its functions in the same way as a healthy one. On the contrary, it deteriorates, runs wild and becomes, like the microbes poisoned by their own excretions or by putrid food, a marauder, a villain, ready to attack and destroy the surrounding tissues and organs in its quest for booty.

"Cancer never affects a healthy organ," says Sir Arbuthnot Lane.

Nay, a cell that is kept in a healthy state, i.e. free from the poisons of its own excretions, will live for ever. *It is immortal.*

It was in 1911 that Dr. Alexis Carrel of the Rockefeller Institute startled the world by his announcement that for the first time he had succeeded in growing living tissue on micro-scope slides, thereby proving that the same cells which constitute a part of our body and are fed by the blood-stream, could thrive and develop outside the body, provided that they were properly nourished and their excretions carefully washed away. If, however, the material they evacuated was not removed daily, the cells soon became languid and feeble, and if left for a longer period they died *in spite of being well provided with food*. Again, if no food was supplied for some days but their evacuations were carefully removed so that the surrounding fluid was kept clean and wholesome, *the cells showed no signs of deteriorating and quickly picked up when again provided with food.*

Carrel's experiments made a profound impression upon Sir Arbuthnot Lane who actually visited him in 1911 and saw the cells growing. On page 42 of his book: "The Prevention of the Diseases Peculiar to Civilization" he writes:

"The cells which I saw growing in New York in 1911 are growing still, and will

probably continue to grow indefinitely as long as they are provided with a daily meal and a daily evacuation. In other words there is no such thing as death of living tissue providing its drainage is perfect and it obtains a sufficient supply of food. When the drainage of these tissues is not properly attended to, the component cells do not die of starvation, but of *auto-intoxication*. The same applies to humanity in general. While a very small proportion of people living in a state of civilisation die of starvation, an immense number die from *constipation* and its innumerable consequences."

Nothing is at a standstill in Nature. Everything seems to be performing some kind of work, to be moving on. This rule applies especially to living matter. Here stagnation is fatal.

Our digestion has its own rhythm. Wave after wave is propagated in the muscular walls of our alimentary canal when at work. The food is pushed forward from one station to another, from the mouth to the stomach through the oesophagus, from the stomach to the duodenum or U-shaped intestine, from there to the twenty feet of small intestine, where most of its content is absorbed. The small intestine joins the Colon or big bowel almost at its lowest point in the right groin. From here the food-residues are pushed upwards towards the liver, then across the abdomen towards the spleen on the left side where the big bowel reaches its highest point and from where the food residues drop down towards the rectum. The food is generally retained in the stomach for about four hours at the most. The journey through the duodenum and small intestine requires another four hours. After about eight hours the residues of a normal meal have passed into the Colon where they have only six feet to travel in order to reach the exit.

Twenty-two feet in eight hours or nearly three feet per hour!

You would think that the remaining six feet would require only about two hours. But no! Even in the healthiest of men and in man's nearest relatives among the animals, the gorilla and the chimpanzee, another six hours at least are required before the residues can leave the body, because of special processes which take place in this part of the alimentary canal. This is normal. In civilized man, however, the food residues are kept back in the big bowel from three to ten times longer, or from 18 hours to some three or four days if not more. This is abnormal and due entirely to civilized man's changed way of living.

A healthy man should have as many easy and complete evacuations as meals. His stools should be of the consistency of porridge and free from offensive odour.

Thirty years ago (1906) when visiting the stables and cages of wild animals after a performance at the London klippodrome, I got my brand-new suit splashed by a chimpanzee which sat grinning at me on one of the beams under the roof. The distance was at least thirty feet, and I could not help admiring the dexterity of that monkey, though, of course, I felt rather upset about my soiled suit. However, the manager, whilst apologising profusely, tried to console me by saying that "a monkey's output was the cleanest in the world, leaving no trace and being entirely devoid of offensive odour." To this I could testify, and my suit was actually cleaned - at least to temporary satisfaction - by the manager himself with only cold water and a sponge.

On the way home I could not help wondering why we humans are so offensive in our habits whilst our nearest relatives in the animal kingdom are miles ahead of us - or at least thirty feet above us - on the very point where cleanliness matters most.

Now, I take off my hat to the monkeys. In trying to play a dirty trick on me, one of their representatives gave me instead a demonstration of "inner cleanliness" which I have never been able to forget and which presented me with a problem, for the solution of which I have been in search for many years. I might have been searching

still if Sir Arbuthnot Lane's main work - "The Operative Treatment of Chronic Intestinal Stasis" - had not fallen into my hands. As a result my own bowels are now normal with three to four complete motions a day, and my stools are almost equal in cleanliness to those of the monkey. My health has improved correspondingly. I am tireless in my work. I can walk for miles and participate in all kinds of sport without getting out of breath or feeling tired and stiff. I am unhampered and easy. Life is a joy.

All this I owe to a great discovery by one of the greatest of Englishmen - nay, one of the greatest of human beings of any country and any time, Sir Wm. Arbuthnot Lane.

XIX.

HOW THE XX CENTURY AUGEAN STABLE WILL HAVE TO BE CLEANED.

In paragraph 9, "Towards New Health", of his book: "The Prevention of the Diseases Peculiar to Civilization" Sir Arbuthnot Lane writes:

"The greatest of all physicians, Hippocrates, used to urge upon the citizens of Athens that it was essential that they should pass large bulky motions after every meal, and that to ensure this they had to eat abundantly of wholemeal bread, vegetables and fruits. Today the medical profession in general regard one action of the bowels daily as being sufficient for health. On this I can only comment that the modern doctor is not following the precepts and practice of his great predecessor, and that knowledge of diet has not formed an integral part of his education."

At the dawn of the history of modern medicine the great figure of Hippocrates looms large on the horizon. He was the first to cast superstition aside, to dissociate medicine from priest-craft, and to base the practice of medicine on observation alone. "When we come to study his observations on the natural history of disease as presented in the living subject we recognize at once the presence of a great clinical physician," states Encyclopaedia Britannica.

Hippocrates was born in the first year of the 80th Olympiad, i.e. 460 B. C., and is said to have died at the age of 109.

One of his statements runs as follows:

"Strength, growth and nourishment result from right food. It appears that every physician should be a skilled student of Nature. *If he wishes to perform his duties properly he should strive to know the relation which exists between the health of men and the articles of food and drink which they consume, and the effect of the various occupations and pursuits upon the physique.*"

When it comes to "the relation which exists between the health of men and the articles of food and drink which they consume" ninety-nine out of every hundred doctors are as ignorant as babies. The diseases that have ravaged my life and those of all my relatives and friends bear witness thereto. Whatever I know on this subject I have had to acquire through practical tests and lifelong research. If I had relied upon the knowledge of the majority of doctors and on their advice as to what I should eat and how I should live, I should have been dead long ago.

I know of only one medical man who has been a "skilled student of Nature" according to Hippocrates. In writing on "the effect of the various occupations and pursuits upon -the physique" he produced a work which Bernard Shaw considered more revolutionary than anything the Bolshevists had ever written. Again, in "striving to know the relation which exists between the health of men and the articles of food and drink which they consume", he became the originator and leader of a movement which will prove to have a more revolutionary effect upon civilized man's mode of living, social affairs and moral and mental outlook, than any other movement hitherto known.

It is true that the so-called vegetarians started a diet-reform movement long ago. But this movement has failed to gain general support chiefly because the majority of

vegetarians, through their large consumption of protein food and ignorance of the functions of the big bowel, have proved to be almost as constipated as meat-eaters and therefore also subject to most of the "diseases of civilization", including cancer.

Hippocrates' standard of habits for a healthy man is *two or three evacuations during the day and one at night*, as stated in chapter XI of his book, Prognostics:

"The excrement is best when it is soft and consistent, which was passed at the hour, which was customary to the patient when he was still in health, and which is proportionate in quantity to the food taken. If these conditions are fulfilled, then the abdomen is in a healthy state.

"In proportion to the food taken the patient should have evacuations twice or thrice during the day and once at night, and his stools should be more copious in the morning, as is customary with people who are in good health."

According to Hippocrates no man is in good health who does not live up to this standard.

Sir Arbuthnot Lane takes very much the same view. He has, after a life-long study of the alimentary canal in health and disease, come to the conclusion that the evacuations should be at least as many as there are meals, and plentiful each time. "The quantity of material expelled from the bowel and the period of its expulsion should vary directly with the input in the stomach, and should occur as automatically and regularly as the discharge of the contents of the cesspool of the house into the street drain. The amount of the motion evacuated should vary in bulk with that of the meal and especially with the amount of indigestible material or roughage contained in the food. Its consistency should be that of porridge."

The same standard of motions is now advocated by a number of modern surgeons and leading physicians.

In his work, *Colon Hygiene*, 1923, pages 117 and 119, Dr. Kellogg writes:

"That one bowel movement a day is normal and efficient evacuation of the bowels, is another error which is universally entertained. One bowel movement a day is a positive indicator of constipation. X-ray examinations of the colon after a test meal show that in persons whose bowels move once a day the body-wastes are usually retained for fifty hours or more.

The bowels should move *at least three times a day* or after each meal. Four movements daily is a still better rhythm and is easily established by a biologic regimen. This the writer has proven not in a few exceptional cases but in thousands of patients who have been willing to take the trouble to train their bowels by means of a proper diet and other simple and natural means."

Dr. Kellogg finds that this is only what has been and still is normal in man and his nearest relatives in the animal kingdom when in a state of health. On pages 8 and 265 of his book "Auto-Intoxication" or "Intestinal Toxaemia", 1922, he states:

"From inquiry through a questionnaire sent to a large number of physicians, chiefly medical missionaries, located among primitive people, I have learned that three or four bowel movements a day is the prevailing habit among people who live in a natural or savage state. A physician, located among the Bushmen of South Africa, related the following incident:

"A Bushman called for relief of constipation. The physician asked him, "When did your bowels move last?"

"This morning, Doctor," was the reply.

"But," said the Doctor, "I thought you said you were constipated?"

"I am, Doctor," the native replied, "I am horribly constipated. My bowels move only once a day."

"The late Dr. Sheppard, who practised surgery for 30 years among the natives of Turkey, informed me that three bowel movements a day is the universal habit of the peasant people of Turkey. If the bowels fail to move three times a day a physician is promptly consulted.

"The normal intestinal rhythm is three or four bowel movements daily, or at least one movement after each meal.

"The chimpanzee and other of the larger apes move their bowels three or four times daily. I was informed by the animal keeper of the London Zoo that the large apes in that great collection uniformly move their bowels four times a day.

"By correspondence with many missionary doctors practising among primitive people in Africa and other foreign countries I have learned that the bowel habits of people living in a wild or primitive state are identical with those of the higher apes."

On pages 93 to 95 of his "Diseases of Civilization", Sir Arbuthnot Lane makes the same statement:

"The public have very little idea as to how much motion they must evacuate or of the great quantity that is evacuated after each meal by vigorous healthy natives living on their usual diet in normal conditions.

The male gorilla passes between 25 and 30 pounds of motion by his bed every night. It is easy to determine this, as he makes a large bed in a separate place every day, never occupying the same bed on two following days. To obtain the necessary amount of nutrient material from the food which he obtains from the wild, he must eat a vast amount, and this explains the quantity of undigested material which he evacuates.

"If we in civilisation hope to obtain a regular action of the bowels, as is required for health and strength and for the avoidance of all those diseases and conditions which I somewhat crudely but accurately describe as '*filth manifestations*', it is necessary that we should eat large quantities of such food as will provide us not only with enough nourishment but also with the wherewithal to secure efficient action of the muscle wall of the intestine."

As regards diet Sir Arbuthnot Lane insists that "we must make a habit of eating *more fruits*, preferably uncooked". While all fruits serve a beneficial purpose, the grapefruit, the *orange* and the *lemon* in particular should enter largely into the diet. The same applies to *wholemeal* in various forms; *milk* and milk products; *vegetables* of all sorts, especially potatoes - "which make such wonderful Irish police and beautiful, vigorous, healthy Irish women" - should form a large proportion of a least one meal; *salads* with plenty of olive oil and especially containing such ingredients as are very green from the presence of chlorophyl, which requires for its development the action of the sun.

In addition to this Sir Arbuthnot Lane advocates *water*, drunk at adequate intervals between meals but not with meals, and the development of the *abdominal muscles* by suitable exercises.

"The necessity of executing one action after each meal," he says, "cannot be emphasized too strongly, and, as in the vast majority of people, the evacuation has been for years limited to one action a day, patience in resuming the normal habit, as insisted upon so long ago as 2300 years by Hippocrates, is essential.

"If you drink enough water, if you eat just the necessary food in sufficient quantity, and develop the abdominal muscles by suitable exercises, it is surprising how soon you will regain *that regular normal habit of evacuation by which alone health, happiness and freedom from disease can be ensured.*"

"So long as the body-wastes are disposed of in this prompt and normal manner,"

writes Dr. Kellogg, "the terrible effects which arise from intestinal toxæmia or auto-intoxication are not seen. The skin is clear, the tongue clean, the breath sweet, the appetite keen, the mind active, optimistic and serene, sleep sound and restful, endurance great and resistance high."

"Unfortunately," continues Dr. Kellogg, "this happy state is seldom met among civilized people who have advanced beyond the age of infancy."

"A very large number of people who go regularly to stool once a day, void a quantity which, though satisfying to themselves, is from a physiological standpoint fantastically insufficient", states *Dr. Leonard Williams* on page 114 of his book, "The Science and Art of Living", 1925. "They relieve not the whole of the large intestine, but merely a third thereof, leaving the poisons from the remaining two-thirds to be reabsorbed. When the contents of this tube are but partially evacuated, the matter which remains behind, distends the lumen (width) of the tube and *converts it into a miniature lake, a cesspool in fact*. The weight of the cesspool is considerable, and it dislocates the whole tube downwards as far as it will go."

One of the fundamental laws governing the big bowel is, according to Lane, that its last part or third section, where the excrements accumulate, "*has been evolved for thousands of years to accommodate an amount of material which bears a certain proportion to the input*".

"The single evacuation a day entails that the result of twenty-four hours digestion shall stagnate in this section of the bowel."

The section concerned is the last half of the colon, from the splenic flexure or bend downwards to the rectum. Here the faeces normally gather in an S-like formation of the bowel before they are pushed into the rectum for evacuation. This S-like formation, which acts as a reservoir, is called the *sigmoid flexure* or the *Roman 'S'*, because of its likeness to the Greek final 's' which again is similar to the Latin capital 'S'.

It is this S-like bend or curvature which has to bear the first brunt of the burden in chronic constipation. Never intended by Nature to receive residues from more than one meal at a time, it is now forced to accommodate those of three meals or more. As a first result it becomes distended. Then it *dilates*, i.e. its strong muscular walls become weakened and flabby and are not able to contract and expel the matter properly. Evacuations tend to become increasingly difficult and insufficient in quantity. Faecal matter accumulates. There is a constant demand for more room to accommodate and pack (stipare) the residues together (con), hence "*constipation*". Nature solves the problem in the only way left to her. She extends the bowel. Generally the upper curvature of the Roman S, the so-called 'pelvic colon', becomes more and more elongated, finally forming a loop two to three feet long which paddles in the pelvis and offers a serious obstacle to the passage of material through it.

The pelvic curvature of the Roman 'S' is normally kept in position by membranes which attach it to the walls of the abdominal cavity. Because of the increase in size and weight of the bowel these membranes also grow in size and strength until they finally form bands which grip the bowel and fix it to the back wall of the abdomen, greatly interfering with its function and its capacity to transmit its contents by diminishing its calibre and "*kinking*" it, very much in the same way as an empty rubber tube is kinked by the nail upon which it hangs. The lumen or width of the colonic canal is thus reduced at these vital points, and this reduction further impairs the passage of waste material on its way towards the exit or vent.

In this way Lane's famous "*first and last kink*" is formed, called "*the first*", because it is the first to develop, and "*the last*", because it is the lowest in the gastro-intestinal

tract.

Lane enumerates and describes five chief kinks, three in the big bowel and two in the small one. They generally appear at the flexures or bends where the bowel makes a sharp turn and is firmly secured by membranes. When overloaded, the intestines are dragged down by the weight of their content towards the bottom of the abdominal cavity. Nature tries to counteract this tendency by strengthening the membranes which continue to grow in thickness until they form bands, thus kinking the bowel at the most vital places.

"This development", says Lane, "takes place already in the child in a very marked manner when the mother insists that one evacuation is sufficient for health. It has been in process of evolution almost from the birth of the child, since constipation or the stagnation of material in the large bowel is such a common state in civilisation, because of the very inadequate diet of the infant. The earlier this factor of stagnation comes into play, the more marked is the development of the bands which some observers considered congenital (inborn) and that they existed before birth.

"As time goes on, the obstruction in the end of the large bowel becomes a more marked feature, and the impact of stagnating and decomposing material on the wall of the narrowed segment sets up an infective or inflammatory process, which is accompanied by spasm of the muscle fibres that encircle it. In this manner the lumen or width of the anchored segment is still further reduced, while the infection of its lining membrane extends upwards along the length of the bowel, constituting a condition spoken of as *colitis*".

The spasm is due to the inflammation of the bowel, caused by the obstruction of the bowel-contents in the anchored part. This inflammation process, which is the chief feature in colitis, and which gradually extends from the first kink along the whole length of the large bowel, causes an accumulation of the stagnant content in the caecum or that part of the big bowel where the small intestine joins the *Colon*. The muscles of the ileo-caecal valve, separating the sterile content of the small intestine from that of the colon where bacilli normally exist and perform an important function, break down, having become inflamed and paralysed by the poisons of the stagnant material, which now get a free passage and spread through the delicate and highly absorbent walls of the small intestine into all parts of the body. Ulcers generally appear in the inflamed mucous membranes of the anchored parts of the bowel and later on become infected with cancer when the tissues of the body have been still further degenerated by prolonged bowel poisoning or intestinal auto-intoxication.

"This band formation, which in its initiation serves a useful purpose, later tends to bring about a series of mechanical and toxic changes which not infrequently destroy the life of the individual."

This is the anatomical and clinical picture Lane draws up of the evils which have befallen humanity through the wrong use to which it has put one of the biggest and most powerful organs of the human system. The great bowel or colon has revealed itself as a real danger, considerably shortening the span of life of every civilized human being, bringing about a host of diseases and organic defects, turning thousands into cripples and slaying other thousands.

Lane looks upon all these diseases and symptoms as nothing but "*filth manifestations*".

That mighty organ, the colon, encircling the abdominal cavity and intended by Nature to be a guarantee of health and a safeguard against toxins and dangerous enemies in the shape of hostile microbes, has been turned into a filthy moat, poisoning those whom it was intended to defend, very much in the same way as the moats of the

mediaeval castles, when turned into sewers, poisoned the inhabitants. And just as in mediaeval times special towers were built within the castles to serve as filth-reservoirs, so in the human system a special loop of the colon is laid out as a 'towering' reservoir for the stagnating residues of a sluggish digestion.

It was the water-craftsmen who finally cleared up the Augean stables of the sixteenth century. History repeats itself. We are horrified when we read about the filth manifestations of 400 years ago, never suspecting that we ourselves are suffering from similar conditions inside our own bodies, for the clearing of which, again, as 400 years ago, *water* is the first thing needed.

In an article on "Water Drinking and Health" in the *New Health Magazine* of August 1933, Sir Arbuthnot Lane writes:

"When we remember that nearly two-thirds of the human body consists of water and that five or six pints are excreted daily, the necessity for taking ample quantities of this element in the dietary is surely obvious. Water is a prime essential of life and of health. In a sense it is more important in the human economy than food, for, though we could exist possibly some weeks without any food, complete abstinence from water would have disastrous results within a few days. Unfortunately the health value of drinking large amounts of water is insufficiently appreciated by a great many people. They fail to realise the extremely vital part played by water in the functioning of the human machine, and that an inadequate supply has a depreciating effect upon the health of every cell within the body. To maintain a plentiful and pure supply of water is one of the most important of the many activities of the Public Health authorities, and it behoves all of us, in the interest of our personal health, to make full use of the water so provided.

Let us first consider what happens to water when it is drunk. Some of it is absorbed by the blood vessels in the large intestine and is distributed to the body cells whose waste products are thus enabled to be washed out into the blood-stream and are borne to the kidneys and skin, where they are excreted. The balance of the water passes through the intestine, rendering its contents more fluid and so assisting very materially in their rapid expulsion from the bowel. In all the fluids, of the body, such as blood and lymph, water acts as the general solvent, and by its means alone is the circulation of nutrient matter possible. It is the medium also in which all fluid and solid foodstuffs are dissolved before absorption, and it is the means whereby all excretory or waste products (excepting gases) are removed from the body. Secretion, excretion and nutrition are all of necessity dependent on the presence of water for their performance.

"One of the most important functions of water is to help in the removal of waste material. As a result of their vital activities the body cells produce effete substances which, if allowed to accumulate, act as poisons and would actually destroy the cells. Normally, the water in the circulating blood dissolves these waste products and carries them to the skin where they are excreted in the sweat, and to the kidneys where they are excreted in the urine. Then there is the food remains or waste in the intestines. If insufficient water is drunk, there is stagnation and desiccation of the bowel contents. Constipation is the sequel, and this brings in its train a host of evils to health. Septic material makes its way into the small intestine, the contents of which are normally sterile: the poisons are absorbed into the blood-stream, and every tissue in the body suffers grievously in consequence.

"Now, if we keep our excretory organs a hundred per cent efficient, we have won two-thirds of the battle for health. By so doing we prevent the accumulation of poisons in any corner of our bodies, and our cells are vigorous and well able to

combat and overcome any germ infection which may assail them. *Let them become debilitated by circulating poisons and they are at the mercy of any disease-producing agent. It cannot be emphasised too strongly that sound health and sound excretion go hand in hand, and that the abundant drinking of water, pure and fresh, is the best, easiest and most natural method of helping the eliminating organs to rid the body of all impurities.* By this simple means it will be possible to preserve the skin clear and fresh; to enable the full value of the food to be obtained; and to maintain the kidneys in sound working order".

Dr. J. Harvey Kellogg is of the same opinion:

"Water drinking is an internal bath; it dilutes the fluids of the body in which the cells and fibres are bathed; it purifies the body by diluting the medium in which it lives. By the free use of water the movements of the mass of liquid in which the living elements of the human body perform their work, are quickened, and the stream of life runs clear and pure. It has been shown that water is absorbed from the stomach very slowly. Absorption takes place chiefly in the intestine. The presence of mineral salts of any kind lessens the rate of absorption.

"Examination of the urine shows not only that the quantity is increased by water drinking, but that the urea and other solid constituents are also increased.

"Baron Liebig showed long ago (and his observations have been many times confirmed) that water drinking powerfully influences metabolism, increasing both assimilation and disintegration, but especially the former.

"When the amount of water supplied to the body is sufficient, the condition of the body becomes in some degree comparable to that of a stagnant pool; while an abundant supply of liquid so encourages its activities that it may not inaptly be compared to the flowing mountain stream. Water is not a mere mechanical conveyor of poisons out and of food in; it is a powerful vital stimulant."

These are the opinions of two of the leading "Water-Craftsmen" of the twentieth century, both fighting, as physicians, the "inner filth-manifestations" of our bodies, and thus continuing the work which was foreboded in one of the labours of Hercules, and which has gone quietly on in Europe at long intervals, ever since the Romans built their first aqueducts and baths, and the Water-Craftsman Hans laid the pipes which carried pure, clear water from the Horse Well outside Elsinore into that plague-stricken city.

XX.

THE GOAL - AT LAST!

After having carefully read Sir Arbuthnot Lane's works and applied his principles to my life I began to see daylight.

Theoretical knowledge is not real knowledge until the theories have been thoroughly tested in life itself, i.e. proved or disproved by the results obtained when put to the test.

Much of our so-called 'knowledge' is only dead theory - intellectual garbage. *Truth is living.*

The curious thing about Lane's theories is that though they are so simple and obvious yet they seem to be proportionately difficult for most people to carry out in daily life. People instinctively feel that his ideas cannot, as can so many other ideas, be 'enjoyed' intellectually without being at the same time carried out in practical life. This, however, they refuse to do as soon as they realise that Lane is attacking their daily habits and mode of living and is, in reality, aiming at changing their lives in a revolutionary way.

But once this revolution has been carried out - what a change! It is like stepping out of a damp, dimly-lit cellar, a dungeon, into broad day-light and bright, warm sunshine - or like being transported from the miseries of a London pea-soup fog in the middle of the winter to the summer-like gardens of Sicily.

Towards a revolution on the lines Lane suggested I had been more or less unconsciously moving ever since I was struck down by appendicitis and brought to the gates of death in the prime of my youth. The summer following that terrible event was like a mental pea-soup fog though spent under ideal conditions in the beautiful archipelago of the Baltic Sea. The acquaintance I was shortly afterwards privileged to make with the invigorating climate of England, where outdoor life, sports and daily exercise are regular, healthy habits among this fresh-air loving people, brought about a revival. Next came the discovery of the practical food experiments carried out by Dr. Alexander Haig, which delivered me from most of my troubles. But not until I came across Lane's epoch-making discoveries did I feel that my feet were planted on firm ground. I began to understand why I had been struck down and had so narrowly escaped death on the very threshold of life.

It was obvious that Lane was right: that in putting the great bowel and our whole digestive system to a wrong use we had invited disease and brought disaster upon ourselves. By altering my diet in the direction he suggested, by adding more roughage in the form of the husks and hulls of grain, the leaves and stems of vegetables, the peels of all kinds of fruit and of vegetables such as cucumber, tomatoes, turnips, carrots, parsnips, potatoes, etc., by drinking more water first thing in the morning and between meals, by abdominal exercises and regular walks and runs, the motions were increased in bulk and frequency and changed to a porridge-like consistency. At the same time the last of my disease symptoms disappeared, and health manifestations increased by leaps and bounds until I had attained a state of health impregnable to disease, and enjoyed a vitality which I felt was like a white, glowing flame.

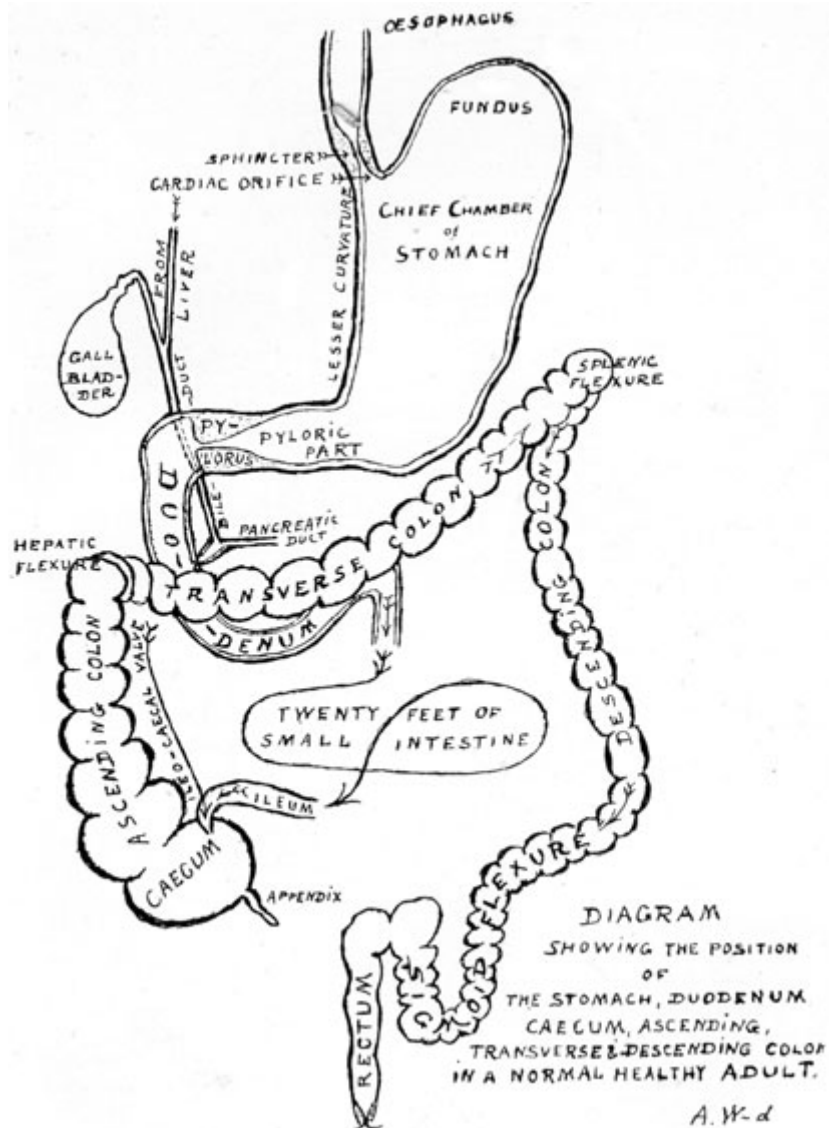
Now, at the zenith of my life, I realise that most of my troubles have been caused by the wrong use to which I have submitted the great bowel, the functioning and

purpose of which was a complete enigma to the medical profession at the time when I was struck down. *Constipation* resulting from this mis-use was the main cause of all my symptoms of disease and failing health, just as to-day it is the main cause of 50% at least of the physical and mental ailments of civilised man. "*Constipation*", says Encyclopaedia Britannica (1911), "*is so common that it may almost be looked upon as the normal condition in civilised countries.*" Its root and chief cause is nothing but wrong feeding or, as Dr. Kellogg puts it, "*civilised man has adopted the diet of the dog while having the colon of the chimpanzee*".

But then, why this colon? - Could we not have done without it? - Why has *Nature* built up this great bowel and, according to Sir Arthur Keith, "*spent her most ingenious efforts in its construction?*" "How is it", he asks, "that in recent days the cry has arisen that, so far as man is concerned, the great bowel is a death-trap and that the human race would gain if they lost it?"

No one besides Sir Arbuthnot Lane has answered this question in a more complete and satisfactory way than *Sir Arthur Keith* himself, one of the foremost anatomists and biologists of our time. Because of the momentous importance of his views, a selection of the most significant paragraphs of his writings concerning the working of the colon is here inserted, so that every reader may obtain a first-hand knowledge of this exposition, so little known hitherto even to the majority of medical men. The quotations will be found in their original setting in his masterly book, *The Engines of the Human Body*, which every interested reader should acquire and treasure.

A glance at the adjoining Diagram shows the great bowel in a normal position twenty-four hours after a bismuth breakfast, revealing its formidable structure and its strange position in the abdominal cavity.



The bismuth-meal was taken at 8 a.m. "No sooner was it swallowed than the stomach began to discharge the meal in minute jets as if its essential purpose was to serve as a hopper for feeding a mill placed further along the alimentary tract." This mill is the small intestine, "stretching along a tube-like corridor for a distance of 20 feet and fitted with all the appliances needed for the conversion of the raw materials contained in food into the finished products which are consumed in the tissues of the body".

"The small bowel is the essential factory of the alimentary system." Here the chyme moves continuously downwards towards the lower part of the intestinal cavity at an average pace of an inch a minute, being retarded and arrested by the many coils formed in the cavity by the bowel. The absorbing surface of this bowel is about sixteen square-feet. "In its upper part the lining membrane is raised into crescentic folds which cross the lumen (caliber) of the bowel and almost double its absorbing surface. Then there is from the beginning to the end of the small bowel a carpet of villi - miniature projecting fingers or tongues - over which the chyme has to flow. Villi contain extensions of the capillary blood-field, and also a slip of muscle which gives them a power to contract and thus act as pumps. These villi give to the inner surface of the small bowel a velvet-like appearance.

"There is", says Sir Arthur Keith, "a contrivance used by the gold-miners which will help us to understand the essential mechanism of the small bowel. The rock of quartz which is quarried from the gold-bearing vein is ground to powder by powerful batteries of stamps. Near the batteries is set up a tailrace through which a powerful stream of water flows. The bottom of the tailrace is covered with a carpet made of blanket, which we may look upon as representing the lining membrane of the bowel. When the crushed quartz is thrown into the head of the tailrace, the sand and particles of stone are carried away by the flow of water, but the grains of gold sink into the pores of the blanket and are held there. After the washing is over we find the blanket, towards the head of the tailrace, full of heavy gold grains; further down the gold particles are fewer and smaller; at the end none are to be seen; all the available gold has been absorbed before the wash reached the dump of the tail.

"Now, the bowel is a tailrace, 20 feet or more in length. The chyme is washed over it by the contraction waves which sweep down the bowel; it is continually stirred by the kneading waves. By the time the chyme has passed over the whole length of the bowel and reached the dump-head - represented by the caecum - all the fuel which can be extracted from the chyme by ordinary digestive means has been removed. *The residue which passes into the caecum represents the washed tailings of the intestinal tailrace.*"

The lower part of the small bowel is separated from the caecum of the big bowel by a strongly-built muscular valve, the ileo-caecal orifice, which under normal healthy conditions only allows the bowel contents to move in one direction, protecting the small intestine from any possible return of the content of the big bowel. The lower part of the small bowel fills the caecum in much the same way as the oesophagus or gullet leading from the mouth to the stomach, forces boluses of food into the stomach.

We have now arrived at the enigma of the big bowel which has remained an unsolved riddle until recent years. Before the discovery of X-rays humanity knew nothing whatever about the workings of this bowel. It was completely ignored, looked upon as an uninteresting receptacle for food residues and nick-named in various ways as a human 'garbage-box' or 'cesspool'. Great scientists such as Professor Metchnikoff of the Pasteur Institute in Paris and numerous other scientific men - eminent bacteriologists, physiologists, anatomists and surgeons - have considered it a useless and dangerous structure which could advantageously be dispensed with. Nothing shows better the extent to which even the most intelligent representatives of humanity may be blind to the simplest facts, and how easily intelligence goes astray when it cuts itself loose from common sense. The powerful and complicated structure of this organ and its position in the body at once refute all attempts to disparage it.

Nature is wise. Her accomplishments are marvels. The same scientists who are ready to remove the colon as a useless and dangerous structure are full of admiration for the wonderful way in which Nature has built up all the other organs of the human system, and willingly admit that they know next to nothing about the ultimate anatomy and physiology of the elements of which this system is built up.

"For two thousand years and more", says Sir Arthur Keith, a countless succession of clever men have studied the body, both when it was living and when it was dead, have taken it to pieces - or, as medical students say, have dissected it - have examined its flesh and texture with the most powerful of microscopes, have applied to it all the arts and crafts known to chemists, and yet, after all these centuries of labour, after all the fine books which anatomists have written, we have to confess, that we have not nearly mastered all the secrets of the human machine".

Would it not, in view of these facts, seem preposterous to blame Nature for having

made such a huge blunder as to build up in the human body, by mistake, such a powerful organ as the colon?

Even Dr. John Harvey Kellogg in his admirable book on *Colon Hygiene* declares on page 29 that "*the really important function of the colon is to conduct waste and unusable matters out of the body*".

If such were the case, why not conduct these waste and unusable matters a much shorter way from the end of the small intestine straight into the rectum, which would require only a few inches of bowel instead of, as now, five to six feet? Why build up an enormous reservoir within the body, an inch and a half to three inches in diameter, running from the bottom of the right side of the intestinal cavity upwards towards the liver where it makes a sharp bend, traversing the middle of the abdomen a little above the navel to the furthestmost point on the left side of the cavity. Here it reaches its highest point just under the spleen, to drop down almost vertically towards the bottom of the cavity where it forms the Roman S-loop and joins the rectum. That is to say, these waste and unusable matters have to be carried the longest possible way along the walls within this cavity, in a powerfully built intestine, formed like the frame of a door, to an exit which is situated only a few inches from the starting point. To give an analogy: what would you think of the municipal authorities of London if they had arranged to have all the refuse of this great metropolis carried in a long circuitous route round the whole of England : - from London to Brighton, then along the south coast to Bristol where this transport system would make a bend northward to Liverpool and the Scottish border, following, after another sharp bend, the old Roman wall and then the east coast along the borders of the North Sea to *Southend* in the Thames estuary, where finally London's refuse would be dumped in the sea? - Would you not consider a transport system of this kind an incredible stupidity, seeing that *Southend* is situated only a few miles from the starting point?

This is exactly what Nature does. But Nature is wise and knows very well what she is doing. She is, furthermore, very economical and never wastes precious material on a useless structure. Then why has she gone to all the trouble and expense involved in the laying out and the keeping up of such a formidable structure? If only the great scientists, who suggested excising the colon from every human being, had asked themselves this question! But they did not. They thought more highly of their own petty intelligence than of the great wisdom of Nature. Their brains were accustomed only to a certain "one-way" kind of mental traffic in isolated facts. From common sense they had cut themselves loose long ago.

One fact leaps to our eyes at once when we glance at the unique position of the great bowel in the abdominal cavity: the first part of the colon, from its lowest pouch, the caecum, to its highest point at the splenic flexure, is so arranged *that the food residues shall be conveniently retained for certain special processes*. From this part of the colon nothing can possibly escape unless it is carried by the muscular activity of the intestinal wall to the very top of the great bowel from where its content is dropped down into the descending colon.

The whole construction is not unlike a *dredger*, which undoubtedly most readers have seen at work in harbours or estuaries bringing mud from the bottom by means of buckets attached to a system of revolving chains. After the food has been held in check in the lower part of the small intestine long enough to make sure that digestion is complete and the absorption of digestible food stuff practically finished, the residua is pushed by the ileo-caecal valve into the *caecal pouch* where it remains often for hours and whence it is finally lifted by 'a chain of buckets' to the splenic flexure. The small intestine is a smooth tube of uniform size, but the large intestine is *sacculated*

by a thickening of its muscular structure. Thus *shallow pouches* are formed actually corresponding to the buckets of a dredger. Instead of the iron chain connecting the buckets we have in the colon, running along its outer surface, *thick bands of muscular tissue which act as gathering strings*. When contracting, these bands draw the pouches together, pushing their contents upwards very much in the same way as air is forced out of the pouch-like folds of an accordion.

"If we study the shadow outlines of the great bowel with the aid of an X-ray apparatus twenty-four hours after the intake of a bismuth meal, we find that they alter so slowly that we can detect the changes which take place only by comparing the picture of one phase with another taken five minutes later", says Sir Arthur Keith, "But if we place our ear over the caecum we discover from the sounds which begin soon after breakfast, that a liveliness has sprung up in the caecal region. *No sooner does the stomach begin to work than a sweeping movement of a peculiar kind can be seen - 'mass-movements' as they are called. Suddenly the beaded shadows of the transverse part of the great bowel - the transverse colon - are drawn together and are shot as a long quickly-moving bolt, which descends the left loin and groin towards the pelvis, where it becomes stationary (in the Roman S). By movements of this kind the great bowel prepares for the reception of a new load*".

In these clearing operations or mass-movements the first part of the great bowel - the caecum and ascending colon - are not involved. Keith regards this as a most remarkable fact showing that the first part of the colon has been entrusted with a special task. "Should we examine our patient forty-eight or seventy-two hours after a bismuth-meal, we shall still find some trace of a bismuth-shadow in his caecum. *One may well suspect that the caecum is charged with a batch leavened by some particular ferment or yeast which has to be husbanded*. In this connection we may also note that wind or gas is always present in the caecum; no matter when we may tap with a finger the region of the belly in which it lies, we always elicit a drum-like sound."

We are now finally nearing the solution of the great mystery. The great bowel is obviously *a digestive organ* second in importance only to the stomach. Sir Arthur Keith describes its activities in the following fascinating way

"We have seen that it is merely the 'tailings' of the food which enter the caecum by the ileo-caecal orifice. The refuse shot from the tailrace of the gold-mine, although all the pure gold has been successfully removed from it, may yet contain gold in chemical combination which can be extracted only by the application of special chemical means. That was a discovery which gold-miners made; *the refuse heaps of old workings suddenly became of value*.

"At an early point in the evolution of vertebrate animals, a discovery of a similar kind was lighted on. The tailings of the small bowel, after running the long gauntlet of the small bowel, still retained certain valuable materials which could not be reduced and extracted by ordinary digestive juices. Such juices could remove almost the whole of the useful fuels contained in all kinds of flesh food in an animal's diet; but in fruit, roots, vegetables, and particularly in the husks of grains, there was a large food element - *particularly cellulose* - which passed without being acted on by ordinary digestive juices. *Cellulose husks have to be dissolved before the valuable kernels they enclose can be extracted and absorbed*.

"These husks, even straw, hay, and wood, disappear if left exposed to the weather. They are digested and dissolved by bacteria and their solutions washed away by rain. *Bacteria, then, were the means which Nature selected for dealing with the tailings from the bowel*; they are often given easy access to the alimentary canals of animals by being carried in with the food eaten. *The hinder part of the bowel became altered*

in construction and established as a special laboratory in which the digestive operations might be carried on by bacteria. That is how the great bowel came to be established.

"The new method was cheap and effective. The production of digestive juices is costly; their manufacture is a constant drain on the resources of the animal machine. Bacteria, on the other hand, are content to perform the work of digestion for a small percentage of the gains which accrue from their labours. How profitable this novel bacterial method of digestion has proved may be judged from the success of the animal forms which adopted it; the three higher forms of vertebrate animals - reptiles, birds, and mammals - have installed it as a regular part of their alimentary systems.

"The new system, however, had certain disadvantages. So long as only harmless cellulose-loving bacteria gained access to the new laboratory all went well, but others of a harmful kind could also gain admittance, and hence an elaborate police system had to be established and maintained in the lower bowel to save the body from invasion. *Putrefaction also is apt to occur in the stagnant contents of the bowel, leading to the formation of substances which may be absorbed and thus injure or poison the body.*

"Unless we interpret the operations carried on in the great bowel in the manner just outlined, the changes which we see taking place in it have no meaning for us. We are at a loss, otherwise, to explain the peculiar construction of the caecum and colon. But when we regard the great bowel as a chamber *in which the refuse from our food is submitted to a new kind of digestion, we find a key to its apparent mysteries.* We then understand why the ileo-caecal orifice - the threshold between the first and second intestinal laboratories - is guarded and regulated by a sphincter mechanism. The ileo-caecal orifice marks the end of one digestive system and the beginning of another.

"We explain the presence of the *caecum* by looking upon it *as the stomach of the great bowel.* We have seen that it is always partly filled with gas, and that it retains part of one batch apparently to serve as leaven for the next, appearances which suggest a bacterial function. We see, too, why alimentary matter is retained so long in the great bowel: *a fermentative change is necessarily a slow one.* There are the same two muscular strata in the caecum and colon as in the wall of the small bowel, but they are arranged differently. The outer coat is gathered into three bands which run along the colon and pucker the fibres of the deeper-lying circular stratum into folds and pouches. That is because the movements and transport system of the great bowel are profoundly different from those of the small. Here there are no peristaltic or "milking" waves. The lower part of the small bowel fills the caecum in much the same way as the oesophagus forces boluses of food into the stomach. The caecum, and the same is true of the rest of the colon, has a rhythmical contraction which gently and slowly kneads the material within and is thus constantly bringing its lining membrane into contact with fresh surfaces of its contents. In order that the contents may be thoroughly searched for every particle of digested food, the wall of the colon is thrown into pouches and folds which are ever changing their position and form, and thus coming in contact with fresh material."

Sir Arthur Keith warns us particularly that we must not think of the colon as being in any way of minor importance - "a mere economical contrivance which Nature has fitted to the human machine in order that the products which escape from the small bowel may be salvaged". "*The great bowel*", he says, "*is one of the largest laboratories in the human body.* When laid open and spread out it forms a long narrow sheet, the width diminishing as it passes from the caecal to the anal extremity. In an adult man the average width of the sheet is about 6 inches, its average length about 70 inches. Its

lining membrane therefore exposes a surface for the absorption of food products of about 420 square inches. This, although little more than one-fourth of the surface which the small bowel presents to its contents, is still a very considerable area. There are none of the contrivances for increasing the absorbing surface - duplications of the lining membrane, upgrowths in the form of villi - such as we saw in the small bowel. The surface of the lining membrane is covered by the usual kind of paving - mucus-forming units, even more active in maintaining a lubricating covering than in the small bowel. The lining membrane is set with minute test-tube glands. These also throw their products, which, so far as we know at present, are mainly of a lubricating kind, on the surface of the membrane.

"Under the paving epithelium and between the test-tube glands is a capillary field not so richly fed by arteries and drained by veins as in the small bowel, but yet of an extent that convinces us that an important work is carried on in the lining of the great bowel. *The paving epithelial units are the active agents in extracting the available products set free in the alimentary contents of the great bowel; they pass the fruits of their labours on to the neighbouring capillary field.* From there the products are carried to the liver to undergo further treatment before being issued in the daily ration of tissue-fuel. We know that absorption proceeds most actively in the first part of the great bowel. When the chyme enters the caecum it is fluid; by the time it reaches the transverse colon it has become reduced to a paste, and in that condition it remains throughout the remaining stages of its journey."

As *Sir Arthur Keith* points out, the Caecum is the *stomach* of the great bowel where large food elements - *particularly cellulose*, found in fruits, roots, vegetables and grains - are broken up and digested by means of a *fermentative process*. But what will happen if no large food elements of this kind arrive? - Obviously the Colon will atrophy, as is the case with every organ which is not being used. *Utilisation is the price Nature demands for the upkeep of her gifts.*

The *first* sequence of this atrophy is constipation, or the undue retention and packing together of food residues in this organ.

The *second* result is food-mineral and vitamin starvation, as these elements are chiefly to be found in the husks of grain, the peels of fruits and roots, the green leaves and stems of vegetables, etc.

The *third* and perhaps most disastrous effect is that the fermentative bacteria disappear and a *putrefactive* flora of microbes takes their place.

"*So long as only harmless cellulose-loving bacteria gained access to the new laboratory all went well,*" says *Sir Arthur Keith*. "*But others of a harmful kind could also gain admittance.*"

These harmful bacteria have been found to be chiefly of the putrefactive kind.

Dr. Kellogg writes in *Auto-Intoxication or Intestinal Toxaemia*, page 48:

"Every human infant - in fact, every young animal - is born sterile. The delicate processes of growth and development can be carried forward in a normal way only in the *absence* of the venomous poisons that are produced by the bacteria that give rise to putrefactive changes. The intestinal discharges of a new-born infant or a new-born animal of any kind are absolutely free from germs.

"Within four to six hours in summer and ten to twenty hours in winter, bacteria appear in the intestinal discharges. They work their way in from both directions - through the mouth and the anus. In a few days a very rich flora is found in the stools.

"Most remarkable and worthy of special note is the fact that these swarming micro-organisms are *all of a special kind*. *None of them are capable of producing putrefaction. They are acid formers - that is, they give rise to fermentation and*

produce acids.

"It is agreed by physiologists that *putrefaction of the intestinal contents does not occur in normal condition*. Nature protects the body by providing a normal intestinal process which maintains a fermentation in the colon, producing acids which stimulate the colon to action; without this fermentation putrefaction would occur with the production of ammonia and other 'bacteria' and thus paralyse the colon and cause constipation.

"In a child brought up on a natural (vegetable) diet, according to *Tissier*, 90 per cent of all the bacteria in the intestine belong to the group of acid-formers, and the *Bacillus Bifidus* constitutes four-fifths of the acid-formers. *Bacillus Acidophilus* is next in prominence.

"In children fed on a mixed diet the putrefactive bacteria develop and the proportion of acid-formers diminish. (p. 90 *ibid.*)

"The three bacteria that are chiefly responsible for putrefaction in the human intestine are the *Bacillus Putrificus*, *Bacillus Sporogenes*, and *Bacillus Perfringens*, commonly called *Bacillus of Welch*. These bacteria are not only putrefactive but are *pathogenic*, i.e. disease producing. (p.81 *ibid.*)

"In a healthy man, living on a diet from which flesh food, eggs, etc. are rigorously excluded, the protective fermentative flora dominates and seldom falls under 80 per cent, but may be as high as 97 to 98 per cent, whilst in a man living on an ordinary mixed diet the fermentative flora is reduced to only 20 per cent or less, and the pernicious or putrefactive flora dominates, occupying the 80 per cent.

"*Burnet* tells us that the intestinal flora of man living on a mixed diet is practically identical with that of the dog. Even the alligator presents a smaller number of bacteria in his intestine than does civilised man. *The faeces of man is like that of the dog only when his diet is like that of the dog.* (p.81 *ibid.*)

"According to *Strassburger* and other authorities the number of bacteria produced in the intestinal tract every twenty-four hours is so great that in many instances these organisms constitute one half of the total mass of the solid contents of the faeces. Many of these bacteria produce highly virulent poisons. Not infrequently nearly the total mass of micro-organisms consist of poison-forming organisms, such as *Bacillus of Welch* and other putrefactive organisms. Foul-smelling stools always show a flora chiefly made up of anaerobes, or poison-forming organisms. (p. 82 *ibid.*)

"*Metchnikoff* and *Bienstock* have shown that the normal inhabitant of the colon, *Bacillus Coli*, is an acid-forming organism *only when supplied with carbohydrates*, i.e. grains, fruit and vegetables. Fed on food residues that putrify, i.e. proteins of flesh, eggs, etc. *it changes and turns itself into an active poison producer.*" (p.82 *ibid.*)

The views of *Metchnikoff* and *Kellogg* are corroborated by *Dr. Anthony Bassler*, Professor of abdominal diseases, who states in his book *Diseases of the Intestines, and Lower Alimentary Tract*, 1920, on page 169:

"It is a well known fact that *Bacillus Coli* - the natural bacterial inhabitant of the colon - when grown in media containing only protein derivations, will produce indol, phenol, hydrogen sulphide, ammonia, and other products indicative of protein decomposition. Putrefaction is the result, because the medium becomes precariously alkaline, foul odours develop, and the resulting products are not only disagreeable to the senses but are quite unfit for food. *This is bacterial putrefaction.*

"*The same organism* in the same protein medium, containing in addition sugar which the colon bacillus can utilise, now produces an entirely different kind of decomposition; in place of the products of putrefaction now appear lactic acid, small amounts of fatty acids, as well as carbon dioxide and hydrogen, which are

characteristic of the break-down of carbohydrates. The reaction is now pre-eminently and progressively acid, the odour not offensive and the products formed are innocuous and inoffensive. *This is bacterial fermentation.*"

Dr. Leonard Williams takes the same view. On page 132 of his book *The Science of the Art of Living*, 1925, he writes:

"There is a microbe which inhabits the large intestine, or colon, known as the *Bacillus Coli Communis*, which is a very human kind of microbe. If he is fed upon meat foods and other cooked foods, like a carnivorous animal he becomes fierce and dangerous, concentrating his activities upon the manufacture of putrefactive products, which he discharges into the remotest part of the body to do their dirty work. But if instead of ordinary foods he is fed upon fresh fruits and vitaminous foods, i.e. if he is grown upon a pabulum which consists chiefly of carbohydrates, he ceases to be putrefactive, our worst enemy, and immediately becomes fermentative, our best friend.

"The problem which has so far presented itself has been that of so arranging matters as to ensure that the *carbohydrates win through the lower reaches of the intestinal tract, the normal habitat of the bacillus coli*. The carbo-hydrates have to pass unscathed through the mouth, to slip past the duodenum and in the small intestine to avoid the various activities of the succus entericus (bowel juices). If, however, the carbohydrate is presented to the mouth in an *insoluble covering of cellulose*, it has no difficulty in passing unaltered through the various gastro intestinal agents which could otherwise overwhelm it. In this way it reaches the colonic habitat of the bacillus coli communis, and transforms that bacterium from an enemy into a friend."

This is what people have instinctively found since time immemorial. We have already seen in a previous chapter how some generations ago Irish peasants in certain districts when making porridge of slightly-cut, coarse oatmeal, used to throw a handful of the same meal into the saucepan when the porridge was already cooked.

This handful had "no difficulty in passing unaltered through the various gastro-intestinal agents", reaching the "colonic habitat" where it acted as food for the "bacillus coli communis" transforming that bacterium "from an enemy into a friend".

"Scalded oats", or "brose", has since remotest times been the food upon which the Scottish people built up their marvellous health in bygone generations. These oats were never boiled, only immersed in hot water and left to stand a quarter of an hour or so before being consumed.

"When the colon is thus supplied with carbo-hydrates," says Kellogg, "fermentation takes the place of putrefaction and the acids produced not only prevent the development of poisons but also act as normal stimulants to the colon, encouraging frequent and normal emptying of that organ.

"It is evident that the most effective way of suppressing the growth of poison-forming, putrefaction-producing organisms in the intestine is to reduce to a minimum the amount of protein in the diet."

This explains at once the great change that took place in my health when I adopted Dr. Alexander Haig's meatless, low-protein diet. It explains also why I was struck down by appendicitis when living on a rich meat-fish-egg diet with only a few over-cooked, de-mineralized and de-vitaminized vegetables and practically no fruit. The paste-like porridge was also cooked to death, whilst the porridge I am now having - Scotch brose - consists of one part of coarse oatmeal mixed with two parts of broad bran and a handful of raisins, merely sprinkled into four parts of boiling water and allowed to stand for ten minutes or a quarter of an hour before being served.*)

*) The Scots have largely gone off "brose", following the deplorable modern tendency to live mainly on pulpy food, but "brose" is still resorted to as the best means of curing the indigestion and constipation which this pulpy food has brought about.

The amount of roughage I consume daily in the form of raw cabbage, raw grated carrots, raw swedes, raw celery, raw onions, lettuce, water-cress, mustard and cress, raw fruits eaten with the skin, core, pips - in fact eaten with everything except the stalk - is unbelievable to anybody on the ordinary civilized diet. Forty years ago only a quarter of that amount of raw food would have completely upset my digestion and made me violently ill. Now I scarcely know I have a digestion. Obviously the same colon which thirty years ago threatened my life now works like a well-oiled machine. The paradoxical truth is that what I then considered digestible was really indigestible, and what I carefully avoided and discarded as indigestible was just that which was not only digestible, but what my alimentary canal had been crying out for ever since I was taken off my mother's milk, and had not been provided with.

We were all, my brothers and sisters and myself, so constipated that our nurse had to use the formidable hair-pins of those days as forceps to remove, often bit by bit, the almost stone-hard lumps of scybala that blocked, the vent and would not move in any direction.

No wonder that two of my brothers besides myself had already been attacked by appendicitis at the age of sixteen, and that we all, after years of suffering, subsequently had our appendices removed.

"The vermiform appendix attached to our great bowel is liable to disease," writes *Sir Arthur Keith* in *The Engines of the Human Body*. "In many of us, after we have passed adolescence, this small structure becomes reduced in size, its lumen (caliber) closes and the muscle of its wall changes to fibrous tissue; it atrophies. It is said to atrophy and become liable to disease because it has ceased to be useful. By way of reproach, it is called a vestigial structure. Now *the appendix is never vestigial in a newly born child; we have every reason to think that it is as well developed in the newly born child of to-day as it was in children born 10,000 years ago, or even a million years ago, for it is scarcely larger in a newly born anthropoid ape than in a newly born child.*

"It is shaped like a narrow test-tube and is usually about four inches in length, and about a quarter of an inch in diameter. Its blind end is free, pointing towards the pelvis; its mouth opens on the interior of the caecum. *Its muscular coats are strong and contraction waves sweep slowly along them. It beats with a slow rhythm. It receives material from the caecum which it works upon, but what digestive changes it affects or what role it plays is not known.*

"This *highly specialised structure* has often to be removed. This does not mean that it is a useless or vestigial structure. We may lose an eye. To our friends we seem to get along just as well as before. The sufferer, however, knows that such is not really the case. Careful observation shows him that there are many things he cannot make out so well as when he had both his eyes."

The same reasoning may also be applied to a caecum without an appendix. Why should an organ such as the appendix with its "highly specialised structure" be useless simply because the doctors do not know its functions? If every organ, the purpose of which the doctors did not know, had been removed throughout history, humanity would have been extinct long ago. Here again the doctors have made a huge blunder and are, in consequence, actually removing hecatombs of appendices every year, thus crippling and maiming millions of human beings instead of removing the very cause

that produces disease in the appendix, i.e. the wrong dietary of modern civilized people. But doctors are very conservative in their habits. They will fight to the very last for their own table and rather head the list of those classes showing the highest death-rate from diseases of the alimentary tract than alter a single item in their dietary. According to the statistics of the *Registrar General of England*, no class has contributed, proportionately, so much to the death-rate from intestinal diseases as the doctors themselves. The following extract bears witness thereto:

Comparative Mortality from Diseases of the Digestive System.

Physicians, surgeons.....	50
Inn-keepers.....	45
Barristers, solicitors.....	44
Seamen.....	43
Clergymen, priests, ministers.....	34
Butchers.....	30
Carmen, carriers.....	28
Farmers.....	25
Gardeners.....	22
Railway guards, porters.....	20
Agricultural labourers.....	19
<hr/>	
Average among all workers.....	28

As shown by the above statistics, *the doctors are no less than 31 points above-agricultural labourers, and 22 points above the average among all workers in mortality from diseases of the digestive system.*

In view of the facts which the above statistics disclose, how could we possibly expect that the medical profession would pay any attention to the following warning by that great authority, *Sir Arthur Keith*:

"We expect our digestive systems to deal with artificial dietaries, which we now thrust upon them, just as effectively as with natural foods, for which they were originally fashioned. They have to digest and absorb substances very unlike those which the ancestral great bowel had to manipulate. *We can hardly expect Nature to speed up her machinery of adaptation and so fashion our bodies that we may run riot among the tempting luxuries which modern civilization has placed within our reach.*"

But that is exactly what doctors do. They expect their digestive systems and those of their patients to deal with almost any kind of dietary, and they fight a losing battle for the most artificial of all dietaries, that of to-day - the de-mineralised, de-germinated, impoverished diet of lean meat, white bread, white sugar, strong tea, coffee, cake and candy, They cut, cauterise and maim the glands which have become hypertrophied by overwork due to this unnatural dietary, filling their operation 'dust-bins' with organ after organ that has broken down and become ruined or actually rotten within the body because of the toxins and inner filth it has been made to harbour. The appendix with its "highly specialised structure", the activities of which *Sir Arthur Keith* has so vividly described, is wantonly classified as a "vestigial,

useless structure" because already after the first sixteen years of misuse it "becomes reduced in size, its lumen (roomage or capacity) closes and the muscles of its wall atrophy".

Next to the appendix comes that mighty and wonderful organ, the great bowel or colon, also considered useless and nicknamed "cess-pool", though obviously too impressive in size and too powerful in structure to be called 'vestigial'. Nevertheless, in many cases this organ, too, is removed as if it were vestigial.

Thus this huge humbug is allowed to go on by the sheep-like herd of 'civilized' human beings who have not yet learned the great truth that uncontrolled officialdom is just as disastrous to humanity in medicine as it has proved to be in all other branches of life. Whilst all other classes of social workers have been submitted to effective control and wholesome criticism the doctors are still considered 'taboo', and their views and learning are looked upon as being just as mysterious and impenetrable to an ordinary layman's mind as the learning and ritual of the hierarchical priesthood in bygone days.

"*The serpent is in man,*" wrote Victor Hugo, the great French genius of the last century. "*The serpent is the big intestine.* The belly is a heavy burden. It disturbs the equilibrium between the soul and the body. It fills history... It is the mother of vices. *The colon is king.*"

Yes, the colon is king!

A hundred years after Victor Hugo, one of the greatest of anatomists and biologists actually confirms this opinion.

"*Our greatest difficulty will always be in the control and management of the transport system of the great bowel.*" (Sir Arthur Keith, "The Engines of the Human Body", Page 218.)

Victor Hugo was a poet and philosopher. He had never studied medicine. But he already saw a hundred years ago what our foremost scientists are now pointing out in vain to the majority of the members of their own profession. He saw then what very few doctors will see today, though the majority of them are sure to have had many an experience similar to that which *Dr. Erwin Lick* describes on page 20 of the English translation of his famous work, *The Doctor's Mission*.

"I was called to visit an elderly unmarried lady, living with her sister. She complained of severe pain in the abdomen. I examined her *conscientiously* and *found no cause for her complaint*. Again, to my great sorrow, I could make no exact scientific diagnosis. The only thing I could ascertain was that nothing was ascertainable to account for the pain. I tried various remedies, dieting, hot and cold compresses, tincture, of opium, etc. Nothing did any good. In this way three days were spent and the patient continued complaining bitterly. Her sister, greatly worried, pointedly asked me - I was at the time 23 years old - to call in an experienced colleague of more mature years.

"In a little town, four miles distant, were two doctors who had been practising there for a long time. I telephoned to one of them and in due course there appeared a short, stout, jovial-looking man who, judging by his appearance, was a disciple of Bacchus. We went to the patient's house. The doctor examined the patient carefully and then we withdrew to a private room. I eagerly awaited his diagnosis. I expected him to solve the mystery of the case. I imagined that immediately he would tell me the cause of the trouble. However, things were very different. He began by asking: 'So, you studied and passed your examinations in the town of R.? - Tell me something about old Professor So-and-so. How is he doing?' I fell from the clouds into reality. For ten minutes we discussed everything except the patient's condition. Then the consultant

began to talk at length about the fee which the patient could, might or ought to pay, and at last I asked impatiently: 'Well doctor, what is the matter with her?' His reply was: 'I have not the slightest notion. What have you given her?' I answered, 'tincture of opium', upon which he said: 'Well, if you have no objection, I shall prescribe her the same opium in the form of powders.'

"This was the end of my first consultation. Since then I have had many consultations with colleagues, but I cannot say that all of them were exactly like the first one. Besides, I have nothing to say against the country doctor whom I met for the first time. He was an excellent fellow, a great original and much liked as a physician. We doctors are human beings with human faults and imperfections."

"Unfortunately the opium powders proved as ineffective as the opium tincture. I became worried. At last the patient refused practically all food. Her sister noticed that her strength was rapidly ebbing. At last it occurred to me that one might try to feed her by the bowel. Late at night I went to the house and ordered that the lady should be given an enema consisting of 6 ozs, of milk, a teaspoonful of salt, a teaspoonful of sugar and a raw egg. Next morning my first visit was to this desperate case. When I entered the house, the sister nearly fell on my neck, beaming with joy. Full of gratitude, she exclaimed: 'My dear doctor, can we ever thank you enough! You have saved my sister's life.' - 'But how? What has happened?' - 'Well, after the enema, my sister had several gigantic motions and now she is perfectly well.' - Indeed she was perfectly well and she remained well."

This incident occurred about thirty years ago, almost at the same time that I was laid up with acute appendicitis and was fighting for my life in a little town in the North. I was also given opium, which is one of the most effective means of making the bowels slow down and of creating constipation. The poor woman was sinking because her bowels did not act. Her doctor, however, apparently never enquired about her motions. In forming his diagnosis after a most careful and conscientious examination he completely disregarded the great bowel. He gave her one of the most constipating of medicines, which naturally made matters worse. Then he called in a brother doctor of more learning and experience, who after another careful and conscientious examination saw nothing and understood nothing, and on top of it all prescribed the same constipating medicine in "a powdered form". The result was that the poor woman nearly died. Alarmed by her state the young doctor now tried to keep up the strength of this overfed woman by bowel feeding. He suddenly recollected having been told by his professors that the great bowel was, anyhow, good for something - it could absorb food introduced into it by the rectum.

The overfilled and poisoned colon of this poor, dying woman was thus given a good liquid meal of milk, egg, sugar and salt, which it could not possibly absorb in its overloaded state but which, nevertheless, released it from the paralysing grip of the bacterial poisons of inner filth and from the somnolence and inactivity imposed upon it by the drug. The result was a miraculous cure - a cure by a fluke!

Dr. Liek does not mention in any of the following pages of his interesting book that this "cure by a fluke" had made him in any way realise the importance of the big bowel, or the deadly effect that constipation, caused by our unnatural modern diet, has upon this organ. The whole incident evidently passed without causing him to make any serious investigations concerning the functions of this great organ. And yet, Dr. Liek is one of the most intelligent and revolutionary of the doctors in Germany. But how could he undo all his false learning, when his brain had been doped by six years of medical training and paralysed by the ordinary drill of medical routine-thinking, in an atmosphere saturated with prejudices against revolutionary medical views of any

kind, however well founded on irrefutable facts.

It is now more than thirty years since *Sir Wm. Arbuthnot Lane* and *Sir Arthur Keith* started their campaign against the misuse to which the great bowel has been put through the modern diet of civilized man. The effect of their teaching upon the Medical Profession as a whole can justly be described as next to nil. There is an ever increasing body of highly intelligent *independent* medical workers, especially in England and America, who have accepted their principles and are following their teaching, but their endeavours to cure disease by putting the Colon to its proper use are still looked upon by the majority of their colleagues as faddism.

Constipation as a disease and a cause of disease is as yet, A.D. 1934, scarcely mentioned in the great textbooks of medicine. In the standard English textbook by *Osler* and *McCrae*, *The Principles of Medicine*, chronic constipation and auto-intoxication are treated in a most perfunctory manner, as if of no account - possibly because the learned authors themselves and their colleagues are unable to produce more than, at the most, one bowel-action of formed stools and scybala*) a day and would, in the circumstances, regard three to four porridge-like motions a day as quite beyond their power and beneath their dignity.

*) The doctors' latest fancy name for excremental marbles and golf-balls. Gr. skybalon.

Hence the teachings of Lane, Keith, Kellogg, Metchnikoff and others are passed over in a 'high-brow' fashion with the superior remark (see *Osler* and *McCrae*!):

"The fad is passing."

Yes, the 'fad' is indeed passing the doors of the medical profession whilst thousands of laymen, because of their belief in the infallibility of the same profession, are deprived every day of at least 50% of their vitality and their joy of life and health, whilst other thousands are treated with some of the latest fashionable aperients, e.g. *Cascara Sagrada* - only one of the many artificial means of producing bowel-actions which will eventually be discarded as more harmful than beneficial. If pressed for more satisfactory advice the same gentleman are only able to appease their patients with the consoling remark:

"Do not worry about your constipation! I am troubled in that way myself. We all have to put up with it."

If this is the state of affairs in *Sir Wm. Arbuthnot Lane's* and *Sir Arthur Keith's* country, what may we not expect elsewhere.

On the Continent, physicians still regard the great bowel as a negligible organ and chronic constipation as a trivial symptom.

Before me on my desk lies a copy of a recently (1930) published, popularly written volume, entitled "Diseases of the Digestive Organs", by a leading Swedish physician, a specialist in these disorders, *Robert Dahl*, M. D. I have chosen this book as a model because Swedish doctors rank among the best trained physicians, having to go through exceptionally long courses of study and to pass more difficult examinations than elsewhere, and because the author has been selected by one of the best known publishing firms in Sweden as the most suitable authority to write on this subject.

The anatomy and physiology of the digestive organs are described in two chapters of, together, twenty-three pages out of 186. Of these about *two* only are devoted to a description of the anatomy and physiology of the great bowel, the upper parts of which are recognised as taking part in the digestive processes, in which processes bacteria are said to play an important part, especially "*the putrefactive (!) microbes*".

The reader would now expect that the residues of a large consumption of

albuminous food, such as meat, fish, eggs, etc., would cause the same evil-smelling processes in the large intestine as the "white of eggs in a state of decomposition" outside the body, but his mind is at once set at ease by the writer, who assures him that "the motions of a healthy person have by no means the terrible stench of rotten white of egg because hand in hand with the breaking-down processes of digestion goes another process, that of *reabsorption* through the mucous membranes of the intestine". These mucous membranes are thought to possess bactericidal properties and "possibly" they are also able "at a certain stage of development" to produce their own 'counter-poison' or antitoxins. Hence the reader need not trouble about the possibility of intestinal putrefaction.

The content of the big bowel is declared to have an "*alkaline reaction*" and to be inhabited chiefly by "*putrefactive microbes*" (p.32 *ibid.*), but not a word is said about this bowel being inhabited in every newly born child by a fermentative flora of microbes, when its content has an acid reaction; nor is there a word about arranging the diet so that this happy state of affairs, so conducive to health and well-being, can be re-introduced in those who have lost it.

Putrefactive microbes are referred to as *normal* inhabitants even of the lower reaches of the *small intestine*, in spite of its contents being considered sterile by the highest authorities.

On page 40 in 'Diseases of Civilization' Sir Arbuthnot Lane writes:

"What cannot be too clearly realised is that in the normal healthy individual the change from *the sterile contents of the small intestine* to that of the large bowel or colon is *abrupt: no organisms whatever exist in health in the former* while in the latter they abound."

Dr. Dahl's teaching is quite different. On page 32 of his popular work "Diseases of the Digestive Organs" he writes:

"In the first part of the big bowel those digestive processes which have not been completed in the small intestine are continued, but now under altered conditions. In these processes the microbes play an important role. *They have already been intensely busy in the small intestine*, particularly those of the kind which *ferment carbohydrates*. The result is that the content of this intestine is made slightly acid. Towards its approach to the big bowel, however, *other microbes begin to dominate, the so called putrefactive microbes*, which live on, and, furthermore, split the digestive products of proteids. *The reaction of the intestinal content is now turned alkaline.*"

This is a correct description of the very unhealthy state of affairs which arises when the pathogenic, putrefactive flora of an overfilled and already diseased colon has paralysed the muscles of the ileo-caecal valve and is forcing its way up into the small intestine. To prevent the whole body from becoming poisoned through this disastrous invasion Nature builds a barrier of fermentative microbes higher up in the small intestine, which keep the putrefactive ones in check. The author, however, regards this horrible state of affairs as normal, having evidently met with it in most of his patients.

The same morbid view is taken of the 'disease of diseases', chronic constipation, which is dealt with in conjunction with diarrhoea on six pages in all.

"What, then, is the *normal* condition of the bowels?" the writer asks. "One can say as a general rule: *one motion a day* with *certain* of its parts of a soft consistency. A great many individual differences are, however, to be noticed. Some people - mostly women - have regular motions every second day, others every third, or *even more seldom, and still feel quite well.*" (p.62 *ibid.*)

This statement is characteristic of the general view and method of reasoning among

doctors. "Some people have motions *every third day* or even more seldom" - i.e. perhaps only once a week - "and still feel quite well": nota bene, *for the time being*. No consideration is given to the fact of their liability to contract all kinds of ailments ten, fifteen or twenty years later, when the liver, kidneys and other organs of the body, which have to bear the brunt of the burden in dealing with the constant excess of toxins produced by the accumulation of inner filth, break down. Their eyesight may be weakened; they may gradually become deaf, or victims of exophthalmic goitre, Reynaud's disease, Still's disease, colitis, or a host of diseases "peculiar to women", and still be apparently well during the prime of life in spite of only one bowel action per week.

But doctors are not concerned with what may happen in a more or less distant future, resultant from various habits and ways of arranging life. They are quite content with present facts and conditions *as they are*, and, with the peculiar mentality which is an outcome of their special medical training, would not understand the deep significance of the following statement by one of the greatest physicians and surgeons of our time:

"It is the diseased colon that has evolved the gynaecologist."

How could such a powerful and wonderfully built organ as the colon ever become diseased if it were not put to an improper use? - That such is the case, is indirectly admitted by Dr. Dahl when he states that *aperients* means "*which nobody is quite able to dispense with in regulating the bowels*". What about our poor forefathers who had to do without aperients for millions of years? And how did the ancient Greeks manage to bring about four bowel-actions a day? They must, according to the author, have consumed enormous quantities of laxative medicine of all kinds. Still Hippocrates, the father of modern medicine, does not mention more than one or two of a herbal kind to be used very sparingly.

It is quite true that Dr. Dahl advocates roughage and water-drinking, but not a word is said about the great bowel as a special organ for digesting the cellulose of grain, fruits and vegetables, nor about the incapacity of a healthy descending colon to accommodate more than the residues of one meal at a time.

It is interesting to compare with Dr. Dahl's standard of what should be considered "the normal condition of the bowels", the following statement on page sixty-six of Sir Arbuthnot Lane's "Diseases of Civilization":

"The end of the large bowel has been evolved for thousands of years to accommodate an amount of material which bears a certain proportion to the input. The single evacuation a day entails that the result of twenty four hours' digestion shall stagnate in this section of the bowel. Should such an event take place, this portion of the intestine becomes elongated, dilated, a great loop being formed which, puddling in the pelvis, forms a serious obstacle to the passage of material through it."

Evidently Dr. Dahl and his Swedish and Continental colleagues who still consider one motion a day normal, would regard one bowel-action per meal or three to four a day as an alarming state of affairs suggesting chronic intestinal irritation, intestinal catarrh or diarrhoea. When a pathogenic, putrefactive intestinal flora is considered normal, its result, chronic constipation, has also to be respectfully classed as normal.

This view-point is adopted throughout the whole book.

On page 138 *constipation* is spoken of as a general symptom in cancer. "But as it is such a *trivial phenomenon* in otherwise healthy people or in those ailing in other ways" no attention should be paid to it "unless it occurs in conjunction with severe emaciation".

Compare with this advice the following statement on page fifty-five of Sir

Arbuthnot Lane's "Diseases of Civilization":

"In the case of cancer, *constipation* and *excessive meat eating* should be the two suspects; when they are present cancer is rife, where absent there is none."

Neither the names of Hippocrates, Sir Arbuthnot Lane, Sir Arthur Keith, John Harvey Kellogg nor those of any other of humanity's great teachers of health production and right living are ever mentioned on any of the 186 pages of Dr. Dahl's book. A lay reader could not possibly extract anything worth mentioning for his own health and life from a book of this kind. It would only leave him bewildered and confused, believing that a pathogenic state of affairs is normal, disease inevitable, constipation a "trivial phenomenon". gastric ulcers a common occurrence and cancer a mysterious disease.

As to gastric ulcers Dr. Dahl declares on page 122 that most patients suffering from this disease are also subject to more or less pronounced constipation, which, however, is "generally only a reflex-action caused by the ulcer and does not interfere greatly with the cure."

This reasoning savours of the lion which killed and ate the sheep for having sullied his drinking water by drinking - *lower down the stream*.

It is little wonder that gastric ulcers are so frequent when doctors persist in putting the cart before the horse in terming constipation a "reflex-action" of its own product, the gastric ulcer. In the same way, our modern de-mineralized, de-germinated, impoverished, civilized diet of lean meat, white bread, white sugar, strong tea, coffee, cakes and candy, could also be termed "a necessary alimentary reflex-phenomenon of the diseases of civilization".

"Why is not everyone suffering from a gastric ulcer?" Dr. Dahl asks on page 106. "Yes," he answers, "here we have indeed the *unknown* factor of the problem. About this factor the authorities have been at variance for ages. Not only blood has flown from the gastric ulcer; it also caused the flow of torrents of ink before we arrived at what we now know concerning this disease."

What then do the doctors know about the causes of gastric ulcers? The author makes an attempt to convey to his lay readers an idea of the mysteriousness of this disease by telling them that a recently published German work on gastric ulcers gives a list of not less than five thousand (5000) "*more important*" books and treatises on this subject. "And still," the author exclaims, "we know at present just as much about the ultimate cause (of gastric ulcers) as a hundred years ago."

This does not sound hopeful, considering that what was known of this subject a century ago was next to nothing; and that a full knowledge as to how a gastric ulcer is caused and how it should not only be cured but also stamped out, is within the reach of everyone endowed with a little common sense.

It is not the gastric ulcer that has caused "torrents of ink to flow" and produced hecatombs of books on the subject, but it is the hecatombs of books, produced by the torrents of ink flowing from pens governed by sterile and mummified brains, that keep the blood still flowing from gastric ulcers.

"While the grass is growing the cow dies," says an old Swedish proverb.

Has not the time come for laymen to take their health and physical salvation into their own hands and leave diseases to be enjoyed by - the doctors?

XXI.

THE REAL WORLD WAR.

After thousands of years and hundreds of generations, when the World War through which we have just passed has been almost entirely forgotten and only a single line and a single date in the history books of those days record the event, there will perhaps be a whole page in the health books of those days about an event which at present very few people remember, and to which the majority of those attach no importance. The event referred to is a most remarkable one. It reveals a 'world war' of a far more deadly and wide-spread kind, going on in the midst of that other World War fought with guns and shells. Of this war civilized man then knew nothing, and still knows very little although millions succumb every year, hit by deadly bullets shot from its unseen guns, and lose their health and strength, often their eye-sight and hearing, through the effect of its invisible 'poison-gases'. The real significance of this world war was brought in a glimpse-like way to the notice of a few observant men when the German cruiser, the "Kronprinz Wilhelm", was forced to seek a neutral port on April 11th, 1915, after having raided the seas for eight and a half months and having sunk fourteen French and British merchantmen. Relying upon her great speed, twenty-six knots, she had successfully defied the British and French fleets, but was finally brought to shore by an enemy, far stronger than the allied powers, against whose attacks her guns and speed proved of no avail.

Before running into the James River and dropping anchor off Newport News, U.S.A., she had lost, in the battle waged with the unseen enemy, 110 men out of a crew of 500. Each day of late two of her crew had fallen prostrate on the deck, hit by the invisible enemy. The others were on the verge of collapse.

The chief surgeon of the ship, Dr. E. Perrenon, was at a loss to explain what had happened. He was just as bewildered and helpless as the ship's officers and the men themselves. He consulted his medical library in vain, and was finally obliged to confess that his medical training and learning had left him in the lurch.

When the "Kronprinz Wilhelm" anchored in the James River she was boarded by government experts, state experts, specialists in private practice, and great numbers of eminent health officers and physicians who had hastened to the ship in order to hold consultations over what had happened. Here was this great German cruiser, one of the fastest of the sea, which for nearly a year had successfully defied the overwhelming strength of the allied fleets, lying helpless at anchor, though not a bullet had struck her hull nor a wound had been inflicted upon her sailors. But all these health officers, physicians and specialists of repute were just as much at a loss to explain what had happened as was the ship's doctor.

The cruiser was well provided with food. In fact, to complete the irony of fate, no cruiser in the world's history had ever been better provided with all the amenities of modern life than the "Kronprinz Wilhelm". All her provision rooms and even her cabins and saloons were packed with stores of food. She had frozen meat, white bread, oatmeal, condensed milk, butter (oleo), potatoes, rice, cheese, salt fish, canned vegetables, corned beef, smoked ham, sausages, sugar, coffee, tea, biscuits, etc., - enough to last her for a full year. Her bunkers and even her spacious saloons were all filled with coal. She could have gone on raiding the seas indefinitely.

After leaving Hoboken on August 3rd, 1914, the "Kronprinz Wilhelm" had roved the seas for two hundred and fifty-five days, subsisting on supplies taken from French and British merchantmen before she sank them. During this time she touched at no port, depending for coal and provisions entirely on her raiding ability and on her speed in escaping French and British warships. When she met the British steamer *Indian Prince*, her own supply of fresh meat was nearly exhausted. She seized all the coal, meat, white flour, oleo- margarine, canned vegetables, coffee, tea and soda crackers from the British steamer before she sank her. The white flour was looked upon as manna from heaven.

A month passed. On October 7th, 1914, the British refrigerator steamer "*La Correntina*" brought her 5,600,000 pounds of fresh beef. She 'corned' 150,000 pounds of rounds in addition to her supply of chilled and frozen quarters. She had now enough meat to give each member of her crew as much as three pounds per day for an entire year. She also seized all the "*La Correntina's*" butter, white flour, tea, biscuits, sweet crackers, potatoes, and canned vegetables before blowing her up.

Six weeks passed and the French barque "*Anne De Bretagne*" brought her a new supply of similar provisions and, in addition, champagne and dried peas.

On December 4th, 1914, the British steamer "*Bellevue*" was seized, carrying a cargo of 4,000 tons of coal and an immense quantity of sweet biscuit, white flour, butter and canned vegetables.

The mercantile marine of the allied powers simply poured provisions on her. On the afternoon of the same day the French steamer "*Mont Agel*" hove in sight with a new supply of butter, white flour and potatoes, and at Christmas time the British steamer "*Hemisphere*" presented her with an involuntary Christmas gift of 5,000 tons of coal, a great quantity of white flour, butter, sweet cakes, potatoes and canned vegetables. On January 19th, 1915, the British steamer "*Porato*" brought her from Liverpool a whole cargo of biscuits besides other foodstuffs. "So many of these biscuits were seized that tins of them were given away as tips to the boys who ran out to her in small boats on the James River with messages, papers, etc." On January 24th, 1915, the British refrigerator steamer "*Highland Brae*" arrived, loaded with frozen meat from the slaughter-houses of the Argentine. She took an extra supply of provisions, enough for a small city. On the same red-letter day the British schooner "*Wilfred M.*" presented her with a cargo of salt fish, potatoes, white flour and butter.

From this it can be seen that the crew of the "Kronprinz Wilhelm" simply wallowed in food. About half a year had passed. No enemy had overtaken her. Not a single bullet had hit her. The raids had been a great success, and yet certain signs of an alarming nature indicated that all was not going well. The ship's surgeon noticed a growing pallor on the cheeks of the crew. The pupils of their eyes had become dilated. There was also a marked shortness of breath. Evidently an unseen enemy had boarded the ship and was now attacking her crew in the height of her success.

Just then, on February 5th, 1915, she sighted the Norwegian barque "*Samentha*" loaded with a cargo of wheat - whole wheat! - but as the "Kronprinz Wilhelm" was overstocked with food of a more refined and palatable kind, according to prevalent views to which the ship's doctor subscribed, the Norwegian barque was straightway sent to the bottom of the sea. *Not a bushel of wheat was transferred to the German ship.*

If fate had staged the whole event she could not have done it in a more dramatic way.

Eighteen days later a new supply of red meat, ham, butter, white flour and canned vegetables were seized from the French passenger steamer "*Guadeloupe*". The ship's

doctor noticed that some of the "Kronprinz Wilhelm's" crew were complaining of swollen ankles and pains in the nerves of the legs below the knees. "Otherwise they seemed able to eat, sleep and work". But on March 25th, when she seized all the butter, lard, white flour and canned vegetables from the British steamer "*Tamar*", fifty of her crew were reported to be acting "queerly", none of them seeming too vigorous.

On March 27th, 1915, she seized the British steamer "Coleby" and took her coal, white flour, butter, potatoes, and canned vegetables, *but sent her cargo of whole wheat to the bottom.*

It was now that alarming conditions began to develop with typical symptoms of paralysis, dilated heart, atrophy of muscles and pain on pressure over nerves, with anaemia. "Fifty of the men could not stand on their feet. They were dropping at the rate of two a day. It seemed that a curse had descended upon the cruiser, and it was plain that the whole crew was rapidly going to pieces. The "Kronprinz Wilhelm" would either be manned by five hundred dead bodies in a few more weeks or would have to make a run for it to the nearest port". The unseen enemy had overtaken her in spite of her swiftness, her guns, and her almost unlimited supply of coal and food - food of the same kind that the populations and armies of the allied powers relied upon for their sustenance.

The Captain of the ship had no choice. He surrendered to the invisible enemy on April 11th, 1915, by making a dash for the nearest neutral port.

The arrival of the "Kronprinz Wilhelm" in Newport News created a tremendous sensation in the U.S.A. The most prominent physicians and health officers took, as we have seen, an active interest in the strange case and offered their advice. They all, however, seemed to be at a loss. Medicines appeared to be of no avail. The curious disease went on. On April 11th two new cases were reported, one more on April 13th, four on April 14th and three on April 15th. On April 16th, a strange event happened.

The "Kronprinz Wilhelm" had been watched ever since her arrival by an American journalist, Mr. Alfred W. McCann of the "*New York Globe*", a former deputy health commissioner, whom the "Globe" had equipped with a laboratory and set free to report on the results of his discoveries concerning food conditions in the U.S.A. For years he had waged war on food adulterers and on all kinds of bleached, coloured, sifted, bouted, de-natured, de-germinated, de-mineralized, chemically treated and 'refined' food, with the result that he had made himself thoroughly hated by most food manufacturers. No man in the U.S.A. had given more study to the causes of malnutrition or addressed more physicians on that subject. As soon as he heard of the ill-fated "Kronprinz Wilhelm", now turned from a formidable raider into a helpless hospital ship with a disease-stricken crew, he at once realised what had happened and where the cure was to be found. But all his endeavours to get on board the ship had proved futile. He had appealed to Washington. He "had exhausted every conceivable device and pulled every wire of influence". He had even tried to act as a messenger for a ship-chandler. All in vain. As a last resource he tried all the prominent physicians of Newport News, the Collector of Customs, the politicians. Everywhere he received the same answer. Journalists were rigorously excluded from the "Kronprinz Wilhelm" by an edict which recognised no exception. It was now that, with the ingenuity of an American newspaper man, he had recourse to strategy and presented the card of a celebrated New York physician to the officer in charge, requesting him politely to deliver it to the ship's surgeon. The effect was magical!

"In five minutes," McCann tells, "I was summoned aboard and ushered through long shady passages, covered with German inscriptions and photographs of the Emperor, into the consultation room. Twelve men, seated around a great table, arose

to greet the "eminent physician". The ship's surgeon, Dr. E. Perrenon, and her officers, saluted me in semi-military fashion." McCann was just going to take a seat and ask for permission to address the assembly when suddenly a prominent health officer, a member of the group of consulting scientists, exclaimed in a loud voice: "Why, here is McCann of the New York Globe!"

"Then the dignity of my entrance was exploded as if by a bomb," says McCann.

He would undoubtedly have been turned off the ship at once if he had not, with the audacity and presence of mind of an American reporter, taken the situation into his own hands, and, before any one of the bewildered assembly had had time to decide what was to be done, presented himself as a leading expert on food questions and delivered a speech which by its accuracy and irrefutable deductions swept all present off their feet. The whole assembly was first taken by surprise, then submitted to a cross-fire from all the batteries of McCann's learning, and practical experience, and subsequently brought to silence.

"No man interrupted me," says McCann. "Their silence at the end of the speech surprised me as much as my intrusion had shocked them. Finally the ship's surgeon abandoned his seat at the table, advanced towards me, extended his hand and smiled. From that moment I knew we were friends. "I will hear all you have to say after the others have departed," he said. When the others had boarded a launch and were taken ashore, he retired with me to his headquarters, and after an hour's conversation sent for the ship's cook. The three of us had it out together."

All this happened on the 16th of April, five days after the arrival of the "Kronprinz Wilhelm" at Newport News. During those five days the stricken men had increased in number from one hundred and ten to one hundred and twenty. From the very moment the ship's doctor sent ashore the assembly of prominent physicians and health officers called in for consultation, the whole situation changed. On April 17th no new cases were reported and Dr. Perrenon expressed great confidence in the new treatment. On April 18th there was a marked improvement. In "eighteen cases the swelling in the ankles subsided, and in a number of cases it was marked that the pain on pressure over the nerve's was not so acute". The next day four men were so much improved that Dr. Perrenon permitted them to go on deck. Many others showed signs of improvement. On April 20th fourteen men were able to leave the ship's hospital and return to their own bunks.

Dr. Perrenon expressed his thanks. "The effects of the new treatment are remarkable," he said.

Improvement now followed on a progressive scale. On April 21st eight men were dismissed from the ship's hospital; the next day eight more; the following, four more were pronounced to be out of danger.

On April 24th seven more cases were dismissed and one of the completely paralysed victims was found to be able to stand on his feet without help.

Within ten days forty-seven men were so far advanced towards recovery that Dr. Perrenon said: "We can safely say they are cured." Among them was a man whom Dr. Perrenon had thought might die when the "Kronprinz Wilhelm" dropped anchor off Newport News. He had now recovered so far that on seeing McCann he could report in broken English: "I have had three days without pain. I am now hoping to be well."

The recovery of the remainder of the crew went on accordingly.

Evidently the cure suggested by McCann had worked wonders. Of what, then, did it consist? - It was probably the simplest and most insignificant cure ever conceived or suggested, and it was based on an equally simple reasoning.

"The raids, which resulted in the sinking of so many French and British

merchantmen, yielded, as we have seen, besides coal for fuel, enormous quantities of fresh beef, white flour, sugar, oleo-margarine, potatoes, cheese, condensed milk, white crackers, sweet biscuit, coffee, tea and sugar, with considerable quantities of canned vegetables,*) ham, bacon, beans, peas, beer, wine and spirits.

*) The same vegetables in a f r e s h state would have been sufficient to prevent and cure the disease. In their canned state they were practically valueless but for the roughage they contained. Their precious vitamins had either been boiled to death or been lost through canning. A very good instance of the effect of boiling on vitamins is supplied by the following two incidents taken from page 65 of "The Report of the British Medical Research Committee on the Present State of Knowledge concerning Accessory Food Factors", 1919:

"Scurvy broke out in a camp in Scotland in the spring of 1917 and 82 men were affected. At the time potatoes were scarce but the ration contained a fair proportion of fresh meat and 2 ounces of swedes were available daily. These are among the most potent antiscorbutic vegetables we possess, and, if cooked satisfactorily, should have afforded considerable protection. The cause of the outbreak was investigated by Professor L. Hill, who discovered that the meat was always served as a stew, the vegetables were added, and t h e w h o l e c o o k e d f o r a b o u t 5 h o u r s. This circumstance was considered by Professor Hill to be a sufficient explanation of the outbreak."

"A second example is afforded by an outbreak of scurvy which broke out in a Kaffir labour battalion in France between May and July, 1918, and in which 142 cases of pronounced scurvy were diagnosed. In this case there was a ration of fresh vegetables equal to 8 ounces daily. These were cooked with the meat and boiled for a period of at least three hours. In the opinion of the medical officer by whom the circumstances of the outbreak were thoroughly investigated, this fact was an important contributory cause."

It was obvious to McCann, as it would be to anyone with any common sense and a little knowledge of dietetics, that this was a bland, de-natured, de-germinated, de-mineralised diet, sadly lacking in fresh fruit, fresh vegetables, green-stuff and roughage. It was a diet that was bound to lead to constipation and all its many serious consequences. By various processes of cooking, refinement and chemical treatment, all the base-forming elements had been processed out. According to McCann, the "refined food had caused a mild, chronic acidosis which abstracts the lime salts from the fibrous tissues, muscles, nerves, cartilages and bones. The swelling of the limbs was due to the abstraction of these lime salts with the increased vascularity and weakness of the muscles that follows, causing neuralgic pains and effusion into the joints." (See McCann, "The Science of Eating".)

There was very little of fresh vegetables and fruits to be had, and those which were confiscated were generally reserved for the officers' table. As a consequence the officers suffered least but nevertheless showed symptoms of anaemia and acidosis. "None of them was prostrated. From their tissues and blood the lime, iron and potassium had not been robbed to the degree suffered by the tissues and blood of the men."

McCann's device was to restore basic elements, or those food minerals which the bland, de-natured, de-germinated, de-mineralised food of the raids lacked.

The first thing McCann had recourse to was the very food-stuff which had been sunk to the bottom of the sea, *whole wheat*. McCann knew that the husks of whole wheat were especially rich in the very food elements wanted. He therefore discarded the floury part of wheat and used only the broad-bran, rich in vitamins and lime salts, ordering a hundred pounds of wheat bran to be kept leaching for twelve hours at 120°F. in two hundred pounds of water. *Of the liquor every man was given eight ounces each morning.*

Of the bran itself each man was given one tea-spoonful morning and night until the stools became loose.

For their meals the men were fed in generous quantities with soup made from cabbage, carrots, parsnips, spinach, onions, and turnips, boiled together for two hours and eaten with un-buttered whole wheat bread. Only the liquor part of the soup was used whilst the residue was discarded, in direct contrast to the usual process in civilized countries where the residue is used and the liquor discarded.

Potatoes underwent a similar but still more rigorous procedure. After they had been washed and peeled, *their skins were retained and boiled whilst the rest was discarded.* Again only the liquor part was used and given as a drink - four ounces to each man a day.

In addition, each man was given the yolk of an egg every three hours in fresh, sweet, unskimmed milk whilst the white was discarded.

One hour before drinking milk, the juice of ripe oranges or lemons diluted with water, without sugar, was given to each man. Apples, raw or stewed, were kept within their reach all the time. *At the end of the first week all the men were allowed to eat the solids of the vegetable soup as well as the liquor.*

From this dietary McCann excluded rigorously all cheese, white of egg, lard, fat of any kind, white bread, crackers, pastry, puddings, mashed potatoes, sugar, saccharine, salt meat, fish, gravy, polished rice, pearl barley and de-germinated corn meal, as acid-forming foods.

No drugs were administered or allowed.

The fact that those forty-seven men could be dismissed from the "Kronprinz Wilhelm's" hospital within a period of ten days after having been kept on this very simple diet of fresh vegetable soup, potato-skin liquor, wheat bran, whole wheat bread, egg-yolks, whole milk, orange juice and apples, constitutes one of the greatest achievements of the World War, compared with which most of the military events dwindle to nothing.

The very fact that the "Kronprinz Wilhelm" sank two cargoes of whole wheat to the bottom of the sea on February 5th and March 27th, 1915, shows the gross ignorance of the medical profession as to what really constitutes the most important food values. *"The germ and bran of that wheat of those two ships," says McCann, "would have been worth more to the rapidly succumbing Germans than its weight in gold and precious stones, because they contained just the alkaline calcium and potassium salts that were needed."*

If Dr. Perrenon had had the slightest training in modern dietetics or, still better, if he had not been a doctor at all but an ordinary man who, out of sheer interest in his own health, had read a few leading books on modern dietetics, he would never have allowed the cargoes of the Norwegian barque "Samentha" and the British steamer "Coleby" to go to the bottom of the sea. He would instantly have recalled a quite recent story about another ship laden with a cargo of wholemeal wheaten flour, which ran ashore in 1910 on the coast of Labrador, and would have acted upon the wisdom derived from that event and saved his crew.

The population of Newfoundland and Labrador subsists largely on bread during the winter and spring. Formerly, when bread was made from brown wholemeal flour, the population was in good health. In 1910, when the ship ran ashore, they were all suffering more or less from symptoms similar to those which had laid one fourth of the crew of the "Kronprinz Wilhelm" prostrate, *chiefly because of the change from wholemeal bread to bread made from pure white wheaten flour.* In order to lighten the ship, a considerable portion of her load was brought ashore and subsequently consumed by the population in the adjacent districts. The result was that *all the disease symptoms described disappeared in that region for a year following this*

event. An account thereof can be read in the report on the present state of knowledge concerning accessory food factors published by the British Medical Research Committee in 1919.

When the "Kronprinz Wilhelm" anchored off Newport News harbour, she was packed with biscuits and bread *made from pure white wheaten flour.* There was no whole meal bread on board. If Dr. Perrenon had been acquainted with the incident just described he would have thrown all the tins of biscuit over-board and loaded his ship with whole wheat instead.

The captain of the Norwegian barque "Samentha" might have told him another story bearing upon the same subject, if he had cared to listen. He might have told him how kindhearted Norwegian men and women, under the guidance and the auspices of their doctors, had brought upon Norwegian sailors the same ailment which was disabling the crew of the "Kronprinz Wilhelm".

Until 1894 that disease was entirely unknown in the Norwegian Mercantile Marine, which proportionately to the size of the population is still the largest in the world. In that year an alteration was made in the sailors' diet in response to popular agitation for the *amelioration of the hard conditions of their life at sea.* An association of benevolent men and women had taken the matter into their hands and finally succeeded in compelling the masters of the ships to supply *bread baked from white wheaten flour from which the husks or bran had been carefully removed.* From that moment the same disease by which the sailors of the "Kronprinz Wilhelm" were subsequently stricken *"became a frequent disease in the Norwegian Mercantile Marine".*

However, all the Norwegian captains did not submit to the change. There was an old 'sea-bear' who had all his life eaten wholemeal bread. Although compelled by the humanitarian busy-bodies and their doctors to give his men white bread, he himself insisted on having a supply of wholemeal bread and rye-flour taken on board for his own personal consumption. After some weeks at sea, queer symptoms began to appear in the crew indicating that all was not well on board. The only thing in the way of food that the sick sailors seemed to have a liking for was - *the captains wholemeal bread.* When that bread was substituted for the humanitarian white bread which the benevolent society at home had forced upon the sailors, cures were quickly effected. However, the captain was finally compelled to husband his supplies in order to preserve his own health, and consequently had the misfortune to see new cases of the same disease crop up one after another without being able to cure them, though he knew how easily and quickly they could all have been made well. The same fate befell scores of Norwegian ships at that time.

Instead of being helped by the benevolent society for ameliorating the hard conditions of their life at sea, the poor Norwegian sailors found themselves in a most pitiable state.

Many of them never saw the shores of Norway and their relatives at home again, but were sent to the bottom of the sea, sewn up in a bag with a weight at their feet.

That happened exactly forty years ago. But these forty years have not appreciably altered the doctors' views. The majority of them still think that white bread is not only fit for human consumption but also preferable to wholemeal bread on the daily bill of fare.

Doctors are chiefly interested in disease-symptoms but not in their causes, especially if the said causes are found to be identical with some article of diet found on their own tables. For civilized man must, according to the doctors' views, vindicate his superiority over all the animals by showing that he can eat and drink

indiscriminately anything that he fancies. If he could not, what would be the use of the doctors? ... And if the doctors themselves could not, what would be the use of all their learning? ...

The learned doctors who had come together to hold a consultation about the curious disease by which the sailors of the "Kronprinz Wilhelm" were stricken, all pronounced it *beri-beri* and all insisted that *it was caused by eating polished rice*. None of them took the trouble to ask the ship's doctor or cook *how much polished rice had been consumed by the sailors per week*. If they had done so they would soon have found out that polished rice was an insignificant item in the weekly bill of fare, and did not occur more than *once in twenty-one meals*.

Beri-beri is a disease the symptoms of which are closely related to those of scurvy, pellagra, neuritis and pernicious anaemia. These diseases are all deficiency diseases, i.e. they are caused by malnutrition or by food deficient in some essential food elements.

Scurvy, the sister-disease of *beri-beri*, has been known to sailors ever since man, in the fifteenth and sixteenth centuries, began to build large ships and set out on adventurous voyages of discovery, finally circumnavigating the globe. An evil power, jealous of his undertakings, seemed to follow him everywhere, sometimes slaying everyone on board and leaving the ship to heave and drift on the waters, a coffin carrying its dead crew about until it struck a rock or was capsized and sunk by the waves.

However courageous and adventurous these intrepid sailors might have been, they all turned pale at the first signs indicating that the unseen angel of death had boarded the ship. Her first touch was light. She tapped a man on the shoulder and his strength began to fail. A slight effort seemed to exhaust him. Next breathlessness set in, followed by mental depression. The muscles of the body and limbs began to ache, the countenance acquired a sallow or dusky hue, the eyes were sunken in their sockets, the gums became tender and the breath offensive.

Thus the poor stricken sailors went on for weeks, the angel of death stalking unseen among them striking right and left.

First one face, then another assumed a haggard appearance, the gums turned livid and spongy, then became ulcerated and bled, the teeth finally dropping out. The breath turned excessively foetid and extravasations of blood formed spots like bruises and swellings in the muscles which tended to become hard and brawny. A slight pressure might have produced them. Bleeding from the mucous membrane of the nose, eyes, and alimentary and respiratory tracts accompanied these disorders, whilst destructive ulcers broke out in the limbs. Disturbances of vision, particularly night-blindness or nyctalopia, often set in, until finally the poor sufferer died from profound exhaustion, pulmonary or kidney trouble.

Thus things went on century after century. Ships set out for distant, newly-discovered countries and returned with only a few sailors left - if they returned at all. The rest of the crew had been slain and buried at sea.

The sea demanded its toll, and the angel of death extorted it from among those who escaped all the perils of the storms, the rocks and the savages ashore.

This scourge of the sea, unknown before the age of the great geographical discoveries, was looked upon as something inevitable. The sailors called it 'scurvy', the learned doctors christened it 'Scorbutus'.

This mountain of suffering was suddenly reduced to a molehill by a very simple discovery.

In the year A. D. 1564 Ronssius discovered that lemon juice was a sure preventive

of the disease.

Sir Richard Hawkins used lemon juice with the greatest success against the same disease in 1593.

Commodore James Lancaster completely staved off the disease on board his ship in 1600 by the same simple means.

In 1636 John Woodall's *"Surgeons Mate"* recommended this means as a most effectual remedy against scurvy.

The doctors took no notice!

The sea continued to claim its toll from ships bound for distant shores. The indifference of the doctors made the task of the angel of death an easy one.

In 1754 a brave and independent doctor, James Lind, wrote a special volume in which he proved that scurvy "was easily preventable with lemon juice and fresh vegetables".

The doctors opposed his teaching and endeavours!

Finally, in 1795, lemon juice was introduced by laymen into the British Navy, and *"the dreaded scourge disappeared as if by magic"*.

In the Encyclopaedia Britannica, XIIIth edition, we read: "The regulated administration of lime juice in the British navy, which has been practised since 1795, has had the effect of virtually extinguishing scurvy in the service, while similar regulations introduced by the British Board of Trade in 1865 have had a like beneficial result as regards the mercantile marine. It is only when these regulations have not been fully carried out, or when the supply of lime juice has become exhausted, that scurvy among sailors has been noticed in recent times."

The 'specific' against scurvy was discovered in 1564. More than *two centuries*, involving untold suffering to sailors and hecatombs of lost lives, had to pass before this simple means of stamping out a terrible scourge could be applied to the British Navy, being introduced even then in the teeth of stubborn opposition and obstruction from the doctors. *Three hundred years after this remedy was discovered, the British Board of Trade introduced the same measures into the mercantile marine.*

Time moves slowly. Those who prefer to wait until the doctors begin to move in the present great food-reform question will soon find themselves six feet under the surface of the earth, with a doctor testifying in scientific terms to the death of the victim from 'natural' causes.

Beri-beri is a more modern scourge. It made its appearance when the modern steam- and electric mills, again under the auspices and with the benediction of the doctors, began to remove the husks, germ and outer skin of grains. It seems to be caused chiefly by lack of certain food-elements found in the husks of grain and the skin and green parts of vegetables, including, of course, most fruits.

There is no doubt that beri-beri was the special disease which struck down the sailors of the "Kronprinz Wilhelm". Its symptoms are as follows:

The victim becomes languid, easily tired, depressed, and complains of numbness, stiffness and cramp in the legs; the ankles are oedematous (swollen) and the face is puffy. After a time the patient suddenly loses power in the legs and is hardly able to walk or stand. Some parts of the body are devoid of feeling, the finger tips are numb and the calf muscles tender. There is a burning or tingling sensation in the feet, legs and arms. All these symptoms increase, the puffiness becoming general and the paralysis more marked. Breathlessness and palpitation come on in paroxysms. The urine is greatly diminished.

The mortality varies from 2 to 50% of the cases. Death occurs generally from syncope or a fainting-fit, an attack in which the breathing and circulation become

faint, due to over-distension of the heart. The most important post-mortem feature is degeneration of the peripheral nerves.

On recovery the muscles of the leg are often found to be atrophied.

As late as 1910, the *Encyclopaedia Britannica*, (11th edition) published the following account of the dreaded disease:

"The cause is believed by many authorities to be an infective agent of a parasitic nature, but attempts to identify it have not been entirely successful. It is not obviously communicable from person to person (Manson), but may be carried from place to place. It clings to particular localities, buildings, and ships, in which it has a great tendency to occur; for instance, it is apt to break out again and again on certain vessels trading to the East. It haunts low-lying districts along the coast and, the banks of rivers. Moisture and high temperature are required to develop its activity, which is further favoured by bad ventilation, overcrowding and under-feeding."

Gilbert E. Brooke's excellent handbook, *Tropical Medicine, Hygiene and Parasitology*, published by Chas. Griffin & Co. in 1908, enumerates under the heading 'Etiology' fourteen different theories in an attempt to explain the origin of the mysterious disease. It states that:

"The specific cause and method of propagation of beri-beri have caused endless discussion, and are still shrouded in mystery.

Some of the many theories may be here put forward and briefly discussed:

1. Gelpke's Theory. That the disease is due to a dried fish infected by a trichina.
2. Grimm's Theory. That it is caused by ingestion of infected fish.
3. Miura's Theory. That it is caused by ingestion of certain kinds of raw fish.
4. Ross's Theory. That it is due to arsenical poisoning.
5. Takaki's Theory. That it is caused by nitrogen starvation.
6. Grogner's Theory. That it is due to a haemamoeba.
7. Braddon's Theory. That it is caused by ingestion of a specific organism growing on mouldy rice.
8. Hose's Theory. That it is due to the ingestion of mouldy rice.
9. Manson's Theory. That it is due to a place germ - earth, floor, or house - which distils a volatile or stable toxin, of which the inhalation or ingestion causes the disease.
10. Laurent's Theory. That it is caused by a deficiency of fat in the diet.
11. Trentlein's Theory. That it is due to oxalate poisoning.
12. Peklaring and Winkler's Coccus. That it is due to a white liquefying coccus, requiring repeated introduction.
13. Hamilton Wright's Bacillus. He considers that a certain specific bacillus lies dormant in certain localities, that it gains access to the body by the mouth, giving rise to a primary duodenal lesion. The resulting toxin produces the characteristic effects on the peripheral nerves, while the organism itself escapes in the faeces.
14. Tsuzuki's Coccus. Tsuzuki has isolated a diplococcus, not from the blood, but from the urine - the *Micrococcus beri-bericus*."

"Although the specific cause has not yet been discovered, *it is almost certainly an extra-corporeal animal or vegetable parasite*, entering the body by one of the usual channels, and there producing the toxin which causes the characteristic nerve degeneration.

There is no evidence to incriminate any definite food, drink, or intermediate host."

Please note the assertion that the cause is "*almost certainly an extra-corporeal animal or vegetable parasite*", and that "*there is no evidence to incriminate any definite food.*"

Almost simultaneously with the publication of these extracts, a Dutch doctor, Eijkman, medical officer to a prison in Java, noticed that the poultry of the establishment displayed exactly the same paralytic symptoms as those characteristic of his beri-beri patients within the prison. In looking out for a common cause he found that the fowls were largely fed upon the same kind of rice as that which constituted the staple food of the inmates. As this was rice from which the skin and germ of the grain had been removed by a special polishing process, he replaced the polished rice by *unpolished* for the fowls. Lo and behold! All the beri-beri symptoms in the poultry rapidly disappeared. He now did the same for the prison inmates - *with the same result!*

Careful investigation showed that beri-beri was very frequent in all those prisons where polished rice was in use, while there was little or no beri-beri where unpolished rice was eaten.

There could be little doubt that the skin and the germ of the rice grain which had been removed by the millers contained some matter of vital importance to the organism, the absence of which in the daily food caused all the symptoms characteristic of beri-beri.

In the supplement to the 13th edition of the Encyclopaedia Britannica we read, under the heading 'Vitamins', the following:

"Water-soluble B vitamin present in the seeds of plants, egg-yolk, yeast and in many fruits and vegetables, also is necessary for health, fertility and resistance to infective disease. *Want of this vitamin produces in particular beri-beri*, a disease commonly caused by the polishing of rice. The rice berry is thus deprived of this vitamin and becomes a deficient food for natives who live largely on rice."

"Water-soluble C vitamin is present in most juicy fruits and vegetables; *its absence produces scurvy.*"

What a difference in views between the 11th and 13th editions of the Encyclopaedia Britannica! These articles were written by doctors; - observant sea-captains and laymen might have given the famous Encyclopaedia the explanation decades - or even centuries ago.

The whole edifice of scientific theories as to the origin of beri-beri crumbled to nothing because of the simple observations made by a prison doctor upon poultry and his subsequent ridiculously simple experiments with their food. Fourteen highly scientific theories blown to pieces and a terrible scourge stamped out by restoring to man's diet certain food-particles which had been thrown away as valueless.

The same applies to scurvy. The learned doctors speak of 'Vitamin B' in one case and 'Vitamin C' in another, as if these terms embodied a great discovery and a great medical secret.

Doctors know nothing about the chemical composition of these food principles or how they act. By observing mistakes made in feeding it has been found out that certain foods are vital to man. That is all.

In the case of *scurvy* it was discovered as early as 1564, or nearly 400 years ago.

In the case of *beri-beri* the cause was definitely established in 1910, and by observations and practical experiments, as for instance in the case in the Norwegian mercantile marine, decades earlier. But doctors took no notice.

All this was well known to many practical men outside the profession when the "Kronprinz Wilhelm" ran into the harbour of Newport News. But the learned ship's doctor knew nothing about it, and the twelve learned physicians and surgeons who had been called in for consultation were all at a loss how to stop the disease from claiming new victims. During the four days of their consultation, ten new cases were

added to the list. Not until the very day that an American newspaper man and Deputy Health Commissioner forced his way on board the cruiser by a stratagem, was the disease stopped in the simplest -and easiest way possible, without having recourse to any medicines or laboratories.

McCann knew, before he saw a single sailor, by what kind of disease the crew had been stricken. He knew that any diet consisting too largely of highly-milled cereals, whether of wheat, maize, rice, or any other grain, is equally capable of producing it. It appeared among the British soldiers in the advance on Kut and during the siege. "The ration then contained white army bread and meat, partly fresh, partly tinned, with very little variation. The men began to fall ill, with pains in their shins and general malaise, which in many cases became acute beri-beri.

"Among the Indian soldiers in the siege no beri-beri occurred because their diet contained *atta* made of *dhal* - a dish made of *pulse*, pea, bean or lentil. The Indian dietary was thus very rich in anti-beri-beri vitamin.

"The Indians, in fact, never had any case of beri-beri, and what is more interesting, when, during the siege of Kut, the white wheat flour ration for the British troops ran out, *atta* was served out to them instead, and from that time beri-beri disappeared from among them, as is described by Colonel Hehir in the Mesopotamian report."

"A better instance", says Dr. M. Hume of the Lister Institute, "could scarcely be wished for to show that beri-beri develops on a diet consisting too largely of over-milled cereals and clears up when the whole grain is served out."

But why does it clear up when whole grain is served out? - The most learned doctors and leading food specialists in Europe have hitherto declared and taught that husks or bran of grain are not fit for human food, that the human alimentary canal cannot digest it and that it should therefore advantageously be given to pigs, poultry and cattle. This theory which is one of the most wide-spread, and in which even a man of Dr. Kellogg's standing believes and which he quotes, is chiefly responsible for the prevalence of beri-beri in the world at present.

"Cellulose," Dr. Kellogg says, "is the one substance found in *food stuff that is not digestible in the human alimentary canal*, although in certain animals, particularly herbivorous animals, Nature has made provision for the digestion of cellulose."

This was the question round which the real world war was centered whilst the other world war was being waged with shells and bullets.

This theory is responsible for the destruction of more lives than all the European wars of modern times put together. The "Kronprinz Wilhelm" represents only one case in thousands. Owing to the particular conditions under which she carried out her raids the whole question was brought out more clearly than in the many millions of minor cases where health is undermined and disease invited in modern European countries.

The great influenza epidemic which followed in the wake of the world war and claimed many more victims than were killed by bullets, guns and poison-gases, would never have become so virulent and devastating if the European peoples had been better guided in their choice of food.

* * *

Time moves slowly. On the 28th of June 1934, a nephew of mine, a boy of seventeen,

returned from a sail round the world. He had embarked in September of the previous year as a sailor on one of the finest windjammers afloat, bound for Australia. I was keenly interested to learn about the diet on board. My nephew described the weekly bill of fare as follows:

M o n d a y. 5.30 a.m. - Coffee with white sugar and white bread. **B r e a k f a s t,** 8 a.m. - Salt herrings which nobody could eat because of the stench. (They were nevertheless served regularly). Onions eaten raw as long as fresh, but for half the voyage in a state of decay and, therefore, left untouched (though nevertheless served regularly). Tea or coffee, white sugar and white bread. Dinner, 1 p.m. - Pea-soup, salt meat, pancakes made of bad condensed milk, white flour, sugar and water. 3.30 p.m. - Coffee, white sugar, white bread. Supper, 7 p.m. - Polished rice and soup, supposed to be made of fruit but composed of manufactured 'fruit essence', prepared of course from chemicals, and potato-flour. (This soup nobody touched though it was regularly served.) Two cups of tea or coffee with white sugar finished the meal.

T u e s d a y. 5.30 a. m. - Coffee, white sugar and white bread. **B r e a k f a s t** - Barley porridge, corned beef, or salt beef, boiled to death. Tea or coffee, white sugar, white bread. **D i n n e r** - Baked beans, salt meat (in such a state of putrefaction that in order to get rid of the stench, the sailors threw it straight into the dust-bin. The same meat was nevertheless served regularly. 'Fruit' soup, as already described, but now served with six or seven prunes, some dried apricots and apples, in quantities normally sufficient for only two persons though now considered a sufficient ration for ten. Tea, with white sugar and white bread. 3.30 p. m. - Coffee with white sugar and white bread. **S u p p e r** - Pancakes as described above. Tea or coffee, white sugar and white bread.

W e d n e s d a y. (Described by my nephew as "The day on which nobody touched food.") 5.30 a.m. - Coffee, white sugar and white bread. **B r e a k f a s t** - Rice, and curry which nobody touched. Tea or coffee. white sugar and white bread. **D i n n e r** - Dried haddock and potatoes with oleo margarine. (The fish nobody touched.) Semolina gruel, cooked to death, which the majority left untouched. 3.30 p.m. - Coffee, white sugar and white bread. **S u p p e r** - Rice-pudding made of polished rice. Tea or coffee, white sugar and white bread.

T h u r s d a y. 5.30 a.m. - Coffee, white sugar and white bread. **B r e a k f a s t** - Oatmeal porridge, cooked to death. Corned beef or boiled salt beef. Tea or coffee, white sugar and white bread. **D i n n e r** - Fried bully-beef - nicknamed "rope yarn" - with potatoes, vegetable soup made from dried and preserved vegetables - a "washout" which very few touched. **S u p p e r** - Boiled polished rice, with a sauce similar to the 'fruit' soup on Monday. Tea or coffee, white sugar and white bread.

F r i d a y. 5.30 a.m. - Coffee, white sugar, white bread. **B r e a k f a s t** - Macaroni, and fried salt pork (with such a terrible stench that it had to be thrown away before the macaroni could be tackled.) Tea or coffee, white sugar and white bread. **D i n n e r** - Pea soup with salt meat, pancakes (as before) and jam. 3.30 p.m. - Coffee, white sugar and white bread. **S u p p e r** - Meat balls (made of scraps of meat and crusts of bread). potatoes, salt meat and boiled beef. Tea or coffee, white sugar. white bread.

S a t u r d a y. 5.30 a.m. - Coffee, white sugar. white bread. **B r e a k f a s t** - Black pudding and boiled beef. (Nobody touched the black pudding but it was, nevertheless, served every week.) Tea or coffee, white sugar, white bread. **D i n n e r** - Dried fish with potatoes, semolina gruel. (Nobody ever touched the fish because of the stench.) 3.30 p.m. - Coffee, white sugar, white bread. **S u p p e r** - Stewed peas and fried bully-beef. Tea or coffee, white sugar, white bread.

S u n d a y. 5.30 a.m. - Coffee, white sugar, white bread. **B r e a k f a s t** - Macaroni,

fried salt pork (which nobody ever touched.) Tea or coffee, White sugar, White bread.
D i n n e r - Vegetable soup as before. Fried bully-beef with potatoes and a 'mush'
made of dried apples, apricots, potato-meal and water. 3.30 p.m. - Coffee, White
sugar, white bread. S u p p e r - Tinned salmon with potatoes. Tea or coffee, white
sugar, white bread.

This rationing apparently provided the sailors, during their circumnavigation of the globe, with about a quart of coffee and a quart of tea daily, divided over four meals and consumed with white sugar and white bread, the effect of which upon the system will be dealt with in the following chapters. On the whole, this bill of fare may be described as even worse than that of the "Kronprinz Wilhelm", the only superior points being the onions, consumed raw but not lasting for more than half of the voyage, the barley porridge, and the lime-juice, rationed in conformity with the prevailing regulations though grudgingly and in the smallest permissible quantities. Thanks to this lime-juice, the onions and the barley porridge, scurvy and beri-beri were kept at bay. Of the excellent wholemeal rye and wheaten bread, in biscuit form and therefore imperishable, which abound in the country to which this ship belonged, and which would have acted as a first class bowel-regulator besides providing food-essentials of the very kind that was most needed - there was none. The result was that my nephew became subject to terrific constipation with, at the most, one or two bowel-actions a week, causing boils to appear, one of which nearly cost him an eye. His digestion became so weakened that upon arrival in Australia he found that he could not eat more than one third of an ordinary meal without feeling sick, and that he could not digest many foods he had subsisted on at home, without vomiting. This applied to most of the junior members of the crew having their first experience at sea. And how easy would it not have been to work out a diet which at less cost would not only have kept these poor sailors well and in perfect health built also would have turned their life on that stately ship from one of physical discontent and subdued suffering into a real joy. It is sad to contemplate that the greatest physical hardships on the sea must always be borne under the greatest physical deprivations, wantonly kept up because of the neglect and incapacity of those entrusted with the care of our bodily welfare.

Those boils, by which the sailors were afflicted, were nothing but the precursors of cancer. According to the general cancer statistics, butchers and sailors head the mortality list. Yet the doctors stubbornly declare that cancer is due to an infection*), and will not consider diet as a probable cause.

Dixi et salvavi animam meam.

*) Webmasters comment: apparently doctors thought at this time that cancer was due to an infection.

XXII.

OUR DAILY BREAD.

The fourth petition in the Lord's prayer contains only seven words:

"Give us this day our daily bread."

The preceding petition runs: "Thy will be done, in earth as it is in heaven."

No prayer is more regularly prayed all over Europe than the Lord's prayer.

Europeans pray that their daily bread may be given them. If they only knew the deep significance of these seven words they would repeat them not once but many times daily, for our daily bread has been taken from us long ago and it is kept away from the multitude in most of the civilized countries by the millers and the majority of the doctors, as well as by a certain percentage of leading politicians, government officials and newspapers ruled by the interests of the millers.

Once when I was having my morning meal at a small restaurant in a Swedish provincial town a peasant came in and ordered breakfast. When it was served he asked for some bread. The waiter drew his attention to the fact that bread was already on the table. The peasant looked at the few thin slices of something dead-white in a basket and said scornfully: "This is not bread, I want real bread, please." There was no 'real' bread to be had in that restaurant so the peasant took his cap and left without saying a word.

I had just finished my meal so I settled my account and joined him. He was a tall, well-built, muscular man of a type now rapidly disappearing in Scandinavia. "I am sorry," I said, "but I do not think you will be able to find a restaurant in this town where you can get real bread." "What," he exclaimed, "no bread to be had in this town?"

"No," I replied, "not in the restaurants but if you come with me I will take you to a shop where you can buy it. That is what I do myself; I buy the bread I am going to have with my meals, otherwise I should never get it."

The man looked astounded. It was his first visit to this town, the centre of a big rural district.

"Oh," he said, "I could not have a meal without real bread. If I cannot get it I shall never come here again. How can people eat that pasty, white stuff? Dear me, I should die if I had no other bread to subsist on." He thanked me and smiled, showing a full set of strong white teeth.

A similar story was told me a few weeks later by a school-teacher from another of our rural districts. When on a recent visit to one of our largest towns, he had wandered in vain from restaurant to restaurant trying to get real wholemeal bread. He was himself the son of a farmer, accustomed to wholemeal bread since childhood and could not touch white bread. "How is it possible," he asked me, "that people are going off wholemeal bread, and agreeing to subsist on such a poor substitute as that white pasty stuff?")

*) It is quite impossible to get real wholemeal bread made of 100% wheat meal in London. There are a great many breads advertised as whole-meal, but they are all, without exception, poor stuff from which the best part of the bran has been sifted away and only a pinch of it sprinkled; on the surface of the crust to make people believe that they are buying and eating the real thing. Bakers seem firmly

convinced that if they produced the real stuff no customer would buy another loaf.

Finland is the only country in Europe in which real bread is to be had. The variety of excellent breads on the market in that country is simply astounding and explains the marvellous achievements of the Finnish athletes. You can buy a loaf of White bread in Finland, but you have then to ask for - "French bread". The consumption of "French bread" at regular meals is insignificant.

The truth is that the story of our daily bread is not only a sad one but is, in reality, nothing short of a scandal that cries to heaven. It actually causes each year, in Europe, the death of more people than the Great War killed in four years, and brings untold suffering upon other millions, especially upon the children. It is the grossest insult to those seven words of the Lord's prayer which we have been taught to repeat daily ever since we were children, that at the same time we should be robbed daily of the very thing we pray for.

If anything has brought disgrace upon the medical profession it is the question of our daily bread.

For untold generations bread was the staple food of our forefathers. It was always made with wholemeal, or 100% of the grain. Originally the grain was consumed in its raw state by gathering the ears of corn in the hand and rolling them between the palms until all the grains had separated from the supporting stem and could be conveniently emptied into the mouth for consumption. Once, going through a corn-field with their Master, the disciples did so "because they were hungry". I have done the same thing many a time as a child.

One of the first things I noticed was that the growing grain in its soft green state tasted sweet and delicious, almost like sugar, whilst the sweetness was gone when it was yellow, ripe and hard. I did not know then that the first fruit of the activities of any plant is sugar, produced with the aid of the sunrays from the carbon of the air and the water from the roots. But sugar is easily soluble in water and would hence be quickly lost to the little germ in the seed, from which a new plant is going to grow, if it were not converted into an insoluble substance. The germ needs sugar for food until it has developed roots of its own and is able to feed itself in the same way as its mother plant. The sugar answers the same purpose for the seedling as milk from the mother's breast for the human baby. But sugar in a soluble form could not be packed in the seed, as the little germ might have to wait for a year or more for a favourable soil to grow in and a favourable season to start its growth. Wise mother Nature therefore invented means by which to preserve the sugar in such a state that the rain from the clouds and the water in the soil could not dissolve it and wash it away. She solved this great problem by turning the sugar into starch which is insoluble in water, and by providing the little germ at the same time with certain enzymes by means of which it could quickly reconvert the starch into digestible sugar as soon as it started to grow and was in need of food.

Hence *the starch in the seed is only converted sugar*. It is sugar put into a cellar or a safe for storage. How wonderful this little cellar is has been shown many times in history, when seeds buried for thousands of years in the tombs of ancient Egypt have been made to grow when put into the soil. After having been asleep for four or five thousand years, the little germ, like the sleeping princess of the fairy-tale, has been roused by a kiss from the sun and has started with the aid of the golden key of the enzymes, to open the starch cellar and convert the store of starchy food it once got from its mother plant into sugar again.

The Scandinavian poet who made the plants sing: "we eat sugar and drink wine" was not far from the truth, for water from roots is a real wine of life, full of precious food-minerals, which the cells of the tiny root-hairs have dissolved from the soil, the

stones and the rocks by means of special acids, acting as miners' tools, and which they have carefully selected and mixed with water to make a delicious drink for all the billions and billions of cells contained in the stems and the leaves.

All this is marvellous, but not less wonderful is the fact that we human beings have been endowed by kind Mother Nature with a somewhat similar ability to that of the little germ. When eating the seeds of plants we begin, as soon as they enter the mouth, to convert them into soluble sugar by mixing them with the saliva. A slice of wholemeal bread, well masticated, will soon be turned into a kind of sweet gruel. The sugar of this gruel is absorbed into the blood by the small intestine and brought to the liver which is the body's greatest chemical factory and storehouse. It is *sugar* that supplies our muscles with the best fuel needed for their tiny little engines. Sugar is the 'Derby-brights', and its little grains are the 'anthracite nuts' of the fire-boxes under the boilers of our muscle-engines.

But these engines are generally put to a very irregular use. If we take a walk or a sudden run, a great cry for fuel will suddenly be raised by millions of tiny muscle-cells all over the body. The demand for sugar is therefore never constant and varies greatly throughout the day. The liver has to keep it in store and supply it accordingly. In performing this task it is placed in very much the same position as the 'seed'. The liver must store the soluble sugar. It cannot store it in a fluid state, as the body is nearly 75% fluid and the blood and the other fluids of the system would soon become so overloaded with sugar that their circulation would be stopped or choked. In order to avoid this calamity the liver converts the soluble sugar into an animal starch called *glycogen*. Like the little germ, the liver, in case of need, converts this animal starch back again to a soluble sugar which can easily and rapidly be carried by the blood-stream to any part of the body in just the right quantities to serve as fuel for the small engines of the muscles which have been put to sudden use.

This, in its simplicity, is the fundamental principle upon which our activities are built and the reason why there is such a deep-rooted craving for sugar in all human beings, especially at their most active age, i.e. that of childhood.

All children love sugar because sugar is the prerequisite for all their intense muscular activities. Because the children love sugar they also love bread. I have innumerable times asked children in the rural districts of Scandinavia what they fancy most when hungry. The answer has invariably been "whole-meal bread with butter and a glass of milk". Many times when skiing and skating in the winter - exercise which in the frosty air soon exhausts the available food-stores of the body, I have always found that nothing satisfies me so quickly and completely as wholemeal bread with butter.

Wholemeal bread has been taken from us because of a huge, incomprehensible mistake made by the doctors and their teachers. Having made this mistake and once started on an exclusive white bread, lean meat, etc. diet, they soon found coarse bread too harsh for their artificial teeth and impoverished, disease-stricken alimentary canal, and consequently sided with the millers in their endeavour to maintain a big profit on their milling products.

Only occasionally do we notice an attempt on the part of health officers to put matters right again as when, for instance, the United States Public Health Service under the pressure of the Great War published a bulletin in April 1916 declaring that the roller mill system deprived flour of valuable food constituents, and that animals fed on highly milled wheat and corn would die within a month or two, whereas they would live in perfect health for many months on an exclusive diet of unmilled wheat or corn.

The flour millers immediately raised a cry and 'swooped down' upon the United States Public Health Service which, in September of the same year, issued a 'corrective' bulletin in which the public was told not to worry about "the refined cereal diet" but to be sure, instead, of obtaining "the essential dietary *components*" from "*other foodstuffs*".

The millers had brought "pressure" to bear on the United States Health Department asserting that its bulletin had caused the consumption of highly milled flours to fall off nearly 25 per cent. The flour industry had indeed been hard hit financially and the Government consequently had to help them to re-establish the prestige of "refined highly milled wheat and corn".

The history of the way in which white bread came to be thrust on the European and American peoples is a sad one.

White bread was first made in France where the rural population by dire experience at once christened it "pain de mort" - the bread of death.

White bread is indeed the bread of death, for it has been robbed of the little germ and the husk or hull of the grain in which Nature has stored a number of food elements, especially of a mineral kind, invaluable to human beings as well as to animals.

"White bread becomes white because from the ground grain of wheat three-fourths of mineral salts and colloids, including the salts of calcium, phosphorus, iron, potassium, chlorine, fluorine, sulphur, magnesium, manganese, etc., are removed. These mineral substances are contained in the brown skin, the cells underneath this skin and the germ of the wheat berry. They are sifted and bolted out of the ground meal, leaving behind the white starchy cells and refined gluten of the interior part of the berry. To obtain a still whiter whiteness this impoverished product is submitted to an electro-chemical process." (McCann, *The Science of Eating*, p.105.)

The first obvious result of all these manipulations is a civilized toothless race with weak, receding jaws and "rabbit-mouths", relying upon an army of dentists and manufacturers of false teeth and dentifrices to make up for all these deficiencies.

People who live largely on wholemeal bread and vegetables never suffer from bad teeth. My father used to start every meal with a slice of biscuit-like, hard bread made of wholemeal rye, half an inch in thickness. At the age of fifty he had all his teeth intact and did not know what toothache meant. I may add that he was brought up in the country on a diet free from white bread, cakes, white sugar, coffee and tea, with very little meat. Though for the rest of his life he used to eat meat daily and consume three or four cups of coffee with white sugar, his teeth lasted his lifetime thanks to the superior diet of his childhood. It is the diet of our childhood and youth that decides the structure and durability of our teeth.

And to think that all these troubles are maintained simply because the members of the Medical Profession have got it into their heads that bran is indigestible and should therefore be avoided by man and given to the pigs! Responsible in the first place for this mistake and all its consequences is Dr. *Max Rubner*, Professor of Hygiene in the University of Berlin and Superintendent of the German State Institute of Hygiene, one of the greatest authorities in dietetics of modern times. In his innumerable works and lectures he invariably taught that the bran of grain was not digestible by human beings, or only digestible to such a small extent that it would be better in the circumstances to give it to the animals and eat their carcasses instead. Because of his great authority this statement was regarded as unchallengeable not only by the German doctors but by learned professors and doctors all over the world, "in the education of whom," as Sir Arbuthnot Lane puts it "the knowledge of diet has not

hitherto formed an integral part." If it had done so, many doctors would have found out long ago, not only that Rubner was wrong in his statement concerning the digestibility of bran, but also how he had arrived at this false conclusion.

The first man who revealed Rubner's mistake to the world was the famous Dr. M. Hindhede, Superintendent of the State Institute for Food-research in Copenhagen. His investigations concerning the digestibility of bran constitute one of the most thrilling chapters of modern dietetics. By the knowledge then obtained he was able not only to save his people from starvation when the allied powers had stopped all importation of food to Denmark, but he was also able greatly to reduce the death-rate during the severe influenza epidemic which followed in the wake of the war, thus proving that "knowledge is power and if it isn't power it isn't knowledge".

One of the first things that puzzled Hindhede as a young student of medicine was the minimum amount of protein required to keep a human being of average weight alive according to the general teaching of those days. Hindhede himself was the son of a farmer and had as such been brought up on a diet rich in carbohydrates but poor in protein. By making careful calculations Hindhede came to the conclusion that he had been underfed in protein all his life as the consumption of meat, fish, etc. in his home was very small. Furthermore, by examining the diet of the poorer classes in Copenhagen who could not afford to buy the expensive protein-containing foodstuffs he found that, scientifically speaking, they ought to be dead, i.e. they existed upon a quantity of protein which, according to the teaching of his professors, was insufficient to keep any human being alive. These facts started Hindhede on his way to discoveries of the most vital nature.

His first discovery was that the prevailing theories concerning the amount of protein in the daily consumption of foodstuffs was not only wrong, but that by cutting it down, people were able to improve their health, strength and power of endurance. He found his observations on himself corroborated by Professor Chittenden's famous experiments on soldiers and students at Yale University, the most thorough and extensive experiments then made in connection with this great question. Both the soldiers and the students showed a great increase in health, strength and endurance by a reduction of the daily protein consumption. Extensive researches by Hindhede concerning the food eaten by various classes in Europe and people in other parts of the world confirmed his findings.

All this happened thirty years ago. The old theory according to which 120 grams of protein a day was considered the minimum amount for a full grown, healthy and efficient man is now exploded. The minimum amount of 120 grams has been brought down to sixty and even as low as forty by subsequent experiments, and it has been abundantly proved that the more this amount is reduced towards the minimum the greater are the advantages gained in health, strength and power of endurance.

Hindhede's second discovery is related to the question of the digestibility of bran and the cellulose elements in grains, vegetables and fruits.

His professors had taught him, as already stated, that the bran of grain was not fit for human digestion. Still, he had been brought up on wholemeal bread, especially bread made of rye. And he infinitely preferred this kind of bread to the white bread which was used in the restaurants of Copenhagen. This rye bread contained nearly all there was in the grain. It constituted the staple food of his parents and had done so for untold generations of his ancestors. He furthermore found out that if the bran of the rye was removed from the meal the bread did not taste nearly so nice, neither did it satisfy his hunger in the same way. Still, scientists of the greatest authority, such as Rubner, had taught that this bran was not fit for human consumption and could with

greater advantage to the human digestion be removed and given to animals, especially pigs, and that in eating the flesh of pigs there would be a greater gain to the farmers than if they consumed the bran themselves. Here again life itself opposed theory.

Hindhede now submitted the theory to a scientific test by experimenting on human beings; and lo and behold! it crumbled and disappeared just as the old 120 grams protein standard had done. According to Rubner man could not digest of bran more than 31.3% of dry substances, 38.9% of protein and 73.5% of carbohydrate plus cellulosa, whilst animals had been proved to digest not less than 79% of dry substance, 79% of protein and 79% of carbohydrate plus cellulose - nearly a 50% better utilization of the bran by animals. Rubner concludes: "*obviously the advantage in eating the flesh and fat of animals fed on bran equals what we ourselves would gain by a direct absorption of the same foodstuff.*" ... "*If the bran of grain is given to feed the animals, this will prove in all circumstances a more national way of utilising it.*"

Hindhede's faith in the great authorities of the medical profession had once before been thoroughly shaken. He was convinced that Rubner was wrong and he himself was right concerning the bran question, and at once set out to investigate how Rubner had arrived at his figures. He now made another discovery, perhaps the greatest of his life.

Rubner describes how he arrived at his conclusion in the following paragraph:

"From observations which I have made on bran from whole-meal wheat which had been *thoroughly washed out with water so that only the hull was left*, it was found that altogether 68.7% of dry substance, 61.1% of proteids and 26.5% of non-proteids (chiefly cellulose) were lost (to human digestion) ."

In this way *Rubner* arrived at the above-mentioned figures: 31.3% of dry substance, 38.9% of proteids, 73.5% of carbohydrates and cellulose which he considered established definitely the percentage of bran that could be utilised by human digestion. His figures concerning the digestibility of bran by ruminants were taken direct from the findings of one of the greatest German authorities on cattle feeding, *Kellner*.

Rubner's own account of how he arrived at his figures is printed in *Deutsche Medizinische Wochenschrift*, 1915, No.19. From this account it is easy to find the flaw in his reasoning. Ordinary bran contains two different parts: the husks, or hard cellulose which is less digestible, and the *easily digested meal-constituents*. These latter Rubner had *thoroughly washed away*, so that his experiment was eventually concerned only with the hardest parts which remained. The figures he thus obtained were now compared with *Kellner's* figures for ruminants, obtained through experiments made with bran *from which nothing at all had been washed away* and in which consequently *all the most easily digested parts were preserved*. That is to say, whilst *Kellner* made his experiments with the *whole* of the bran, Rubner confined his to the hardest and most indigestible parts without noticing the fundamental difference in the stuffs with which he and *Kellner* were experimenting. In comparing his results with *Kellner's* he naturally came to a very unfavourable conclusion as to the utilisation of bran by human beings. *Upon this huge mistake the whole prevailing theory of the indigestibility of bran by human beings has been built up.*

"One can scarcely believe one's eyes," says Hindhede, when one realises that this false comparison has been used as *the chief argument against including the bran of grains in the making of bread.*"

Hindhede now set out to make a series of experiments on human beings with bran from which nothing had been washed away, and he arrived at results which proved

irrefutably in every instance that bran could be digested just as well if not even better by human beings than by pigs and ruminants. His figures were soon corroborated by the experiments of other scientists who confirmed his findings. The Great War had evidently roused some interest outside Germany in the question of the digestibility of bran by human beings, whilst the brains of the German scientists remained paralysed by Rubner's great authority.

Professor G. Wiegner of the Technical High School in Zürich came, by his own experiments, to the same conclusion as Dr. Hindhede, and thus was this distinguished scientist converted from a convinced upholder of Rubner's theory into one of those who helped to demolish it. Through extensive experiments he arrived at the following figures concerning the digestibility of wheat bran by human beings, pigs and rams.

	Dry substance	Protein	Carbohydrate
Human beings...	60.4	86.3	75.1
Pigs.....	59.1	75.7	65.2
Rams.....	67.2	77.5	74.6

Through his experiments Wiegner established the fact that *man was able to utilise bran as food just as well, if not even better, than the ruminants and pigs.*

Even Rubner's chief argument, given as a cause of man's supposed inability to digest bran as well as ruminants and pigs: "because his digestive juices were not able to dissolve the aleuron-cells which form a thick layer on the inside of the outer skin of the grain" was blown to pieces. Wiegner submitted these cells to a test by immersing them in pepsin-hydrochloric acid and found that *nearly the whole, or 87.2%, of the bran-protein was soluble.* His final figures for the digestibility by humans of ordinary coarse bread made of unsifted wheat bran are:

Dry substance	Protein	Carbohydrate	Cellulose
88.7	82.3	94.4	33.9

Wiegner's conclusion, printed in "Mitteilungen der Gesellschaft schweizerischer Landwirte", 1918, No. 5, runs as follows:

"As man is able to digest bran just as well as ruminants and pigs, the feeding of animals with bran represents, to human beings, the great loss of nearly nine-tenths of the nourishing part of the grains."

In order to remove conclusively every doubt as to the digestibility of wholemeal bread, two other authorities, Langworthy and Deuels, may be quoted. They made thirty-three tests with graham bread (full wholemeal bread) and forty-three tests with white bread and arrived at the following average figures which, for the sake of comparison, are printed side by side with Hindhede's figures:

	Langworthy			Hindhede		
	Dry substance	Protein	Carbohydrate	Dry substance	Protein	Carbohydrate
Graham bread	92.2	84.2	94.4	90.1	84.5	93.2
White bread	98.3	89.5	99.9	97.5	93.7	99.2

Langworthy's and Deuel's results were published in the *Proceedings of the National Academy of Sciences*, Vol. 5, No. 11, page 514.

Of cellulose, hitherto considered indigestible, whole wheat contains 2.5%.

It is this quantity of cellulose which has hitherto been used as a bogey by the millers and their scientists and by doctors to frighten people from eating wholemeal bread.

On page 92 in his "Diseases of Civilization" Sir Arbuthnot Lane refers to this ignominious campaign, saying: "Some doctors have even protested that the bran and germ extracted from the wheat are injurious and irritating to the human intestine and are therefore only fit to fatten pigs and other animals who thrive on them." - Nothing demonstrates in a better way the complete ignorance of doctors as to the constituents of food in general. The same doctors who consider the bran and the germ of wheat injurious, nevertheless eat strawberries which, according to Bunge, contain 2.3% of cellulose, radishes which contain 2.8%, beans 3.6%, grapes 3.6%, pears 4.3%, raspberries 6.7%, raisins 7%, hazelnuts, almonds, walnuts and hickory-nuts from 3-7% and asparagus, cantaloupe, water-melon, mushrooms, apples and celery which all contain *as much cellulose as whole wheat*.

Professor G. Bunge demonstrated as long ago as 1889 that the unabsorbed protein of lentils was 40%, of carrots 39%, of potatoes 32% and of cabbage 18%. Bunge also demonstrated that the unabsorbed protein of milk ranges from 7 to 12%.

If the same principles were applied to these foodstuffs, they would have to be sent to the millers to be refined into a patent flour before we could touch them.

Bunge himself took quite a different view. "We must see," he declared, "that the diet of human beings *does not lack woody fibre, bran or cellulose. The excessive fear of 'indigestible' foods which prevails among the wealthier classes leads to debility of the intestinal muscular walls.*"*)

*) In advertising a well known make of supposed wholemeal bread, the makers - one of London's biggest firms - announced that their whole-meal bread contained "no harmful bran".

"The unrefined grain of wheat as it comes from the field contains *in organic form* twelve mineral substances needed for the health, growth and life of the animal body."

"Nature," says McCann, "never made a 'white grain' of wheat and man never knew the meaning of white flour until he conceived the idea of startling his guests with bread as white and lifeless as the napery on which it is served. Chickens, guinea-pigs, white mice or monkeys fed on bread made from the unrefined wheat thrive indefinitely, but *chickens, guinea-pigs, white mice, or monkeys led exclusively on white-bread diet perish in from five to seven weeks.*"

"White bread becomes white because from the ground grain of wheat three-fourths of the mineral salts and colloids are removed."

"The bran is found to consist of rough, canvas-like, brownish particles, with a very remarkable suggestion of woof and warp. The germ, difficult to distinguish from bran with the naked eye, will be found to consist of rich, oily, cream-coloured particles."

"A chemical analysis of this bran and germ, which take up large quantities of water and hold it in the intestines for lubricating purposes, shows that they are rich in vitamins, in silicon, sulphur, nitrogen, iron, iodine, potassium, manganese, phosphorus, nucleo proteins, or phosphorised albumens, lecithins, or phosphorised fats and the simple phytin compounds and phosphates without which, as proved in a series of experiments carried out in St. Petersburg, *no animal can be properly*

nourished."

Of these twelve mineral substances in organic form a pound loaf of whole wheat bread contains 70 grains, while a pound loaf of white bread of the ordinary kind contains only 18 grains, which makes a difference of 52 grains. In order to regain these 52 grains by eating some kind of animal foodstuff especially rich in them, approximately two dozen eggs or two pints of milk would have to be consumed, according to McCann.

Still, the majority of doctors think that even poor people can afford to eat white bread instead of wholemeal bread. It is quite true that at present wholemeal bread has been made more expensive as far as weight is concerned, though *it is a significant fact that in a wheat producing country like the United States it costs one dollar less per barrel to manufacture whole wheat meal than it does to manufacture white patent flour*. But the millers do not like people to consume whole-meal bread and therefore charge two dollars more a barrel for a product which actually costs one dollar less to manufacture than white patent flour. This constitutes one of the greatest scandals of modern times.

Still, in spite of this forced and unnatural difference in price, there is nearly 50% more value for the money in a loaf of wholemeal bread than in a loaf of white bread of the same weight.

Sir Arbuthnot Lane writes on page 92 in "Diseases of Civilization":

"Many people assert that we eat too much. This is true in so far as we devour large quantities of food *which contain neither sufficient vitamin nor roughage to ensure satisfactory drainage of the intestine*, in other words, to prevent constipation. On the question of white bread, it is frequently maintained that this product is favoured by the working classes because it is cheaper than the wholemeal variety. This involves a fallacy, as shown by Dr. Rowland's experiments on rats. When vainly endeavouring to obtain enough vitamin and roughage from white bread, the rat eats enormously, while, *if provided with wholemeal bread, the animal requires but a small quantity to meet his requirements in these particulars*. Therefore you will find that your children require only half the amount of wholemeal bread requisite for health and that they will have regular motions of the bowels."

Alfred W. McCann takes the same view on page 117 of his chief work "The Science of Eating":

"Complete absorption means constipation. Deficiency of mineral salts means constipation. Absence of cellulose or fibre means constipation. Bran takes up moisture and holds it in the intestines, thereby making the intestinal mass more elastic, stimulating peristalsis, and increasing the rhythmic waves of contraction and relaxation so necessary to the process of elimination. Bran surrenders to the body the solubles it contains. White patent flour contains approximately 11% protein; bran contains 15%. White flour contains 1% fat; bran contains 4%. Patent flour, like refined corn meal, contains less than one-half of one per cent (0.5%) of mineral salts. The bran and germ of the grain contain nearly *ten times as much*. Of phosphorised compounds alone bran contains *twelve times as much* as patent flour."

"This does not mean that bran is a substitute for whole-meal. It is not. Bran lacks many of the elements found in the cells of the thin outer skin of the wheat. It is *the whole grain*, with bran and germ included, *nothing added and nothing removed*, that is ground into honest, adequate, God-given meal."

"Such meal is rich in all the food minerals and vitamins essential to human and animal life, containing just that quantity of bran necessary to make constipation impossible."

"Where constipation is avoided the absorption of the irritating and poisonous end-products or toxins of intestinal putrefaction is rendered quite impossible."

"Thus one of the suspected causes of cancer and of many other diseases, including hardening of the arteries, is also avoided. Involuntary suicide and auto-intoxication are synonymous."

'Gutta cavat lapidem' - the drop hollows the stone - not by force but by constant dripping. It is the small imperceptible causes that bring about the greatest results. Slight mistakes in the way of eating will bring about the downfall of great nations more surely than invading enemies, for the invading enemy may be easily absorbed by the conquered people if their way of living is healthier. It is the *health-factors* adopted by any nation that will ultimately decide its fate.

This was proved by Dr. Hindhede through the gigantic food-experiments to which he submitted his people during the war.

Normally Denmark grows yearly 1,100 million kg. of rye, wheat, and barley and imports 1,500 million kg. of rye, wheat, maize and oilcake. Denmark's total consumption of these food stuffs amounts to 2,600 million kg.

1917 found Denmark on the verge of a disaster. In order to stop every possible hole through which food could be brought into Germany the allied powers included Denmark in the German food-blockade and thus deprived her of the 1,500 million kg. of rye, wheat, maize and oilcake she depended on for her maintenance. On the top of this a severe drought deprived Denmark of 300 million kg. of her normal crop. Instead of the ordinary 2,600 million kg. there were now left only 800 million kg. for her population, i.e. *less than one third of the amount normally required to feed her people and domestic animals.*

The situation was desperate. Dr. Hindhede as Superintendent of the State Institute for Food Research in Copenhagen was appointed food-dictator. To him was left the solution of this grave problem. However, he rose to the occasion and it did not take him long to find an easy way out of all the difficulties. His life had taught him two invaluable facts: 1) that man could subsist with great advantage on about one third of the proteins he generally consumed. 2) that in bran nearly nine-tenths of the food value of cereals or grain-stuff was denied human beings and given to cattle and pigs. He knew by calculations, the accuracy of which could not be refuted, that to be adequately fed a pig required, kilogram for kilogram of bodily weight, just as much food as man. Hence, *instead of reducing to starvation two-thirds of the Danish population, he ordered four-fifths of the pigs to be slaughtered and reserved their food of bran, potato-peels and grain-stuff for the people.* In addition he diminished the total number of cows by 34% and *withheld the wheat bran from the cows. Thus only 20 pigs in one hundred and 66 cows in one hundred were left to compete with man for the 800 million kg. of cereals which were left for the maintenance of the population and its live-stock.*

The only bread allowed to be baked in Denmark that year was a coarse rye bread in which was incorporated not only all the rye bran but in addition 12-15,% of wheat bran. *"It was indeed the coarsest bread ever seen,"* says Sir Arbuthnot Lane. *"Hindhede thus arrived at an impossible diet according to the old, dietetic teachings, but an ideal one according to his new theory."*

And it worked!

"The results to health of this extremely Spartan diet were striking in the extreme. The mortality for the whole country in the first full rationing year, October 1917 to October 1918, fell 17%, indicating a mortality of 10.4 per thousand, *the lowest deathrate ever seen in any country.*"

When the terrible influenza scourge reached Denmark in 1918 Hindhede scored another triumph. His country was the only one in Europe which could show no higher mortality in the influenza epidemic of 1918 than in the years preceding the war. Whilst, owing to this epidemic, the deathrate per 1000 living rose, in the neutral countries, 24% in Norway, 27% in Sweden and in Spain reached 46% above the deathrate in 1908-1913, *it actually fell in Denmark to 2% below the deathrate in 1908-1913:*

The following table will bring this astonishing fact more clearly to the reader's mind:

Deathrate per 1,000 living.

1 Denmark	1908-13	13.3	1918	13.1	fall	2 per cent
2 Norway	1908-13	13.5	1918	16.7	rise	24 per cent
3 Sweden	1908-13	14.1	1918	18.0	rise	27 per cent
4 Holland	1908-13	13.6	1918	17.1	rise	26 per cent
5 Spain	1908-13	23.0	1918	33.6	rise	46 per cent
6 Switzerland	1908-13	15.2	1918	19.0	rise	25 per cent
mean 2-6 (Norway-Switzerland)					rise	30 per cent
mean, without Spain					rise	25 per cent

"Too much stress," concludes Sir Arbuthnot Lane, "cannot be laid on the value of the measures Dr. Hindhede adopted because of their perfect simplicity and of the facility with which they can be followed in this country, with a certainty that, by adopting them, disease may be rapidly reduced and the nation transformed from a C₃ to an A₁ type."

To my mind Hindhede was the greatest general of the war. He had been put in charge of a nation threatened by the worst enemies of all - *hunger*, and disease which always follows starvation. His army was an army of 2,600,000 men and women and their children. There was not food within the country for more than one third of them. Yet he not only fed them well, but in spite of a stopped import, there was food left over with which, I am told, he was able to allow Denmark to help her sister nation Sweden, which in spite of larger resources was worse off than Denmark so far as food was concerned.

During the war I often had occasion to cross over to Denmark from Sweden, especially in the year 1917, and it was a real joy to see such an abundance of excellent bread everywhere. I was supplied with more than plenty, whilst at home in Sweden people were more or less on the verge of starvation and the bread ration was insufficient.

While the other generals of the Great War were doing their best to destroy lives, Hindhede was saving lives. But he not only saved lives, *he gave the people better health and better resistance to disease*, so that when faced with the modern scourge, influenza, the Danes were the best armed nation in the whole world.

The irony of fate would have it so that Germany, which borders Denmark in the South, *had more food per capita during the whole of the war than this little nation in the North in the fatal year 1917.*

On page sixty-three of the German translation of his book: "The New Doctrine of

Feeding" (Die neue Ernährungslehre), Hindhede points out that Germany had, proportionately, 70% more rye and 130% more potatoes per head for the feeding of her people than Denmark. But Germany did not accept the same feeding principles as Denmark because of Rubner's fatal mistake concerning the digestibility of bran. Consequently Germany tried to keep her live stock *at the highest possible level*, not taking into account that in these days a pig needs for its maintenance just as much food per kilogram as a human being. Hindhede actually says, on the page referred to:

"That we in Denmark (1917) saw Germany starving, though Germany normally, in proportion to the number of our population, had 70% more rye and 130% more potatoes with which to feed her people, was a fact that could not help making us realise more clearly the difficulty of our own position (i.e. when the allied powers stopped all food-import to Denmark)."

"What saved us was the fact that we in Denmark had realised the huge mistake Germany was making in trying to keep her live stock at the same level without taking into account that *when cattle are fed with food-stuffs suitable for human beings not less than 80% of these food-stuffs are being lost to the population.*"

In the pamphlet 'Number 10', issued by the Danish Government, 1917, concerning the right composition of a war dietary during the blockade, the following paragraph has a direct bearing upon this loss:

"Whilst the breeding of pigs in olden days was limited to domestic pigs, which were fed with the offal from the kitchen, the fields and the barn, nothing could be said against it. But the extraordinary increase of pig-breeding in modern times has reduced the offal to a more and more negligible factor. The chief food for pigs in our days consists of *grain food and milk*. In order to produce 60 kilograms (slaughter-house weight) of flesh with, a content of 11% protein and 33% fat, not less than 265 kilograms of grain-stuff with 12% protein, 2.4% fat and 69% of carbohydrates are needed, plus 450 litres of skimmed milk*) containing 3% protein, 0.1% fat and 5% carbohydrate.

*) Skimmed milk contains all the vital elements of whole milk except the fat and constitutes therefore an excellent food for human beings.

That is: a pig consumes one million and ninety-one thousand (1,091,000) calories of food whilst it renders in flesh for human consumption only two hundred and eleven thousand (211,000) calories, or scarcely more than 20% of the food values consumed. *The loss to human consumption is 880,000 calories per pig or 21% of the food values consumed.*"

The shadow of starvation which hung over the German nation and threatened its existence more than the guns and strategy of the enemies, now turns out to have been an imaginary one, produced entirely by the huge blunder made by a German scientist, *Rubner*. All the German food experts bowed to his great authority. Surely, Rubner could not be wrong. His dictum: "Bran cannot be utilised by human digestion in the same way as by cattle, wherefore it is without question more economical to give it to pigs and use their flesh for human consumption", obsessed and paralysed the thinking of this highly theoretical nation. The Germans had to go through all the experiences brought upon them by a four years blockade before they could see daylight. Nay, they do not see it yet, for according to available statistics Germany had in 1932: 22,858,549 pigs and in 1933: 23,879,000, which indicates an increase of not less than 1,020,451 pigs in one year. These figures mean simply that Germany in 1933 could have maintained almost her whole town population (30.1%) upon the food values given to pigs, or increased her total population by at least 20 million if she had

adopted the same methods of feeding as Denmark in 1917.

In a special 'Memorandum' issued by the Danish Home Office in the Autumn of 1917, the Danish Government points out on pages 106-109 that the actual loss in food which might be used for human consumption amounts to not less than 81.3% by pig breeding, 81.6% by the dairy industry and 94.7% by breeding of cattle for slaughter and fat production. In other words these three branches of food-making did not give more than 18.7%, 18.4% and 5.3% of the nourishing value of the food-stuffs used in their upkeep. The memorandum makes an exception for cows and bulls which are chiefly fed on mangel-wurzels, hay and straw, or mainly with a kind of fodder which human beings in no circumstances or only very exceptionally could utilise, though where mangels grow potatoes and grain could also be produced.

Taking into account the available cultivated soil in Europe before the war (according to Sundbärg, *Apercus statistiques internationaux*, Stockholm 1908, Page 178) Hindhede comes to the conclusion that if the feeding of the various European nations were built upon a rational foundation, Denmark could easily increase its population 5.8 times or from three million to seventeen million five hundred thousand (17,500,000), Norway from 2.5 million to 4.5 million, whilst Great Britain would be able to maintain on the land alone not less than fifty-seven (57) million and Germany 200 million. The figures refer to the available cultivated land of Great Britain in 1908 but do not, of course, apply to arable land not then under cultivation.

From these calculations it will be clearly realised that in a proper solution of our food problem lies the key not only to the health and strength of every nation but also to most of its social problems.

When Sir Arbuthnot Lane founded the *New Health Society*, he declared that one of the main points on the programme of this society would be "to put the people back upon the land, with a view to enabling them to lead more healthy, happy and active lives in the open air of the country, where they can be instructed by experts in intensive and other forms of gardening, the culture of fruit-trees and shrubs, etc. so that they may produce not only enough fresh food for themselves but may provide for the people in the towns much of the fruits and vegetables which they are now obliged to buy from the Continent and can perfectly well be grown on English soil in great abundance."

Upon the realisation of this great aim hangs the future existence, the "to be or not to be", of this one so sturdy and healthy race.

XXIII.

ANOTHER THREATENED FACTORY.

Sir Arthur Keith calls the big bowel a "threatened 'factory'". There are many threatened factories in the bodies of civilized human beings nowadays. Another factory which is threatened with ruin is our sugar-making factory.

We have already seen that the first result of plant-activity is to convert the carbon dioxide of the air and the water and minerals of the soil into sugar by the aid of the Sun's rays. But this sugar is quickly converted into starch which, as we have seen, is nothing but sugar in an insoluble form. Starch is a minute plant cellar filled with sugar. Sugar is the real bread of life.

When the plant is short of food the starch is reconverted into sugar, which can easily be carried about in solution by the sap which constitutes the vital juice or the 'blood' of the plant.

As was pointed out in the previous chapter, man has no ability within his body to produce sugar from the same constituents as the plant. He gets his bread of life from the plants. But as the plants only retain sugar stored in their starch cellars, man is unable to get his sugar in any other but this converted and stored-up form. Hence Nature has supplied him with an elaborate factory for *reconverting starch into sugar*. The first part of this factory is represented by the teeth, acting as grind-stones, and the six salivary glands of his mouth. The salivary glands contain a ferment which converts the starch of wheat, corn, rice, oats, potatoes, beets, carrots and all other starch-containing seeds, roots and fruits into sugar. This conversion does not take place until the food has been thoroughly broken up between the upper and lower teeth or mill-stones of the mouth, which is used as a real mill, far surpassing any invented by man. If, when very hungry after half a day's strenuous exercise in the fresh air of the forests and open fields of the country, we consume two or three large slices of wholemeal bread, a sweetish taste, superior to any we have ever experienced, tells us when a batch or bolus of food is ready to be swallowed. The mouthful of bread has then been converted into a kind of gruel which, on its way downward, is left almost untouched by the stomach. This great organ passes on the starchy or sugary food to the intestinal factory, where the remainder of the unconverted starch and the starch which has already been made into sugar are acted upon by other ferments, above all by *amylopsin* - which might be called the chief wedge Nature uses for driving water-molecules into the starch in order to reduce it into the form of sugar specially suited for the human body. As already stated, this sugar is carried to the liver which stores it in the form of an animal starch called *glycogen*. It is this store-house that the muscles and the tissues of the body constantly draw upon when in need of fuel. The liver then changes its animal starch, or glycogen, back into 'blood-sugar' which can, within a few seconds, be carried by the circulation to any part of the body.

Except in honey, which is a marvel, and is the only form of sugar which the human system is able to absorb directly into the blood through the stomach, sugar does not exist in an isolated, free state in Nature. Consequently man has had to get his supply of sugar from the various forms of starch with which Nature has supplied him during the many millions of years of his evolution. He would have starved to death and his species would long ago have been completely annihilated, unless Nature had supplied

him with a sugar factory of his own which in its marvellous efficiency constitutes one of the masterpieces of creation.

However, utilisation is the price Nature demands for the upkeep of her gifts.

If not used, this great factory will break down and, at the same time bring ruin upon man. This is actually what is happening at present, though neither the medical profession nor the food-reformers seem yet to have awakened to this fact.

When man discovered how to kindle and use fire, he also finally discovered how, with the aid of fire, to convert the starch into the original substance from which it had been derived. In other words *he used fire as a wedge by means of which he could break up the starch molecule* instead of the wedge Nature had been using in the form of the ferments of his salivary and alimentary glands. This was hailed at the time as a great and wonderful discovery, and is still so considered to-day. Man had outwitted Nature! He had found a short cut from the starch to the sugar, and was now able to dispense with the elaborate mastication and digestion of all kinds of grainstuff, roots and vegetables. The wonderfully sweet taste which marked the completion of the mastication processes in the mill and first stomach - the *mouth*, could now be had by means of fire direct from the converted starch in the form of brown sugar. Put a piece of sugar into your mouth and notice how quickly it melts without your moving the teeth or the muscles of your oral cavity, and how soon you can swallow it in a liquid form free from any encumbering residues of *grain-bran* or *vegetable cellulose*. What a wonderful discovery!

But what about the factory itself if it were left to decay? What about the liver which cannot store up more than a limited amount of sugar? What about the blood, with its capacity of holding only 0.1% of sugar in a healthy state? And what about the sugar-products themselves thus offered as food to human beings? Were these sugar products equal to those produced by the sugar factory of the body when utilising *all the parts of the grain and all the parts of the vegetables, fruits and roots in their natural state where starch is found always in combination with a number of indispensable minerals and other food constituents in an organic form*? To all these vital questions the medical profession, the chemists and the millers have hitherto paid no heed.

Our forefathers, during countless generations, were forced by circumstances to find their 'bread of life' by converting all kinds of food materials as offered and supplied by Nature herself into the sugar-fuel for all their organic activities.

As a matter of course the sugar, stored up in those days by the liver as an end-product of all the various activities of the human sugar-factory, must have been a *full sugar*, richly charged with highly essential food-elements.

Compare with this full product the white sugar now offered to civilised humanity in increasing quantities, the consumption of which in the United States of America alone has risen to at least 150 lbs. per person a year, when the consumption not only of commercial sugar, but sugar in sweets, cakes and various drinks is taken into account. In 1927 the consumption of commercial cane sugar in the U.S.A. was 81 lbs. for every man, woman and child a year. In Germany it amounted to 16 lbs., in France to 28 lbs. and in Great Britain to 30 lbs.

Still doctors and chemists and sugar manufacturers go on crying "eat more and more sugar: sugar is cheap and has a high calorific value" i.e. it ranks as pure fuel among the best heat-producers. This has been shown clearly by a number of irrefutable experiments carried on in the laboratories of the chemists, of the doctors and the sugar manufacturers.

But what about the human laboratory? The sugar it is now offered is a refined product from which *all vitamins and food minerals of the sugar cane, the beetroot*

and various other plants from which sugar is made, have been refined away.

"Fifty years ago", says Alfred W. McCann, "old-fashioned brown sugar, manufactured on the sugar-cane plantations, was in common use. Such sugar possessed not only all the sweetness of the cane, but also its aromatic and nutritive substances, including the mineral salts, no longer present. The delicious flavour of old-fashioned brown sugar is due to the presence of 'impurities' derived from the juice of the cane. The elimination of these 'impurities' yields an impoverished, colourless, de-mineralised but sweet product."

It has been said that out of twenty food-elements of the sugar cane not less than nineteen have thus been refined away.

"Today we do not know whether our refined sugar is derived from the sugar cane or from the beetroot. All we know is that it is sweet. Whence it comes, what curious processes it passes through on the way, how it affects the body when it arrives, are questions never asked.", (McCann)

When once the history of the sugar industry is written, one of its most interesting chapters will undoubtedly be the account of how civilized man was lured into discarding the original brown sugar for the refined white products we now see everywhere. Seventy years ago when Louisiana in the U.S.A. was producing on its sugar farms only the old-fashioned, clean, wholesome brown sugar, and when the same kind of sugar was manufactured in the West Indies and sold directly by the producers to the consumers, no one ever dreamt of extracting from it as an end product the deadly white sugar. White sugar was then an unheard-of thing.

In the meantime industry was developing at a quick pace, and everywhere there were manufacturers and chemists on the lookout for something which could be passed through their mills and sold to the public in great quantities at a good profit. They conceived the idea of extracting from the full brown sugar a white product, still sweet but deprived of all 'impurities'. No heed was paid to the fact that these 'impurities' happened to be a number of organic minerals and food constituents of the kind which every human system needs, and which it always gets when manufacturing its own sugar from wholemeal bread, and from grains, vegetables, roots and fruit in their natural state. These invaluable impurities were now refined away and a sugar produced which, in its whiteness, matched the starched and bleached napkin on the table, and even beat its cousin, the white bread on the plate, from which bread the brother millers of the sugar manufacturers had also taken the utmost care to remove all 'impurities'. Thus civilized humanity was blessed with three spotlessly white end products: white sugar, white bread, the bleached table-napkin. What a trinity of unblemished purity!*)

*) Give a starving man only White bread, or only White sugar and he will succumb more quickly than if given a broth made of his chopped-up napkin. This sounds paradoxical but is nevertheless strictly true, because the white bread and the white sugar would soon exhaust his limited stores of precious food-minerals, without which he could not go on feeding upon the nourishment stored up in his own tissues, whilst his chopped-up napkin would only have a laxative effect.

Still in spite of the spotless whiteness of this end product and the foolish belief of many people in the 'refinement' slogan, the sugar refiners did not succeed in bringing the whole of the brown sugar production under their control. In order to achieve this end they had recourse to strategy.

This strategy is described on pages 287-289 of "The Science of Eating", by the American food expert, McCann, as follows:

"My work has made me unhappily familiar with many food crimes which, by their

very nature, cannot be punished. This crime was literally a conspiracy against the human race, and its consequences are now to be reckoned with although no body of laws exists with which to meet them.

The sugar refiners knew that if they could prejudice the people against the use of brown sugar, thus destroying the market for it, they could then buy it up, refine it, and control its distribution, *thus securing a profit on every pound of the raw material that every planter produced.*

In the old days the manufacturer of brown sugar shipped his product direct to market. The refiners did not touch it on the way. Of course, they were unable to collect tribute from such a system.

To get control so that all the producers would have to send their raw sugar through the refiners' hands it was necessary to kill off the demand for brown sugar. To kill off the demand it was necessary to disgust the people with all brown sugar so that their appetite for it might be destroyed.

To accomplish this they inaugurated one of the most violent advertising campaigns ever witnessed in America. In 1898 they were ready to 'educate' the public, and educate it they did.

The advertisements of the brown sugar exterminators consisted obviously of an attack upon old-fashioned brown sugar. Each advertisement was accompanied by a picture said to be an enlarged photograph of a dreadful looking animal described as a cross between a louse and a lizard.

To prove that such a creature lived in all brown sugar they went to Dublin and dug up a commercial chemist who, like many other commercial chemists now earning fat fees by furnishing 'scientific' support for many food indecencies, was willing to certify, for a consideration, that he had found this louse-lizard-monster in brown sugar.

One of the advertisements, which I quote word for word from the Congressional Record, reads as follows:

'Professor Cameron, public analyst of the City of Dublin, who has examined samples of raw sugar, states that they contain great numbers of disgusting insects which produce a disgusting disease.'

The advertisers did not say *what* disease. It was enough for their purpose to say it was a *disgusting* disease. They knew they were lying, but the American public, long fed on advertising lies, swallowed the statement and asked no questions.

'The shape of these disgusting insects', the advertisement continued, 'is very accurately shown in the accompanying photographs magnified two hundred diameters. It is a formidably organised, exceedingly lively and decidedly ugly little animal. From its oval-shaped body stretches forth a proboscis terminating in a kind of scissors with which it seizes upon its food. Its organs of locomotion consist of eight legs, each jointed and finished at its extremity with a hook.'

'The number of these creatures found in raw sugar is sometimes exceedingly great and in no instance is raw sugar quite free from either the insects or their eggs. Brown sugar should never be used.'

Now comes the devil from behind the stump, and here is what the devil said through the medium of this advertisement:

'It is fortunate, however, to note that these terrible creatures do not occur in refined sugar of any quality. Use only refined sugar'.)''*

*) This story is still believed in by many who dread these imaginary animals, though a single drop of drinking-water may be swarming with micro-organisms and often with more strange and fierce looking animals than those the sugar refiners describe.

Far from attracting our worst enemies sugar is known as one of the best protections against them. Dr. John Harvey Kellogg writes on page 28 of "Auto-Intoxication or Intestinal Toxaemia":

"Milk f e r m e n t s because of the large amount of s u g a r which it contains. Eggs and meat do not ferment but undergo putrefaction. This is because of the absence of s u g a r. Eggs placed in a strong solution of sugar will not decay. S u g a r i s w e l l k n o w n t o b e a p r e s e r v a t i v e.

This wise provision is of great importance in the economy of Nature. Vegetable foods contain s u g a r s, s t a r c h e s and d e x t r i n e s, substances which f e r m e n t, and so when undergoing decay do not in general give rise to the obnoxious and poisonous gases and other substances which accompany the decay of animal tissues.

F e r m e n t a t i o n and p u t r e f a c t i o n are antagonistic processes. Fermentation produces acid products which are for the most part harmless to human beings but i n i m i c a l to putrefactive bacteria."

"Our mothers and grandmothers were horrified. Wherever they looked they saw the dreadful picture of the disgusting louse-lizard-monster. They saw the dreadful creature in all their delicious desserts and dainties. Their fruit cakes, muffins, cookies, brown bread, toffies, candies, hard sauces and other good things suddenly appeared before them as horrible sepulchres in which reposed the dead bodies of vermin.

One after another the advertisements appeared. The Dublin professor became famous and the American public writhed in disgust.

The brown sugar industry, as far as the housewife was concerned, was completely destroyed.

Wholesale bakers' supply houses, unknown to the housewife, continued to handle the stuff in carload lots and the retail bakers fed it, without arousing their suspicion, to the poor creatures who wouldn't dream of using it in any home-made product.

The poor plantation owner who made brown sugar just as maple sugar is made to-day, found his market closed to him. His only means of disposing of his raw sugar was to sell it to the refiner. This is what the refiner wanted and this is what he got:

Just as the farmer used to send his grain to the local grist mill but was gradually forced to ship it to the centralised roller mills, thereby losing control of his product and furnishing enormous profits to a few highly organised groups of money makers, so also the planter found it necessary to do business with a few monopolists or quit.

Through the louse-lizard-monster the American people have been deprived of a luxury which there seems to be no hope of restoring to them unless, grimly determined to act for the selves, they decide to discourage the use of refined of every kind and thus make it necessary for the sugar interests to give them back the old-fashioned product so ruthlessly destroyed."

Instead of the sugar that the human sugar-factory produced from Nature's raw material, for millions of years in the evolution of mankind, our systems are at present offered an industrial and commercialised product from which almost all valuable organic minerals have been extracted, thrown away, or given to cattle in the form of molasses. The result is that the body *cannot utilise this kind of sugar without robbing itself of just those food minerals which have been refined away, and which form an integral part of the juices of the alimentary canal and the secretions of the glands.*

Commercial sugar has put our oral grind-stones and salivary glands to a large extent out of use. At the same time it has proved the most deadly enemy of these same grindstones, so ingeniously built by Nature that they would easily have lasted a life-time.

Refined sugar does not act in a direct way on the teeth, but it undermines them by its affinity for calcium which constitutes the chief building material of the teeth. It is a fact well known to chemists that calcium combines with sugar. Whilst a thousand parts of water will only take up one part of calcium, it easily absorbs *thirty-five times*

as much calcium when sugar is added.

"Where calcium is abstracted from the tooth under-structure, the thin enamel, made thinner by fluorine starvation, sooner or later cracks or breaks under pressure, thereby opening an avenue for the entrance of putrefactive bacteria, which begin the work of true decay. The ruin is really accomplished long before any evidence of decay is disclosed.

We know if there is a deficiency of calcium salts in the food the body will actually tear down its own structure in order to obtain the calcium necessary to maintain the integrity of its internal secretions.

In the case of a calcium deficiency in the food the body goes to the only available source of calcium supply, the lime of the teeth and bones. That lime is gradually consumed until, weakening the structure of the teeth, it finally leaves but a shell of fluoride enamel over a honey-combed structure." (McCann)

In countries where the food is poor in calcium, there is saying among the peasantry: "With every child goes a tooth". The demand of the unborn upon the mother's tissue for bone-building calcium is often so great because of the calcium-deficiency of the food, that very often an expectant mother loses all her teeth, and the child when born cannot develop proper teeth.

Thus it happens that in countries like Kentucky, which is said to be a veritable quarry of calcium, 86% of children, in the presence of millions of tons of bone- and tooth-building material, have decayed teeth and show the most conspicuous symptoms of calcium starvation, whilst in countries where calcium deficiency is conspicuous in the soil, children used nevertheless to have good teeth *as long as they were fed on wholemeal bread and the natural products of the soil*. Calcium deficiency is behind many of the most common disease symptoms, such as anaemia, acidosis, nervous prostration, tuberculosis, etc. There can be no doubt that this calcium deficiency is chiefly caused by the large consumption of white sugar which acts as a real food-mineral-burglar.

The effect of the consumption of white sugar upon the human constitution is aggravated when combined with a large consumption of white bread which acts in exactly the same way because of its deficiency in food minerals. White bread as a starchy food has to be converted into sugar, which sugar, as we have seen, is again stored up by the liver in the form of animal starch. White bread is generally consumed as fresh as possible, while still retaining some of its flavour, because when stale it is generally tasteless in contrast to wholemeal bread which tastes best when older. In a fresh state white bread cannot be properly masticated and generally forms lumps in the stomach and intestines which the gastric juices are unable to act upon in a proper way. Improperly masticated and improperly digested, it is a burden to the body which, in addition, has to surrender its own food-minerals to make up for the deficiency of the same food-minerals in the bread. Hence white bread is "food-mineral-burglar" number two, producing a deficient sugar and depriving the body above all of its calcium. No wonder the teeth have to go!*)

*) In delivering a lecture over the wireless, an old costermonger from Covent Garden, who had many times sold pears to King Edward himself, said:

"Formerly people used to buy nuts, but this habit has gone almost completely out of use because they haven't the teeth with which to eat them." - In my childhood we used to be able not only to eat with perfect ease the kernels which are now found to be too hard for the decaying teeth of this generation, but we used our teeth also as crackers for the shell. Nut-crackers were then quite unknown, the peasants always cracking the shells with their own teeth. Thanks to tea, coffee, white bread and white sugar no one could do it now.

Still the chemists and doctors and refiners all cry: "Eat white bread! Wholemeal bread is too coarse and irritating. Eat more sugar and sugary food. Sugar is cheap. Sugar is a wonderful heat-producer!"

Where is this excess of sugar going to be stored? The liver cannot accommodate more than a limited amount in the form of glycogen or animal starch. The blood in a normal healthy condition cannot contain more than 0.1%, or only one part in a thousand. Ask the doctors! They look perplexed and admit they have never thought of it. Ask the chemists! They generally know nothing about human physiology, and only think in laboratory terms of the great heating value of chemically pure sugar. Ask the refiners themselves! - They look scared and beg you to hush it up.

There is one organ in the body that positively refuses to hush it up. That organ is the *Pancreas*. It is the healthy and normal *pancreas* that seems to control the amount of sugar contained in the blood, and it is the failure of the *pancreas* to perform this function which causes diabetes. In diseased conditions of the *pancreas* the excess of sugar in the blood is eliminated through the kidneys. It is obvious that the *pancreas* is overworked by the excessive introduction of de-mineralised sugar and finally breaks down. There is little doubt that de-mineralised sugar undermines the tissues of this great organ in the same way as it destroys the teeth, i.e. by robbing it of the food-mineral so necessary for its own restoring processes and activities.

One of the greatest authorities on medical and physiological chemistry, *Professor Olof Hammarsten* of the University of Uppsala, declares: "*the hyper-glycemia**) may be caused by the introduction of more sugar than the body can destroy. If too much sugar is introduced into the intestinal tract at any one time, so that the assimilation limit is over-reached, the glycemia is caused by the passage of more sugar into the blood than the liver and other organs can destroy."

*) Excess of sugar in the blood; the condition preceding and accompanying diabetes. The amount of sugar normally present in the blood (one part of sugar in 1000 of blood) may rise in diabetes to four or five times that amount. (Gr. hyper, over; glykos, sweet; aim, blood.)

The same opinion is expressed by *Dr. Robert Hutchinson*, physician to the London Hospital, who states: - "It must be borne in mind that the assimilation limit is not the same for all individuals. Some people are able to convert more sugar into glycogen than others. *Persons with a low assimilation limit are potential diabetics - that is to say they are more liable, through sugar excesses, than others to become the victims of diabetes.*"

Now, who is going to decide ahead which child or grown-up person has "a low assimilation limit" and is a "potential diabetic"? No doctor can do so until the damage is done and the patient's doom sealed.

A friend of mine who passed all his medical examinations with flying colours and who married a fellow student, also an M.B., had the great misfortune of having his eldest daughter, laid up with this disease while still a child. Nevertheless there was white bread, white sugar, cakes, and all the paraphernalia of the modern civilized diet on their table for the other children to enjoy, until the fourth child, *the only son*, was suddenly found to have sugar in his urine, thus being ear-marked by the hand of death at the age of three.

You would think that having had to sacrifice two of their own children in consequence of modern dietetic follies, these two medical practitioners would have investigated the causes of this terrible disaster and warned all their patients, and especially all parents, against white sugar and white bread as the two chief suspects.

But no! They considered the disaster inevitable, putting it down to "constitutional tendencies and dispositions". Their table remained exactly the same, and the products of the refiners sacrosanct. Besides, they were both highly qualified medical practitioners.*)

*) The mother, M.B., of the two diabetic children wrote to a relative when her only son was struck down by diabetes:

"Poor little D., who cannot have any cakes and candy!"

What is the use of medical knowledge unless you can eat and drink what you fancy? ... What is the use of all the amenities of modern civilized life if you cannot enjoy them? The liver, the pancreas and all the other glands and organs must accommodate themselves accordingly.

But what if they cannot do so and break down? - Then there is only one way out of it - to go to the animals and extract juices from their unimpaired glands and, by introducing them into the blood-stream of the diabetics, keep them alive and their systems going for a few more years.

This is exactly what has been done in the case of the pancreas.

In this great gland there is an island-like formation of cells, called the 'insula', which atrophies in all diabetics. By taking the extract of similar islands of cells from the pancreas of healthy animals and injecting it into the human circulation, the excess of sugar in the blood and consequently in the urine can be got under control. "What a triumph!" the doctors exclaim, full of professional pride. "How wonderful medical science is," cry their victims in chorus, though the insulin injections only add a few years to their lifetime. At the same time insulin definitely closes the door to recovery and does away with all hopes of a cure. For a cure can only be effected by inducing the insulin-producing cells of the patient to resume their activities. The only way of achieving this end is to put the sugar factory of the body to its proper use by supplying it with the right kind of raw material. If this is done in time, after a proper fast, some weeks of rest and a thorough cleansing of the whole system, there is in many cases, especially in young people, a chance of recovery, provided that the right kind of food is chosen and thoroughly masticated, starting with small meals which are gradually increased in quantity until eating has become normal and no symptoms of the old trouble recur.

But, of course, sugar in any form must be dispensed with for ever, neither can there be any question of going back to the old diet that brought about the disease. *The only road to recovery lies in putting all the organs of the body to the use for which they were originally built. This rule is the Alpha and Omega of health.*

There are no short cuts to health and no easy means by which Nature can be induced to surrender her gifts for a lower price than that which she demands: *full and proper utilisation.*

Let a healthy man put his right leg out of use and walk on crutches for some years and that leg will soon atrophy until it is beyond recovery. Inject into the blood-stream of a diabetic insulin taken from the glands of animals, and the spark of vitality left in the insulin-producing glands of the patient will soon be extinguished for ever. For why should the remainder of these glands take the trouble to recover and exert themselves when the system is being artificially provided with what would have been the product of their activities?

The fallacy of the Insulin craze is revealed by the latest diabetic death-rate statistics. Insulin was introduced in 1924. We have been told that it cures diabetes and that that disease now "has lost its terrors", and we are consequently entitled to expect

a great fall in the death-rate from this disease. Yet, since the introduction of Insulin that death-rate has increased enormously, as is shown by the following fluctuations in the diabetes deathrate per million living in England:

Before Insulin.	After Insulin.
1920.....100	1926.....115
1921.....108	1927.....126
1922.....119	1928.....131
1923.....114	1929.....142
1924.....110	1930.....142
1925.....112	1931.....145

Statistics all over the world where Insulin is being used tell the same tale. Here the doctors are again treating end-results, attempting in vain to stem the flow of the river in its lower reaches whilst refusing to consider what could be done by discovering and controlling its sources. The truth is that they thoroughly dislike any means of preventing manifestations of disease- symptoms if these means imply a change in their own mode of living, above all an attack upon their table. Their chief aim seems to lie in vain attempts at keeping decaying physiques going for a few more years by all kinds of artificial means.

"The aim of the doctor is to maintain life at any cost," declares Dr. Dahl in his book "The Diseases of the Digestive Organs".

The civilized nations of to-day will have to pay for this principle with the certainty of becoming extinct and leaving their countries to be populated by yellow-skinned hordes from Asia and the dusky masses of Africa, unless they take their lives in their own hands and start investigating the laws governing their physical welfare, which laws will be found to be quite different from those worshipped by the doctors.

Nature does not aim at the upkeep of life at any price regardless of quality. What is not fit to live is thrown on her scrap-heap to be dealt with by the countless armies of her 'house-breakers' or scavengers. Disease of any kind is a sign that an individual is not fully qualified to represent his species. Nature's aim is the production of higher types; the doctors': - to keep any type alive as long as possible, with a complete disregard for the necessity of producing specimens of "Homo sapiens" impervious to disease and fit to carry on the evolution of their own species upon the foundation which Nature herself has so firmly laid in the course of millions of years.*)

*)"It is a commonplace that human life is changing, not only rapidly but also at an ever-increasing pace. Conditions of life have probably changed more in the last fifty years than they did in fifty million years of the early history of the earth. If they change so much in fifty years, what will they be after another fifty million years? *Will the human race be transformed into something more wonderful than we can now imagine, or will it have vanished entirely from the scene, like the weird animals who occupied the earth fifty million years ago?*" - Sir James jeans.

Doctors, as the self-chosen supervisors of the physical well-being of the civilized races, are woefully indifferent to this, the most important part of humanity's task. *They think in terms of disease bur not in those of health, in the terms of cure and not in those of prevention.*

Life is a creation which has been going on for millions of years. That creation is still going on to-day in the same way as ever.

Man is essentially a creator. In disregarding this fact and being content to carry on in any way, he has cut himself off from the great "elan vital" of the whole universe and marked himself as an object ready for Nature's scrap-heap.

This scrap-heap is a huge 'cauldron of disease'.

It is around this cauldron that the chief interests of the doctors are centred. To keep it going at all costs, i.e. to maintain life regardless of quality, is their motto.

This motto is one of the most Mephistophelean ever invented. For whilst posing as "maintainers of life at any cost" the doctors are at present the real slayers, at a fabulous expenditure in money and lives. In limiting their activities to treating end-results, regardless of the causes that have brought them about, they are butchering and maiming thousands by cauterising, scraping, operating upon and cutting out organ after organ, which, in almost every instance, might have functioned perfectly had they not been ruined by the reckless modern way of eating and drinking, shared in and authorised by the doctors themselves.

Diabetes, now increasing by leaps and bounds in all the white-bread and white-sugar consuming countries, is but one of many instances which show the way in which the doctors are playing a losing game and leading humanity along the road to destruction.

It must be obvious to any observant onlooker that the really healthy are becoming increasingly few, and those who are ailing in one way or another increasingly numerous, or, as our fore-fathers would have put it:

"The Eagle of Destruction is gnawing more vigorously than ever at the root of the Tree of Life."

Humanity is gradually rotting in spite of all that the doctors, in their own interests, say to the contrary.

As long as there is a single decayed tooth in a man under fifty 'all is not well in the state of Denmark'.*)

*) One of the most recent endeavours of the doctors has been to show that disease is a normal state of affairs and that health never was natural - but that thanks to the doctors it will become so. It has been pointed out that even chimpanzees and orangoutangs in a wild state sometimes suffer from caries, and that certain of the glant reptiles of the past, the dinosaurs, were subject to caries, arthritis and even sarcoma.

It must be obvious to any student of biology that only mono-cellular beings, such as the amoeba, can be disease-proof and therefore immortal, and that life invited disease when it set out to build multi-cellular beings or organisms. Organisation implies dis-organisation, Integration - dis-integration. *Disease is disorganisation and disintegration.* The marvel is that billions of individual cells, in spite of all the great difficulties in feeding them and delivering them from their waste products, are able to work so smoothly together in the great, closed-up cell community of a body that disease nevertheless is incidental and health normal. Even to a chimpanzee In the tropics food-essentials such as calcium may be lacking, and how much more so in the case of a dinosaur having to feed properly every day the cells of a huge body weighing 10-15 tons.

A few decades ago an ancient burial place was discovered in Cornwall, disclosing well preserved skeletons. Every skull had a perfect set of healthy teeth. - Compare with these the toothless skulls with their oral cavities full of artificial teeth which would be found in a modern cemetery. In the former people were buried In an age when a dentist would obviously have starved to death, and when there were - no doctors. (See Sir Arthur Keith, *The Engines of the Human Body*, p. 319.)

XXIV.

LIFE'S TRAGEDIES.

It was a sunny Sunday afternoon in April. I was walking to the station in order to take train and join some friends at a garden party, when I suddenly stopped and, contrary to all my previous intentions, returned home. For as I walked I was caught by a sudden irresistible impulse to go home and write a letter to my dearest friend, with whom I had shared most of my life since the earliest days of my childhood.

On reaching home I spent nearly two hours writing the strangest letter I had ever sent him. When the letter was finished it turned out, again quite unintentionally, to be a bird's eye view of our friendship - how much it had meant to me, how wonderfully faithful and loyal he had always been, and how desolate my life would be if I were left to survive him. When I read through my letter before posting it, I was startled by its deep and sincere tone. I seemed to have put my whole heart and soul into it. It might almost have been taken for a farewell letter.

It seemed to me very strange and almost uncanny that I should have written such a letter on that sunny April afternoon. "However," I said to myself, "it will cheer him up; it will do him good. He has been so faithful to me, such a wonderful friend; he has a big family, many children and many worries. I am glad I wrote it."

Having posted the letter I thought no more about it.

This happened on Sunday, April 21st, 1929. On Friday, May 3rd, two weeks later, I received a wire from his youngest brother telling me that he was no more.

That wire revealed in three words a tragedy, one of many of a similar kind. Only this tragedy brought home to me more clearly the disaster towards which many million people are heading. This is one of the reasons why I am telling the story. Another is that this tragedy is one of my chief motives for writing this book. I must speak, because I am certain that it is the will of my deceased friend - a will that he has expressed to me in the most unmistakable ways since his departure. Nay, many of the chapters in this book and in my coming works would never have been written if it had not been for his assistance and the strange and wonderful way in which he has guided me to the well of truth.

I had not seen him for four years when the wire conveying the news of his death reached me. Shortly afterwards I learned from his wife and relatives what had happened. The letter I wrote to him on that Sunday afternoon, the 21st of April, 1929, was, according to his wife's account, received by him at lunch time on the following Thursday, April 25th. It was the last letter he received on this earth. He put it in his pocket, went to his office after lunch and read it there - the last letter and the last thing he ever read. Scarcely had he put it back in his pocket when he was taken ill with excruciating pains in the region of his stomach. He was quickly brought home and attended by the chief medical officer of the district, who said it was *kidney trouble*. Next, another doctor, a young, newly graduated M. D., arrived on the scene and diagnosed a *perforated gastric ulcer*. My friend had been suffering from a gastric ulcer for quite a considerable time, as I was told later on by his wife. The third doctor called in was his own medical attendant and the chief health officer of the town. He had actually been treating him for a gastric ulcer for years, but nevertheless now sided with the chief medical officer of the district in his diagnosis. He was known to have

an aversion to newly-graduated practitioners and was therefore said to be always inclined to turn against the opinions they expressed.

I have since asked several medical men, some of whom knew my deceased friend very well and had even attended him, what they thought of the case. They all said that they could not possibly understand how two men of their own profession, in face of the fact that my deceased friend had already been suffering from a gastric ulcer, could have arrived at any other diagnosis than that put forward by their younger colleague.

My friend should, of course, have been operated upon at once, for there is a rigid rule according to which a perforated gastric or duodenal ulcer must be operated upon before sundown or else there is very little hope of saving the patient's life.

There were no proper facilities for operating in the town. My friend was kept at home overnight in order that the two doctors who diagnosed kidney-trouble should be able to watch developments. But the pain only increased and my friend suffered the most terrible agonies. The following day it was decided that he should be sent to the nearest provincial town, the centre of the district, two and a half hours' railway-journey from his home. Here the case was immediately diagnosed as a perforated gastric ulcer. He was operated upon without delay, but the operation proved to be - too late. With the setting sun of the previous day the sun of his own life had gone down for ever. But so wonderful was his constitution and so great his resistance that he survived the operation, which was performed on Friday April 26th, until the next Friday, May 3rd, a thing that very rarely happens in similar cases. He fought death in the presence of his wife, mother and brother for no less than a whole week, suffering the most terrible agony.

The chief surgeon of the hospital was furious. He said there would not have been the slightest doubt about my friend's recovery if he had been taken there immediately, by the first train after the perforation of his ulcer. But the two leading physicians of the town allowed train after train to pass on that day and the following without taking any steps, letting the poisons which poured out from the open wound into the abdominal cavity wreak untold havoc and cause general inflammation of all the surrounding membranes and organs. It was in this state that my poor friend was operated upon on the following day.

There cannot be the slightest doubt that those two physicians murdered my friend by gross negligence and a manifest inability to decide upon the right treatment in one of the most obvious of cases, in which, according to all the leading physicians of the province, a mistake in diagnosis should have been inconceivable.

The eminent surgeon who operated upon my friend said to his brother: "Tell the doctors of X. to send us immediately any serious case they are in doubt about, so that no time may be lost and the patient's life may be saved where there is a possibility of saving it, as there undoubtedly was in this case."

No tragedy ever made a deeper impression upon my mind or, at the same time, made my own life more desolate. I felt as if half my life were gone. There was the sun, shining as before, there were the flowers, the green lawns and the branches of the trees waving just as gracefully as ever in the wind, but the sunshine had lost its lustre, the flowers seemed faded in spite of their freshness and there were broken strains of a mournful tune in the whispers of the wind. The world was the same and its interests the same, but I had been alienated from it all by a single wire containing three fateful words. Months passed before I was brought back to earth again, and perhaps nothing helped me more than some very strange events, impossible to reveal and yet so decisive and unmistakable in their nature.

There could not be the slightest doubt about my duty. Those who were still treading

this earth and who were on the road to a similar disaster must be warned and helped. A study of the causes that led up to the fatal accident which befell my friend revealed so much ignorance on his part and on that of his doctors that I could not possibly avenge his death in a more noble way than by recording them all.

I know that this is the will and the wish of my deceased friend, and in fulfilling it my own life has acquired a new aim and a new meaning.

He was the healthiest of nine children. I do not think he had ever been ill in his life. Well built, hardy and fond of all kinds of sport, he led an intensely active life. That may account for his early fondness for sugar as an easily digested, heat- and energy-producing food. I remember him always with lumps of white sugar in his pockets. It was this unfortunate habit which finally proved his undoing. For the sugar-eating spoiled his appetite for proper food, particularly wholemeal bread, of which at his home there was always plenty. He grew up to be one of the finest sportsman of his town, ranking among the foremost skaters and skiers, and was unsurpassed in yachting. I remember him still, the life and soul of innumerable races and yachting-expeditions. As a sailor he was almost uncanny. Right in the middle of a race he would be seen to leave all the other competitors, turning his yacht in a totally different direction without any obvious reason. Then just as everybody thought he had suddenly gone mad and lost all his chances, a new wind would strike up unexpectedly from quite a different quarter and bring him in record time to the goal, whilst all the other yachts were left miles behind, fighting a strong head-wind.

He came of a stock that had bred sea-captains for many generations and he seemed to have something of the sea in his blood and a strange ability to foretell all the caprices of wind and weather. To see him at the wheel was a sight no one could forget. His face beamed with joy. Nothing seemed to escape his eye even on the darkest nights. Never did he make a mistake about the route or miss a seamark, even in intricate passages of an archipelago full of islands and submerged rocks.

When working in his office his eyes often wandered stealthily to the weather-cock which he had purposely placed so that he could see it from his desk. If it indicated a good wind, and the sky was clear, no monetary gain in the world could keep him away from the sea. All his business friends complained of this and were often in despair, but they loved him all the more for it.

Still, this child of the winds and the waves was supplied with a full set of artificial teeth at the age of sixteen and another set at the age of twenty. He had inherited the constitution of a real sea-bear, but that constitution had gradually been undermined from his earliest childhood by a faulty diet, containing too much white sugar, white bread, cakes and coffee, besides meat, fish, and the usual bill of fare of the North. In his home he always had, first thing in the morning, a cup of coffee with two or three lumps of sugar and cream, biscuits made of white impoverished flour from which the bran had been carefully removed and soft, white bread straight from the oven. This introductory meal, generally taken about seven o'clock, knocked out a good part of his appetite for a substantial breakfast and created, by its deficiency in vitamins and food-minerals, a feeling of constant unrest, a want of something. This craving was again silenced by coffee and cakes at twelve o'clock, a second intermediate meal which had the same devastating effect on his dinner at two o'clock as the early morning meal had had on his breakfast. About four or five o'clock came another intermediate meal of the same kind as at noon - coffee, white sugar, cream and cakes, which could not but interfere with the evening meal or supper, at eight.

There were altogether at least six - sometimes seven - meals a day, all consisting of bland, easily digested food of very much the same kind as the food the sailors of the

"Kronprinz Wilhelm" had. The first result of this kind of feeding was a terrific constipation. I remember how my friend, as a boy of fourteen, used to complain of not having had more than one or two bowel-actions a week, declaring that his only means of getting relief in the winter was to take his skis and go for a two or three miles' wild run at top pace. Of course, it was the intervening summers with their sunshine and abundance of green stuff and vegetables, bathing, swimming and yachting which kept him alive. In the winter he always suffered from potential beri-beri or scurvy.

Thus things went on day by day and year by year. My friend married most happily, and was the lucky father of three fine boys and two daughters when fate struck him down. In spite of the many letters I wrote him about food, his diet remained much the same, especially his consumption of sugar. He could not keep off sugar and candy. I remember him once telling me that his father was so struck by his sugar consumption as a boy that he asked two physicians about it, who laughingly said that sugar was an excellent food, providing fuel of the best kind in the easiest and cheapest way, and that it was especially good for an active, sport-loving boy. With this verdict, given by two able representatives of the medical profession, his father was so pleased that he presented him as a birthday gift with a sugar cone of the kind that was then sold to the country folk in the district, wrapped up in thick paper and weighing not less than twenty pounds. The gift was meant as a humorous compliment to my friend's sugar consumption, which had been so highly approved by the profession.

In a recent work on dietetics, published by an association for the spreading of scientific knowledge to the people of Sweden, one of the foremost food-chemists of that country advocates an extensive consumption of white sugar for the whole nation and especially for its sportsman. "All our sportsman are quite aware," says the author, "of the value of white sugar, especially as a fuel for physical exertion." "Put plenty of sugar on your porridge," is one of the author's leading precepts, quite worthy of a food-chemist with a mind as free from physiological considerations as white sugar is devoid of the invaluable food-minerals contained in the vegetables or raw material from which it is extracted.

This food-chemist does not know that white sugar, whilst acting as a chemically pure fuel with a great heating value in his laboratory, acts in the human system as a corroding poison.

I have many a time in later years beaten all my former records on skis and skates, submitting myself to eight or ten hours' strenuous sport at a temperature of 20-40°F below freezing point, subsisting on nothing but pure water, and have never yet returned home exhausted. This can easily be done on food consisting of wholemeal bread, butter, potatoes (baked and eaten in their jackets), raw cabbage-leaves, grated raw carrots, raw onions and milk.

On my last visit to Scandinavia these were the only food-stuffs I consumed for six weeks, during which I spent five to eight hours a day in taking strenuous exercise in the open.

I may add that my first drink in the morning consisted of the juice of half a lemon and one orange mixed in a pint of water without the addition of anything else. From this dietary sugar in any form, white bread, condiments and even oatmeal porridge were rigorously excluded because I could not get the coarse oatmeal to which I was accustomed.

In the town where my friend lived were seven doctors, each of them almost as ignorant concerning the effect of various foods upon the human system as my deceased friend himself. From them he got no support whatsoever for a sensible change in his way of living. None of them would for a single moment have suspected

white sugar of being one of the chief causes that brought about the ruin of his digestion. He fell, in the prime of his life, just when his children were beginning to grow up and needed him most, with a 'bullet-wound' in his stomach, shot by the same unseen enemy who laid two sailors a day prostrate on the "Kronprinz Wilhelm". Had he only been operated upon that day there is not the slightest doubt that he would have been alive now and in better health than ever. For this disaster and his narrow escape from the clutches of death would have opened his eyes to an understanding of the causes which had brought about his gastric ulcer. In any case it would have rushed me to his assistance, and I am certain I should have been able not only to put him on his feet again but also to give him health the like of which he had never enjoyed in his life before.

Now it was my fate only to mourn at his grave and contemplate the end of the tragedy. At the same grave stood his young wife in the prime of her life surrounded by five children, the eldest only twelve years of age and the youngest two years, bereft of the father whom they all adored and whom they so needed. And yet they were all left with the impression that the calamity which had befallen them was inevitable, that not even medical science represented by three doctors could have prevented their father's being taken from them, and that what had happened was God's will.

There were the doctors at the grave, representing science, and there was the minister offering religious comfort. But what assurances can ever console the bereaved when shovel after shovel of earth tells another tale and they return home to find a certain place empty, a certain door closed and a certain voice and certain steps never to be heard again.

Two months after my friend's death his sixth child was born.

A few months later we witnessed his flotilla of yachts and boats, the pride of his life, being sold and dispersed.

Perhaps nothing could make me realise the cruelty of fate more deeply, for it was at sea, on the deck and under the sails of those yachts, that I had spent some of the supreme moments of my life in his company.

His death was felt and deeply regretted by everyone. No funeral in that old Swedish town had ever seen a larger assembly of mourners.

He was a true sportsman.

* * *

But the whole of the story is not yet told. Only a year or so before this calamity one of his brothers returned from the United States in much the same state as the sailors of the "Kronprinz Wilhelm". He had served as an officer in the allied armies all through the war and after the Armistice spent some years in the U.S.A., from which country he returned stricken by disease, manifesting itself chiefly in severe neuralgic pain in the left side of his face. He consulted a nerve specialist who very characteristically suggested an operation which would remove the excruciating pain from the left side of his face though it would at the same time render it immobile, so that he would only be able to laugh with the other side. Another specialist in digestive troubles diagnosed a duodenal ulcer for which he said there was no cure but operation. However, operation was refused in both cases. As a last resource diet and plenty of exercise in fresh air were tried.

The diet suggested by the specialists consisted chiefly of gruel, plenty of cream,

boiled eggs, olive oil, cottage cheese, white bread, fish, meat - on the whole food which left no residues and was bound to cause severe constipation. Constipation set in. Bowel-actions could only be induced by means of aperients and enemas, which produced stools consisting of stone-hard lumps. The disease remained stationary, and at my friend's funeral his brother, who had escaped all the dangers of the Great War, seemed a doomed man.

I induced him to come to London. He arrived, all skin and bone, yellow in the face and looking like a shadow. A physical wreck - one of the most pitiable sights I have ever seen.

I put him on a week's fast with plenty of water in order to give his duodenal ulcer a chance to heal. Then commenced a struggle for life which was fought out in the very room where I am writing these lines. Often on coming home I did not know whether I should find him alive or not. But gradually he rallied, on a diet as different from what any doctor would have suggested as day differs from night. The principles I applied to his case were fundamentally those laid down in the previous chapters. The cure turned out to be a complete success. After four months I was able to send him home restored to health and delivered from all his troubles - a new man. It so happened that he entered his mother's house on the very day she was celebrating her seventy-ninth birthday, in the presence of a large gathering of relatives and friends. In a letter to me he described the astonishment that met him from everyone in the very town where he had been seen only a few months previously, a living corpse, marked down by death, to whom it was thought that fate had meted out only a few more months of life.

He has been well ever since.

How easy it would have been to save my friend who now lies six feet under the surface of the soil. For his constitution must have been wonderful indeed to enable him to hold out for so many years in spite of his "Kronprinz Wilhelm" diet.

Another brother of his was also prostrated by a similar diet. His weak spot, however, was not the alimentary canal but the lungs. He developed consumption, and at the age of twenty-five was considered a doomed man. I sent him post-haste to the Maritime Alps of the French Riviera, where for six months he subsisted on nothing but wholemeal bread and the products of the soil, plenty of fruit in various forms, goat's milk and fresh water. After six months of this life he was re-examined by Dr. Danjou in Nice - then a leading food-reformer of Southern France - who could hardly believe his eyes. The transformation was complete. He was now a first-class life. His doctors at home expressed their surprise - but showed no interest whatever in the way in which this miraculous cure had been performed.

The mother of these boys recently (1934) celebrated her eighty-third birthday with scarcely a grey hair upon her head and all her mental faculties intact. Yet she lost one of her most beloved sons, and in him one of her best friends, before he had reached much more than half her present age.

Why had he to leave the field of his activities so early? She lives on practically the same food as he did, with the exception of his excess consumption of sugar and tobacco. The answer to this question is given by the way in which she was brought up until the age of twenty. Coffee enjoyed with sugar, cream and white bread was then a rarity. Her food during those years was simpler, coarser and more substantial. Until the age of twenty she did not know the curse of constipation. It only set in after her marriage but it finally robbed her, at the age of fifty, of her hearing. Her deafness, which has been gradually increasing ever since then and has cut her off, year by year, from the sounds of the surrounding world and the voices of her relatives and friends, turned her head into a workshop of buzzing, deafening sounds. For thirty-three years

all this infernal noise and buzzing has gone on night and day. She bears it with angelic patience, thinking that it is her cross, the share of suffering meted out to her by a supreme power whose decisions are inscrutable. She thought so, also, when her fourth son died and the very physician who was responsible for his premature death delivered a funeral-oration over his coffin. She thought so when her sixth son arrived home disease-stricken from the U.S.A. and her fifth son contracted consumption. Her husband and first and third son had been taken from her long ago. By now all of her six sons would have been gone if - a sudden light had not been thrown on a very much neglected organ in the human body. This light revealed the "inscrutable power" to be nothing but what the majority of doctors still persist in regarding as a very trivial affair: *chronic constipation*, caused by the wrong use to which this much neglected organ has been put through another, from a medical point of view equally trivial factor - *the modern diet*.

A mountain of suffering caused by a molehill!

The plague-stricken Europe of the sixteenth century would have stoned to death or burned at the stake any man who dared to suggest that all their stupendous sufferings only came from outer dirt. A similar suggestion that most of our physical and mental sufferings of to-day come only from inner dirt has been laughed at and ridiculed for well over a quarter of a century by the majority of the medical profession.

How many more decades will elapse, how many more graves will have to be dug, how many families swept out of existence, and how much human happiness destroyed, before modern civilized man has learned his lesson?

THE NERVE WRECKED.

No organs within the body suffer more from its disorder and from the various poisons introduced and produced than the nerves and the brain.

"Nerve centres have a more intense metabolism than nerve trunks and nerve endings," says Professor Oliver on page 324 of his notes to Bouchard's "Lectures on Auto-Intoxication in Disease".

This susceptibility of the nerve matter to impurity in the blood-stream is a fact well established by the researches and investigations of many high authorities. But it is also a fact well known to every observer of daily life. Where is the man or woman who has not noticed the relief felt in the whole body, and especially in the mind, immediately after a good bowel-action? It is as if a heavy weight had suddenly been lifted off the shoulders. Breathing is freer, walking feels lighter, thinking easier and life happier. A feeling of joy and optimism seems to surge up through the whole body and manifests itself in the mind as a brighter outlook upon life.

I once met a lecturer in the north of Sweden who had been attached as a reporter to a leading provincial newspaper. He told me the following story:

"Our editor often gave us articles and leaders to write on important subjects. Sometimes we had to tell him that we found the task too difficult and were afraid that we could not produce a satisfactory result. His answer was always the same: "Go to the W.C. and make a fresh start."

This editor was a practical physiologist who, without having studied Sir Arbuthnot Lane and Bouchard or even having heard their names, had by simple observation come to the conclusion that retarded bowel-actions and consequent accumulated poisonous matter in the colon also retard and impede the mental faculties.

If it were possible to construct some kind of instrument showing the content of toxic matter in the system at any moment, we should find that the fluctuations in our mental states of exhilaration and depression closely follow the rise and fall of toxicity.

This is not theory but a matter of actual fact which any normally healthy person can easily put to the test by subsisting for a time on food which will keep the bowels in a healthy state, and then again, for an equal length of time, on food which produces constipation. No bowels are in a healthy state unless, as Hippocrates stated 2,300 years ago, they have three to four good motions a day. Although this state of affairs cannot be produced by diet alone without plenty of exercise in fresh air, which oxygenates the blood and helps in a most effective way to neutralize and eliminate the poisons, it will be obvious to anyone that in a right kind of diet and plenty of exercise lie the means of deliverance from most of our mental worries and troubles.

It is a fact recognized by leading alienists that all the insane are constipated and that, in a large number of cases, sanity is regained as soon as the bowels are made to act properly. But from this fact to the acceptance of the natural means for the cure and prevention of constipation is a long, long way which will take the medical profession perhaps hundreds of years to travel. Time moves slowly, and never more slowly than where accumulated learning and fixed ideas of the past have to be undone before the brains and minds stuffed with them can be made to see the simple truth heralding the dawn of a new day.

This new day will come to everyone who, free from prejudice and conventionality, is ready to put the principles laid down by Hippocrates, Bouchard, Sir Arbuthnot Lane and Sir Arthur Keith to a simple practical test, provided that his great bowel has not reached the state of ruin which is characterized by the symptoms of that terrible disease, colitis.

Unfortunately colitis is wide-spread, especially in England and America, whose millions of inhabitants are fed to a large extent on the same sort of food as the crew of the "Kronprinz Wilhelm" had to subsist on while raiding the seas. But colitis is to-day found everywhere in all the civilized countries where similar food is used and where, consequently, constipation is prevalent. Any kind of food deficient in vitamins, food-minerals, and roughage and containing an excess of protein will, as we have seen, produce a host of diseases, according to the constitutional disease-tendencies or organic weaknesses of different individuals. However, in all of them, without exception, the brain and nerve matter will suffer proportionately to the quality and quantity of the food and its effect upon the activities of the big bowel.

"The chemico-physical constitution of nerve matter must be extra-ordinarily unstable, since the slightest stimulus suffices to set up great disturbances," writes Dr. R.C. Macfie in his book already referred to, "The Romance of the Human Body". "The slightest touch of the end of a fine hair on the hand is instantly felt in the brain, meaning that the touch has set up a disturbance in the constitution of the end of the nerve fibre, which disturbance instantly spreads upward along the whole length of the fibre to the brain. So, too, if we tickle the foot ever so lightly with a fine feather, the molecular disturbance runs right up to the spinal cord and brain, and results in afferent disturbances that lead to contraction of the muscles of the foot; and if the tickling be persisted in, it may lead to actual convulsions. So, again, a tooth cutting the gum, or a grain of strychnine in the blood, may lead to great nerve explosions and violent contractions of the muscle. It is strange to find such constitutional instability and yet such precise functions."

Fortunately we seldom get a grain of violent poison such as strychnine in the blood, but unfortunately we get many grains of bacterial poisons from the intestines and many ounces of toxic matter from the alimentary canal, caused by over-feeding and the introduction of food which easily putrefies and stagnates inside the body. These toxins set up a constant irritation of the nerve matter which manifests itself in the mind as 'nervousness', 'irritability', depression, pessimism, a gloomy outlook on life.

Of all the nerve cells of the body those of the brain have the most intense metabolism. The brain itself may be likened to a sponge constantly bathed in a stream of blood. "Chemically it consists mainly of ninety or ninety-five per cent. of water and some highly phosphorized fats, and it weighs on the average a little more than three pounds. There is nothing about it to show that it is anything special, and yet, scientifically speaking, these three pounds of flabby, flobby stuff are the greatest dynamical machine in the universe." (Macfie)

This great 'dynamical machine', more than any other organ in the whole body, is dependent on the quality of the fuel which the blood-stream constantly rushes to its many million intricate cell factories. If the fuel is of the right kind, optimism is the outlook of man and joy of life his dominant feeling. On the other hand, if this blood-stream provides his brain with a constant flow of a fluid that has been contaminated by vitiated or stagnant air in the lungs or by impure, impoverished, de-mineralized, de-germinated and putrefying food in the alimentary canal, depression and pessimism will dominate, producing feelings of tiredness and disgust with life, of unfairness, irony, brutality and even sadism.

Man in the latter case is prone to blame everything but his own faulty habits of living. He seeks the cause of his mental states in outer events, and his deliverance from them in stimulating drinks, narcotics and drugs from a chemist's shop or the mental drugs provided by mental healers of various denominations. If a Theosophist, he believes he is suffering in consequence of sins committed, if not in this life, then in a previous one; if a Christian Scientist, he thinks his ailments are the result of habits of wrong thinking; if a member of an established church, he regards his mental and physical burdens as a symbol of the cross, to be borne with patience and fortitude.

Disease tends to split life up into two contending camps, good and evil, black and white, night and day. The poor sufferer is torn between these powers and suspects many of his most natural feelings of being evil because of the poisoned state of his nerves and brain. He speaks of a "higher" and "lower" nature in himself, and often spends his days and nights in a devastating fight with imaginary powers.

This conflict, wholly unknown to the really healthy, is only a mental projection of the fight going on in the system between the bacterial and putrefactive toxins poisoning the blood, and the effort of all the glands and organs to neutralise and eliminate them. Hence the ups and downs, moments of exhilaration and depression, of self-assertion and self-negation. "Himmel hoch jauchzend und zum Tode getrübt" - High in the Heaven of Happiness, deep in the Depths of Despair.

The civilized world is at present beset by an army of nerve-wrecked people who seek their salvation in following various schools of religious and ethical thought, either ancient or modern, instead of going to the root of the trouble. They are nearly all of them suffering from constipation without knowing it. It has been said that modern civilized man spends half his lifetime in developing this complaint and the other half in combating it. The cure, unfortunately, is not obtained by joining various ethical and religious societies alone, however great the influence of the mind may be over the body. For just as we cannot keep the air of a schoolroom sweet and wholesome as long as the children in that room do not get a weekly bath and clean underwear, so we cannot keep our minds healthy unless we see to it that the main receptacle for the food residues of our alimentary factory, the great bowel, is kept in a clean and wholesome state.

"Our greatest difficulty will always be in the control and management of the transport system of the great bowel," says Sir Arthur Keith.

At no time in the history of the European people has so much care and attention been given to outer cleanliness and hygiene than in these days; yet very few of those men and women who are eager to keep themselves and their surroundings scrupulously clean seem to realise that inner dirt is a far more serious source of physical, mental and moral disturbance and grave disease than hands that have not been washed before a meal or shirts that have not been changed once or twice a week. They foolishly think that the stench produced by their faeces outside the body somehow does not exist inside it, i.e. that the faeces begin to produce that abominable stench only when they appear outside the vent. They are anxious to procure the cleanest possible toilet-paper the covering label of which asserts that the content has been examined and approved by the medical profession which more or less highly recommends it. - What a blessing - that medical profession! Without its constant watchfulness and supervision all kinds of impurities and microbes might be introduced from outside through the lower end of the alimentary canal. What goes in at the other end does not matter.

In the days of Hippocrates the first thing a doctor inquired about when examining a patient was the consistency and odour of the faeces and the taste and smell of the

perspiration. If either of these two bodily excretions was not up to the mark the doctors knew that the body was in an alarming state and their first step was to put these two things right. In these days our learned doctors, who think with contempt of the doctors of ancient Greece, submit the bodily excretions to all kinds of laboratory examinations, but they do not use their organs of sense as they were used by their predecessors in Hippocrates' days, though no laboratory apparatus will ever surpass them in sensitiveness.

The halls of our Christian Scientists, Theosophists, Spiritualists and Psychoanalysts are filled with people - mostly ladies of the upper classes - who think that disease symptoms can be conjured away by various mental theories and tricks, whilst all the time they are harbouring in their interior the putrefying, evil-reeking residues of dozens of meals in which numberless bacteria flourish and whence toxins are spread through the overpowered circulation to every organ in the body and especially to the nerves and ganglion cells of the brain, the chief seat of all the mental faculties.

Still, mental treatment, psychoanalysis, spiritualism, theosophy, Christian science, etc. are 'en vogue' and Bouchard's, Sir Arbuthnot Lane's and Sir Arthur Keith's theories are not. It is surprising to note how little known and understood their teaching is, even among those interested in physical culture and food-reform. I once asked a lady lecturer on food-reform for an explanation of Sir Arbuthnot Lane's theory and teaching concerning the colon, but could not extract from her anything beyond the fact that he advocated several bowel-actions a day and considered the great bowel a real danger to humanity. No wonder then that the spiritual teachers and leaders of our time know so little about the causes and deadly effects of constipation, and manifest an almost complete ignorance and indifference concerning Lane's ideas in their attempts to cure the diseases which are only a consequence of the unnatural use to which certain important organs within the body have been put in modern times.

I was once invited to visit a great continental establishment for curing disease by thought-transmission and prayer. The house was full of beautifully decorated cubicles where people went to pray in solitude, and from where, by means of thought-transmission, diseases were said to be cured in people living as far away as Australia, New Zealand, South Africa and California. The leader of that establishment was a famous spiritualist who went into trance at certain times every week in the presence of a great gathering of members. Whilst in trance he concentrated upon a cure for far distant members or patients who were specially afflicted. I had a chance of speaking to him when the seance was over and could not help noticing from his sallow and livid complexion and a number of other symptoms that he himself was suffering from severe constipation.

"Please excuse a rather impertinent question," I said, "but may I ask if you suffer from constipation?"

He looked at me questioningly as if he had not really grasped what I said. "I mean," I said, "that normally you seldom have more than one bowel-action a day, perhaps not more than one in two days, and that your stools are hard and cause you great trouble in passing."

"Well, my friend", the great leader said, "you have described my condition quite accurately, but I cannot see what this has to do with spiritualism or our ways of curing disease?"

"I am afraid," I said quietly, "that it has a great deal to do with both. If I were you I should try to cure my own constipation, before attempting to cure diseases which may only be an outcome of the same state of affairs in those you are trying to cure by prayer and thought-transmission."

Still, there were all those people suffering more or less from the same complaint as their leader, kneeling for hours daily in the beautifully decorated cubicles, praying for people, of whom they knew nothing more than the names and addresses, and who, again, were in all probability suffering from diseases caused by exactly the same trouble.

During the great plagues of the Middle Ages the spiritual powers in which people believed seemed quite indifferent to the conditions which caused them. In the same way the spiritual powers invoked to-day seem quite without understanding of the real causes of the sufferings that beset civilized humanity.

The spirits are largely called upon to suggest remedies for ailments and cures for diseases, but all these remedies and cures are only the fashionable ones. They might have been suggested by any doctor in more prosaic language. Coué became, after his death, one of the most fashionable and authoritative representatives of the spiritualistic worlds, whom countless sufferers consulted through their mediums and whom the spirits themselves seemed to hold in high esteem. But the big bowel, the importance of which for health and disease Victor Hugo had already so clearly realised a century ago, is still being wholly overlooked by the spirits in spite of its great size and overloaded state.

Nothing has made me doubt the claim of possessing clairvoyance and other extraordinary gifts, put forward by mental healers and great leaders of various spiritual movements, more than the fact that none of them have been able to see or detect what Sir Arbuthnot Lane and Sir Arthur Keith saw with ordinary eyes when studying the human intestine.*) How many books have been published about spiritual worlds, etheric and astral bodies, strange multi-coloured wheels in various forms revolving in those bodies, invisible to ordinary eyes but seen and understood by those leaders who, in spite of their manifested interest in finding a cure for the prevailing diseases of civilisation have nevertheless been blind to the retarded functions and ruined state of one of the largest and most important organs in the human body.

Neither those great leaders nor their adherents have yet become fully alive to the revolutionising ideas of England's foremost surgeon and her greatest anatomist, and consequently the spiritual worlds are still kept in the dark about these great discoveries. The spirits are still exploiting Coué and suggesting cures on well-known medical or mental lines, feeling shy of touching upon such trivial matters as our daily bread, the consumption of white sugar, the digestibility of bran, the necessity for more roughage in the food, etc. But once all these burning questions, upon which the "to be or not to be" of individuals and races ultimately depends, have become sufficiently well known and popular, the interests of the great Mahatmas and spirits will also be found to have changed accordingly, and the seances and esoteric books will be full of dissertations and perorations on these subjects. The spirits of Hippocrates, Bouchard, Sir Arbuthnot Lane and Sir Arthur Keith will become intensely popular, and will then be called upon to explain through metal trumpets in the mysterious darkness of the seance room what nobody cared to listen to and follow when they were alive.

Ultimately the whole craze is bound to disappear with the restored functions of the colon.

Some years ago I had the great honour of associating with the supposed reincarnated spirits of the Emperor Marcus Aurelius, St. Paul the apostle and Seneca the philosopher. Why these august personalities should have chosen the bodies of three such debilitated persons I do not know, but after some years of a more hygienic life and a more rational diet they gradually abandoned them, leaving their places to be occupied by Hippocrates, Galenos (Galen), Court physician to Marcus Aurelius, and

Paracelsus. Finally even these great authorities on ancient and mediaeval medicine deserted them leaving Messrs. Rogers, Higgins and Smith to lead their own lives undisturbed by antiquity. Only St. Paul's wife persisted in claiming that she had been a famous 'hetaera' of Imperial Rome who had re-incarnated in order to be saved by the good Emperor Marcus Aurelius. However, Marcus Aurelius also left and she was ultimately cured by the re-incarnated Galenos, alias Mr. Higgins, whereupon she also settled down to be - only herself.

Now, all these fantastic ideas were only the outcome of an unsound state of mind, reflecting the toxaemia from which the persons in question were suffering. This toxaemia may lead to many strange ideas, actions and tragedies, as will be seen from the following instance.

A friend of mine, a great idealist, married a charming girl who unfortunately, at the age of twenty, had developed severe colitis and at the same time fallen into the hands of an unscrupulous "spiritual" leader, who gained complete control over her mind. They lived happily together for some years, until this leader again appeared on the scene and claimed that their only child should be brought up in her school at the other side of the globe. The husband opposed her resolutely and was consequently anathematised. Being a sea-captain he was mostly away from home. Once, on his return, he found his only child, a boy of six, on the verge of collapse through starvation.

In his absence the boy had been taken ill. His wife submitted the case to the great leader who undertook to cure him, with the proviso that nothing should be said to the husband about it and none of her letters or prescriptions shown to anybody. As a result of this treatment the boy's health was gradually undermined to such an extent that he finally developed tuberculosis.

Needless to say, this woman, supposed to be a great mahatma, never asked any questions as to what climate the boy lived in, how much he weighed, of what his daily food consisted, how many meals he had or what quantities he consumed at each meal. The mother was only told categorically that the boy should be kept on a low diet. When he became worse the same great mahatma declared that the disease was fundamentally caused by the deeds the boy had committed in a previous life, that it was a purgatory for his soul, a necessary ordeal for 'mental' healing, and that through this test brought upon her and the boy by the great Karmic Law, he would develop into a wonderful character. Indeed, he had been chosen by the Mahatmas for a special errand in the other world.

The boy was dying when his father arrived. He at once took him in hand and let him eat as much as he possibly could. Nay, he went into the kitchen himself and prepared the food when his wife refused to do so and accused him of thwarting the great intentions of the Mahatmas. Seeing that she could not get her own way she shut herself up in her room and wept bitterly.

The boy recovered. It was found that he had actually been starved to such an extent that, driven by hunger, he had stealthily ransacked the dust-bins of the neighbouring farms and collected mouldy pieces of bread and other food residues which he had subsequently hidden in hayricks.

For years, however, he showed signs indicating that his nervous system had received a severe injury. The boy was sent to a naval school after his mother had deserted both him and his father for the great leader.

This is only one case in a thousand indicating what tragedies may be brought about by a wrecked nervous system. I saw the lady herself shortly before she left to join 'the Lodge of Light' of her beloved teacher. All the symptoms of a fully developed colitis

were written in her physique, her way of walking, her general bearing, her complexion and the very expression of her face. She was one of those shallow-chested, slender women with a sallow complexion, whom our modern artists are so fond of painting, and who are held up by the ladies' journals as the modern type of woman. The type is modern indeed, because with the modern way of feeding this type is bound to become more and more prevalent.

This poor woman belonged to the class of the hopelessly nerve-wrecked. She had a morbid passion for extreme cleanliness, characteristic of those who suffer from inner filth. She was always washing her hands and always on the look out for microbes everywhere. In the same way she was fighting her own most natural instincts, suspecting them of tempting and alluring her soul from being purified. In spite of all her ailments and defects she was firmly convinced that she belonged to the few of the elect who were destined to become the nucleus or the pioneers of a new humanity. These thoughts gave her great comfort. Without them her life might have been unbearable.

It is generally the nerve-wrecked who build up and cling to castles-in-the-air. Unable to feel at home in the world of reality, they construct in their minds a world of unrealities to which they cling, and for the sake of which they are ready to abandon home, husband, children ... anything that would count with normal, healthy people in this world of ours. The teaching and assurances of a great leader, believed to be a mahatma and therefore infallible, and endowed with the most superlative qualities, are taken as an unquestionable guarantee that the conjured world is the true one and this world of ours but a passing dream.

In the world of realities the nerve-wrecked are nothing, whilst in the world of unrealities they are everything, maybe reincarnated kings and queens, great poets and philosophers.

Even the diseases they suffer from are lifted up to a higher plane, being regarded as an outcome of evil deeds in former lives or a purgatory imposed upon the sufferer by unseen powers, the great mahatmas and spirits who are supposed to rule the universe. Far from being a sign of inferiority, these diseases are looked upon as a mark of distinction. By their aid the sufferer will develop into something which healthy persons will have every reason to envy and regret - if not already here, so in lives to come. Thus health is given an inferiority whilst disease is glorified.

No people fight selfishness and praise unselfishness more, in theory, than the nerve-wrecked, and no people are in reality more self-centred and - if men - more 'beastly selfish'. Disease in any form tends to concentrate the attention and the interest of the sufferer upon himself. There are angelic exceptions to this rule, but most sufferers show a morbid inclination always to talk about themselves and their ailments.

Here psycho-analysis and most of the modern psychic methods of healing step in and lead the poor sufferer still further on the road of self-centredness and self-importance, whilst the real road to mental healing lies fundamentally in the ability to forget oneself and one's ailments.

A woman friend of mine once caught sight of some books on psycho-analysis and modern psychology on my shelves. After having glanced at the titles she at once declared that that was just what she wanted as she was in failing health, feeling very tired and depressed. - Would I help her? ...

I promised to do so provided that she would agree to start, not with the mental side but with the physical, as I could not in any circumstances recommend the use of psychological methods until all the physical ones had been thoroughly tried and

exhausted. I told her that I was well aware of the great influence of the mind over the body, but that it would, nevertheless, be a great waste of time to use psychological means for fighting symptoms which might be entirely due to physical causes.

The lady thought this common sense, and agreed to apply to her life some very simple rules, embodied in more exercise and outdoor life, the drinking of more water between meals, a reduction of meat in the diet and an increase of roughage.

As she was the owner of a beautiful garden, I suggested that she should work in it for at least an hour every morning before breakfast. She was decidedly anaemic and obviously suffering from the modern civilized scourge, constipation. I told her frankly that she must not stop short of three good bowel-actions a day if she wished to restore her health and experience the real joy of life.

As she was a brilliant woman, it did not take many words to convince her. Endowed with a fine character and great willpower she at once set to work. The morning work in the garden seemed to have a wonderful effect on both her health and her mind. She became interested in many things she had never noticed before and often returned to her gardening in the afternoon and evening. She simply could not keep away. Her appetite increased. The teapot, white sugar, white bread, condiments and cakes gradually disappeared from her table. Her bill of fare was ultimately reduced to the simplest kind. She practically lived on what her own garden produced, with the exception of milk, wholemeal bread and dates. Of this achievement she was very proud.

Within three years that delicate and anaemic lady had changed into a robust, healthy-looking woman, beaming with joy.

I had solemnly promised to introduce her into the secrets of modern psycho-analysis and psychology when she had exhausted all the physical means of restoring her health. - She never once referred to this promise. Psycho-analysis and psychology were entirely forgotten.

She no longer spoke of herself and her former ailments. As she grew healthier new interests seemed to crop up one after another. She had always been a great lover of Nature, but in a rather platonic way, at a distance. Now she wanted to study botany and zoology. These studies led her to biology, in which she ultimately became a scientist of distinction.

In attempting to draw illustrations of the objects she was studying her interests were turned to art. She took up painting and told me that in no other work did she experience a greater joy or a more complete forgetfulness of herself.

She had reached the summit. For if in anything, health manifests itself above all in an irresistible desire to create, and in a complete forgetfulness of self.

Art is the outcome of the 'life-feeling' produced by the general way of living. If the fire of life is smouldering, the visions and ideals of the artist are clouded by a smoke-screen. The art of our present time is suffering from the pea-soup fog of toxæmia and cannot find its way back to the Acropolis of ancient Greece unless the causes clouding the brains are removed.

The same with religion. A thoroughly healthy man is religious in a quite different way from an unhealthy one. His religion is a full-blooded optimism expressing itself in the joy of life and serene happiness. His mind seems impenetrable to worries. His greatest joy is to overcome difficulties and to turn the desert into an oasis. His very presence makes itself felt in all directions. He radiates confidence and seems, without a word or gesture, to inspire a new and brighter outlook upon life.

Health laughs at psycho-analysis and all the theories about mental healing. It looks upon life inherently as a whole, and on "living" as a great gift. Its chief aim is to

produce more life and to create new values in a constant endeavour to reach "Higher still and higher" in all its activities.

It is only life in its decline and decay that contemplates itself and discovers death.
To health life is eternal.

XXVI.

BETWEEN MAN AND HIS HEALTH STANDS THE DOCTOR.

We are in need of a tremendous upheaval - a r e v o l u t i o n, in fact, in medical science. It is bound to come, and will prove the profession to be f u n d a m e n t a l l y w r o n g. It will cut the ground from under their feet.

Lady Fisher.

The last half century has entirely changed the face of the world. Future generations will envy those of us who are now sixty and seventy and who saw for the first time the telephone, the electric light, the wireless and the loud-speaker introduced into our homes, who rode the first bicycles, drove the first motor cars and flew the first aeroplanes. What would not our descendants a few generations hence give for a chance of seeing the world and experiencing life as it was before the introduction of these inventions, and watching and studying the impression they made and the changes they wrought in our minds and habits. There is no doubt that all these inventions are fundamentally changing man himself to such an extent that, in all probability, they will be considered the starting point of a new epoch in the world's history.

While all these changes have been going on, man's way of feeding himself has been left to chance, personified by ignorant cooks and equally ignorant doctors.

Thirty years ago doctors knew next to nothing about the effect of various foodstuffs upon the system. Doctors today do not know much more. "Go on and eat what you like" is the general advice given to the healthy, and to a large extent also to those who are ill.

*) A friend of mine, a well known Swedish writer and scientist, had one of his kidneys removed. He had been smoking to excess, and was very fond of salt fish and strong coffee - three habits quite sufficient to cause the breakdown of the kidneys. After recovery he asked the eminent surgeon who had operated upon him what he would be allowed to eat. "Eat anything you fancy", was the answer. With only one kidney left and all the other organs impaired! The criminality of this answer was equal to murder.

When the digestive system breaks down under the modern haphazard way of feeding, the most preposterous dietetic advice is given, always with the manifested aim of enabling the patient to return as soon as possible to exactly the same haphazard ways of eating and drinking that brought about the trouble.

And yet, during the last thirty years, discoveries concerning food have been made which are just as marvellous and revolutionary as those made in the realm of physics

and engineering. But the difference between these discoveries and those in physics is, that whilst the latter only add to the conveniences of life, the former cannot be introduced without greatly inconveniencing civilized man in his adopted habits of eating and drinking. *Nothing is more difficult to change than the habits in which the digestive system has been falsely trained since earliest childhood.*

Life is adaptation!

If any man, civilized or savage, is given certain kinds of inferior foodstuffs and drinks, to the exclusion of others more wholesome and beneficial, the human digestive system, with all its various glands and chemical factories, has to adjust itself to what is offered. It must, if life is to be preserved, make the best of a bad business. And so it does until it breaks down, and a change cannot be made without greatly upsetting the system, because the organs have specialised themselves in a wrong direction and are so weakened by misuse that they will no longer respond to the very foodstuffs they were originally built up and were constructed to digest. This is the chief reason for the saying that "what suits one man does not suit another" or, as the proverb has it, "one man's meat is another man's poison". For healthy babies there is never any question as to what constitutes the right food. The same foodstuffs, if chosen with due regard to man's anatomical constitution and biological evolution, will do for all children almost without exception. Deviations and 'idiosyncrasies' only indicate inherited organic defects and disease tendencies. With years of wrong living these defects and tendencies become more pronounced, until at the age of forty or fifty nearly every civilized man and woman seems to possess a constitution which has run amok among the luxuries of modern life and is either overfed with wrong food, starved of the right kind of food ingredients or drugged to such an extent that it requires years of observation and attention by expert dieticians to find out the means by which to keep it going and save it from ultimate ruin. To set it right in a biological sense is, in most cases, out of the question.

Still, a food reform is needed, and not only a reform but a *complete revolution* in our diet and habits. In the introduction to his book: "Diseases of Civilization", *Sir Arbuthnot Lane* writes:

"It will be my endeavour to prove in this book that certain faulty habits of our civilisation, particularly in relation to diet and intestinal function, produce within our lifetime certain structural changes in our anatomy which inevitably result in a chain of diseases of varying gravity. In other words, it is my object to show that it is these unnatural conditions of civilisation which are the *fundamental causes of disease, and that the elimination of disease is not dependent upon therapeutic inventions, but upon a complete revolution in our diet and habits.*"

His famous address on chronic intestinal stasis and cancer, delivered before the Guy's Hospital Physical Society, October 18th, 1923, opened with the following words:

"At present surgery and medicine appear to be *one horrible mêlée of attempts to understand and treat end results, little or no endeavour being made to obviate the development of these conditions.* In surgery, operations increasing in severity replace less extensive procedures: whereas in such a condition as ulcer of the stomach, *no attempt is made to remove the factors which produce it together with many necessarily associated results, the possibility of the recurrence of the ulcer being only eliminated by the removal of the entire organ.* The profession *is only just beginning to realise the enormous part played by the defective functioning of the gastro-intestinal tract, the consequent fouling of the food-supply, and the poisoning and deterioration of the tissues by septic material absorbed from the intestine.*"

It was just because of this neglect on the part of the medical profession that I myself was nearly struck off the register of the living, and that the great tragedy of a perforated gastric ulcer befell my dearest friend and led to his premature death. When Sir Arbuthnot Lane says that "at present surgery and medicine appear to be "one horrible mêlée (disgusting huddlemuddle) of attempts to understand and treat *end-results*" he has hit the nail on the head. In people suffering from a gastric ulcer, *only the gastric ulcer is treated*, though that ulcer is nothing but the end result of years of wrong living and wrong feeding on the part of the patient. Yet this wrong living and feeding is allowed to go on in exactly the same way everywhere, breeding thousands of new cases and leading to thousands of catastrophes. The profession does not budge even in the face of an overwhelming number of facts easy to observe and demonstrate. It sticks stubbornly to one of the most stupid of principles *that, in the whole of creation man is the only animal who can with impunity eat what he fancies* or what modern means of communication and modern food manufacturers bring to his table. Any attempt on the part of a farmer or breeder of animals to apply the same principles to horses, cattle, pigs and poultry, would be regarded as madness. No wonder then that there are no less than 5,000 "*more important*" scientific treatises written by doctors concerning gastric ulcers and that a leading specialist has to admit "that in spite of all this learning we do not know more about its real cause than one hundred years ago".*)

*)But they know just as little about the cause of minor ailments and are just as helpless in their attempts to remove them in themselves as in their patients. A few days ago I got the following letter from a woman friend:

"I am delighted to be able to tell you that I already feel much better for the suggestions you so kindly made as to my diet. I am easier than I have been for a very long time. I am consequently becoming more and more sure that there is something radically wrong with the methods used by the doctors! They seem to pay so little attention to minor ailments and even tolerate them in themselves, and accept them as inevitable. Some time ago I mentioned to the doctor who was attending my mother, that my neck was always stiff and creaked when I turned my head. He said: "Most people have that nowadays, I have it myself." "But what are you going to do about it?" I asked. He shrugged his shoulders and, with a weary smile, said: "Wait till I can have a holiday, I suppose." Another instance was the case of a working man who went to his panel doctor. After a few days he went again as he felt no better.

"What? Are you back already? Have you finished the medicine I gave you the other day?"

"No, doctor, but I have a very bad headache and can't get rid of it."

"So have I," was the doctor's reply...

In view of the attitude of the profession to feeding, it would seem that during the many million years of its biologic evolution humanity had been brought up by Nature on an entirely wrong diet which, under the guidance and blessings of the medical profession, has finally been put right - by 'illiterate' cooks, ignorant of even the meaning of such words as 'physiology' and 'biology'. These cooks have nevertheless, according to the views of the profession, been able to achieve such wonders in modern dietetics that doctors have not only looked upon the way of feeding invented and introduced by them as sacrosanct and above criticism, but they actually seem to have devoted their chief efforts to proving that civilized man's ailments and decrepitudes are due only to *the wrong way in which Nature made him*. In order to save the cooks, and disguise their own ignorance, they put the blame on God and his creation instead of upon themselves and their chief protégées.

It seems to be a law that any organised society becomes conservative and backward if left to itself, i.e. without wholesome criticism from outsiders. Even a society of reformers would in the end, I suppose, become hostile to reform.

The first physicians of Europe, the disciples of "the greatest physician of all",

Hippocrates, regarded the *serpent* as a symbol of their art, because the serpent renews its skin every year. In the same way they hoped to renew the health of their patients and renew or improve upon the principles and methods of their own learning.

With the downfall of Greece, Medical Science hibernated, remaining asleep for 1500 years until the arrival of Paracelsus. These hibernating tendencies became, however, so strongly ingrained in the minds of the members of the medical profession, propagating themselves from generation to generation, that the *tortoise* with its immovable and unchangeable century-old shell and slow movements ought surely, instead of the serpent, to be regarded as the true symbol of the profession.

In spite of the 2,300 years that have elapsed since the days of Hippocrates we are still far behind his achievements and those of his disciples, especially in actual 'health-production' and in the maintaining of human physical and mental ability at the highest possible level. Our profession is "only just beginning to realise" what was as clear as daylight to its predecessors in the days of Hippocrates - *"the enormous part played by the defective functioning of the gastro-intestinal tract in the causation of disease"*.

The famous English physician, *Sir James Mackenzie*, wrote on pages 2 and 24 of his book *Symptoms and their Interpretation*:

"The general practitioners are the people who are brought into contact with the illnesses which impair the health of the community. An analysis of the complaints which the general practitioner sees reveals the present state of medical knowledge. If we put aside the trivial ailments and consider the illnesses which lower the health of the great majority of people, it is found that *only a small percentage (5-10 per cent.) are capable of being diagnosed with any degree of accuracy. Most of this small percentage are cases of disease so advanced that the organs are damaged beyond repair, such as apoplexy, chronic Bright's disease, gangrene of the feet, advanced heart disease; and these are the endresults of a long period of ill-health, whilst the origin of the ill-health was not detectable.* Even such diseases as consumption and gastric ulcer, are in all probability *secondary, or super-added diseases - at all events, their diagnosis cannot be made before gross changes take place."*

"The backward state of diagnosis is illustrated in these two latter conditions. They are such common complaints and have been the subject of long and careful investigation by innumerable doctors, yet today we cannot detect consumption until the lungs are damaged, usually beyond repair, while, as regards gastric ulcer, Berkley Moynihan, out of his great experience, states that it is disheartening and humiliating to have to confess that at this time we are still often unable to detect this complaint...."

"The bulk of the most instructive phenomena produced by disease are incapable of detection by mechanical aids. Many valuable signs are only perceptible to the trained eye or the trained ear or the trained finger. Still more valuable signs are only revealed by the sensations experienced by the patient. To interpret these requires a training that can only be acquired by many years of patient observation, during which the mind is stored by the experiences of the past, by methods which are peculiar to medicine. These methods can never be acquired by a laboratory-trained observer, and it is because of this that men trained in the laboratory fail as clinical investigators, however distinguished they may be as physiologists, chemists or bacteriologists."

On page 80 of Dr. Macnair Wilson's interesting book "The Beloved Physician" Sir James Mackenzie is reported to have expressed himself as follows:

"The sensitive index finger of the experienced doctor can give far more valuable information than all the instrumental methods in the world... When I see the modern

cardiologist (heart specialist) getting his assistant to take an X-ray photograph of the heart and an electrocardiogram, and even a blood-pressure reading, and then behold him sitting down to study these reports, *I am truly amazed. I never could have realized that the practice of medicine could have become so futile and ineffective*".

The same great authority wrote in "The Basis of Vital Activity":

"There is an unfortunate human tendency to be satisfied with progress achieved. Medical men are not exempt from it. They tend to dwell with too much complacency on their relatively few successes and to ignore their many failures."

And in "The Future of Medicine":

"The fact that medicine is becoming so complex implies that it is being pursued on wrong lines ... So far, the greatest endeavours have been spent in elucidating the *later* stages of disease, and progress demands that the predisposing and *early stages* should be investigated with equal thoroughness and energy."

In his "Diseases of the Heart", page 12, we read the following scathing sentence, revealing in one single line the fallacy of the modern microbe-mania:

"The detection of a microbe which provokes the ill-health throws no light upon the condition which made the man ill and which may lead to death."

Sir James Mackenzie belonged to the few who care more for truth than anything else in this world. He was at heart a real physician. He could not, in the long run, stand the many fallacies upon which modern medicine is built. In the last letter he wrote he makes the following confession:

"When I left London I dared not tell anyone the real reason for my leaving, for it would have been looked upon as a piece of folly. *For years I had been gradually becoming convinced that the whole tendency of research was on the wrong lines; that it was devoid of fundamental principles, was haphazard, and could not supply the kind of knowledge which would enable us to solve medical problems.*"

Sir James died on the 26th of January, 1925. With these words he bid farewell to a world that had hailed him as one of its greatest physicians. What will a layman think when he contemplate such a verdict upon the present methods of healing in the light of the fact that all through history *very simple means have proved sufficient to stamp out terrible scourges and diseases*? The plagues of the Middle Ages were caused by nothing but the accumulation of filth everywhere. Still, none of the doctors in those days even dreamt of suspecting filth to be the real cause of the scourges they were at a complete loss to understand and stave off. On the contrary they directly opposed the very measures which were calculated to remove the causes, as when, in the eighteenth century, the King of Spain ordered the streets of his capital to be kept clean, forbidding human dirt to be left in the open. The doctors of Madrid petitioned that this decree should be withdrawn and the streets left as they were "because the dirt in the street attracted certain putrescent particles of the air, which, imbibed by the human body, would cause fatal sickness". When in the sixteenth century lemon-juice was found to stamp out scurvy on board ships, and when this means of fighting the disease was recognised and for several centuries repeatedly advocated as the most efficient remedy for that terrible scourge, the medical profession repeatedly pooh-poohed it and stubbornly resisted, by decree, its introduction into the navy for no less than two hundred years, until this measure was finally decided upon and made compulsory - *by laymen*. Similarly, the true cause of beriberi was found out long ago by laymen and sea-captains whilst it remained unnoticed by the profession who were on the lookout for a microbe, as being a more fashionable cause, instead of such a simple and trivial thing as polished grain. The history of human suffering is full of similar instances of the refusal of the medical profession to accept trivial remedies for well established

diseases, especially when these remedies have been suggested by somebody outside their own profession.

Nay, their professional jealousy is often directed against their own colleagues, teachers and leaders if they venture to innovate too much or dare to deviate in their views and methods from those held by the majority of doctors.

Even *William Harvey*, one of the greatest pioneers in medical science, could not escape the hatred and malice of his colleagues when he published his famous Essay, "On the Motion of the Heart and Blood". The following extract from his preface shows that he knew only too well the disposition of his colleagues:

"True philosophers, who are only eager for truth and knowledge, never regard themselves as already so thoroughly informed but that they welcome further information from whomsoever and from wheresoever it may come ... The studious and good and true never suffer their minds to be warped by the passions of hatred and envy which unfit men duly to weigh the arguments that are advanced on behalf of truth, or to appreciate the proposition that is fairly demonstrated. Neither do they think it unworthy of them to change their opinion if truth and undoubted demonstration require them to do so."

Aubrey, his historian, relates that nevertheless, "after his book came out, he fell mightily in his practice, and *all the physicians were against him.*"

Harvey's great work appeared in 1628. Fourteen years later the French Academy of Medicine declared that the blood *did not circulate in the body*, and fortyfour years later in 1672 *that it was impossible*. The English physicians did not even take the trouble to express an official opinion in the matter, which evidently seemed to them too ridiculous.

When *Dr. Leopold Auenbrugger* in 1761 published "his epoch-making discovery of percussion of the chest in diagnosis" he made no secret of the reception he expected his discoveries to meet with from his colleagues. He wrote:

"In making public my discoveries, the fruits of seven years' observation and reflection, *I have not been unconscious of the dangers I must encounter, since it has always been the fate of those who have raised or improved the arts and sciences by their discoveries to be persecuted with envy, malice, hatred, detraction and calumny.*"

No matter which century we may study, the profession has always given great epoch-making discoveries the same reception.

Even the case of the great *Lister* constitutes no exception. Anyone nowadays would think that the wonderful and incontestable successes he achieved by scrupulous cleanliness and the use of antiseptics in his operation theatre, would at once have been recognised by the medical profession in England. Here was a clear case where an innovation saved lives in hundreds and thousands, whilst the death-rate from operations all over the world at that time had risen to such a height that there was serious talk among laymen of definitely abolishing hospitals as veritable deathtraps. *Lister* proved conclusively to the world that this death-rate could be greatly reduced by the use of antiseptics and immaculate cleanliness. Through the introduction of his methods the hospitals were ultimately saved. Yet at first he was laughed at and ridiculed by the majority of his colleagues, whilst "the leading surgeons of Germany were among the first to seize upon the new idea with avidity and practical success; so early as in 1875, in the course of a tour he made on the Continent, great festivals were held in his honour in Munich and Leipzig. The countrymen of Pasteur did not lag far behind; and it is no exaggeration to speak of *Lister's* appearances *in foreign countries* at this time as *triumphal*. *In England Lister's teaching was slow in making its way.*" (Encyclopaedia Britannica, XIII edition.)

No man is a prophet in his own town or country. The medical profession of England, who ought to have been the first to pay their great colleague and countryman a tribute by accepting his principles, lagged behind. The Hungarian and Austrian doctors, who chased Semmelweiss out of Vienna when he proved that want of cleanliness was the chief cause of the great death-rate in their maternity homes, never mentioned his name when they paid tribute to his great English successor. It was Lister himself who generously pointed to Semmelweiss as his forerunner.

Fifty-five years after Semmelweiss had demonstrated his great discovery, the *British Medical journal*, in an article devoted to the glorification of Lord Lister*), acknowledged the huge blunder the medical profession had made in allowing not less than thirty (30) years to elapse before it accepted the evidence Semmelweiss brought forward, though his evidence is now admitted to have been "conclusive"

*)Lord Lister died June 26th. 1925.

"The story of antiseptics in midwifery is one of the least creditable chapters in the history of medicine. The true origin of puerperal (childbed) fever, and the way to prevent it, was demonstrated by Semmelweiss in 1847. The evidence he brought forward was *conclusive*, and was accepted as such by Hebra, Haller, Skoda, Michaelis, and others... *We must with shame confess it met with no attention adequate to its importance.* After the way to prevent puerperal fever had been shown, it still broke out from time to time in every lying-in hospital in London.... The experience of lying-in hospitals all over the world has now shown that puerperal fever can be prevented. *This might have been done thirty years earlier.* That it was not done can only be ascribed to that selfsatisfied inertia of mind which makes men cling to routine, think their own opinions final, and distrust what is novel."

This is a handsome admission of a mistake made. But such an admission is no guarantee whatever against a repetition of a similar mistake being made to-day. The mistakes are, as a matter of fact, inevitable with the present state of affairs, when the most important of all the social functions and activities, upon which the health and welfare of individuals and nations ultimately depend, have been monopolised by a class of people who depend upon disease for their livelihood and who are bound by their training and social position to be conservative in their views and jealous of their trade.

How many thousands of poor mothers did not succumb and leave motherless children behind, before the profession was forced to accept Semmelweiss' "conclusive evidence", and how many generations of men and women will not yet have to drag themselves through life, crippled by disease, and die prematurely, before the doctors accept the facts revealed and the teachings put forward by Sir Arbuthnot Lane and Sir Arthur Keith concerning the functions of and the diseases caused by the great bowel? - And to think that in the main their teaching discloses and repeats only what was common knowledge 2,300 years ago!...

Truth and innovations have always been, and are likely to be for ever unwelcome, even if introduced into the profession by their own most prominent members.

In 1813 the University of Oxford conferred upon Lister's great countryman and predecessor, Jenner, the degree of M.D. "It was believed," states the Encyclopaedia Britannica, "that this would lead to his election into the *College of Physicians*, but that learned body *decided that he could not be admitted until* he had undergone an examination in classics (Latin and Greek). This Jenner refused. "I could not do it," he said, "for John Hunter's Museum." - What has Latin and Greek got to do with the art

of healing or with Jenner's great discovery? - Nothing! But the members of that august body would not tolerate one of their own profession who had not passed the same examination in Greek and Latin to which they all had had to submit. Hence he could not be admitted.

In view of all these facts, is it to be wondered at that the great revolution in our diet and habits which Sir Arbuthnot Lane advocates, has met not only with almost complete indifference on the part of the majority of doctors, but actually with irony and laughter?

"When you mention Sir Arbuthnot Lane to doctors they laugh at him," the mother of a girl of fourteen once said to me when consulting me about her daughter's health. The girl was obviously suffering from 'Lane's disease', and the mother confessed that she had read some of his articles and books, but that she had been put off applying his principles by her own doctor. "Roughage is never advisable for a weak digestion," he said. "Your child is delicate and wants strengthening food."

The food that was suggested was the very food which was responsible for the delicate state of that child's health.

Thus the vicious circle is allowed to go on. It is 'strengthening food' which causes constipation and it is 'strengthening-food' that is suggested and prescribed by the profession for curing the evils that follow constipation. Finally, when colitis is fully developed and the damage irreparable, a nervous wreck has been added to the many that are roaming aimlessly about in our civilized countries, feeling themselves alienated from life, and left to seek their happiness in imaginary worlds of dreams and healing.

Health lies ready waiting for everyone in the fresh air, sunshine and natural simple food which Nature provides. But between man and his health stands the biggest and strongest trade union in the world, that of the doctors.

Modern civilization has been largely built upon the principle of free criticism of all its institutions. An Englishman is allowed to criticise, just as it pleases him, his government, his religion, his newspapers and all the various bodies that constitute his society. In England the criticism of an opposition is even regarded as an integral part of the system of government which can not be dispensed with if the country is to be well governed. There is only one class of people practically exempt from this principle and at the doors of which criticism generally stops dead - that of the doctors.

The medical profession allows criticism to a certain extent within its own ranks, if carried out by a qualified member with due deference to all its written and unwritten prejudices and traditions. But woe to him who dares to criticise the profession from the outside! How could such a criticism possibly be admitted when, within the ranks of the profession itself, the great Jenner was not allowed to enter the College of Physicians because he had not passed a preliminary examination in two dead languages? "Do you know your Greek and Latin?" will always be the first question by which the intruder is met.

On page 3 of his masterly book, "Cancer, the Surgeon and the Rescarcher", June 1928, Ellis Barker writes:

"The medical profession in England and abroad is organized into a powerful trade union. The medical trade union has its trade union Press and it is animated by a narrow trade union spirit. No one who is not a member of the trade union is allowed to express an opinion on medical matters. He is reviled on principle because he does not hold the 'trade union ticket'. He is treated as an intruder. This is a most unfortunate state of affairs. The public is anxious to be enlightened on matters of health. It recognizes that prevention is better than cure. However, medical men are not

permitted to enlighten the public in the Press over their signature because that would be considered as 'advertising', if not 'infamous conduct in the professional sense'. The livelihood of medical men who venture to write for the information of the people may be taken away from them by the professional organisations. These organisations are as jealous of the professional man who tries to enlighten the public as of the outsider who endeavours to do so. *Health preservation and disease prevention are thus made 'a mystery' in the spirit of the selfish old guilds from which the modern trade unions have sprung.*"

The trade union of doctors is not only the greatest and most powerful trade union in the world. Its position is more unique than that of any other institution, past or present. Its members are the masters of life and death to untold millions of people. Unpunished by the civil criminal laws, they may commit the grossest blunders, terminating the lives of thousands of citizens without the possibility of any appeal, because they are themselves the supreme judges in their own case.

"When a dam breaks or a bridge collapses," writes Dr. Howard Criswell, "the engineer's work is checked point by point, the calculations reviewed, and if one false step is found, the engineer is ruined for ever. How many of our present medical students, so eager to qualify for this lucrative profession, would be so anxious if their blunders were to be exposed by such investigations, instead of being quietly hushed up and removed from sight and buried by the undertaker! How many would make even a living, if they received pay only when they rendered real instead of suggested or imaginary benefit! How many would "break even" if compelled to make restitution where their treatment left the patient worse than before!" (*Health for All*, June 1933).

In a volume entitled *Domestic Medicine, A Treatise on the Prevention and Cure of Diseases*, published in 1797, Dr. William Buchan, wrote:

"As matters stand at present; it is easier to cheat a man out of his life than of a shilling, and almost impossible either to detect or punish the offender. Notwithstanding this, people still shut their eyes, and take everything upon trust that is administered by any Pretender to Medicine, without daring to ask him a reason for any part of his conduct." This sentence still holds good, though a hundred and thirtyfive years have elapsed since it was written. People still 'shut their eyes' to the truth.

William Buchan was a Scotch country doctor who dedicated his volume "*rather to the prevention of disease than to its cure*". Like his great colleague and countryman in the twentieth century, Sir James Mackenzie, he revolted against the futility and criminality of the methods in use.

Now, *prevention* of disease differs as much from the ways in which doctors try to cure disease at present as day from night. Prevention cannot be achieved without a thorough study of the ways in which modern man has *arranged* his life, and a willingness to *rearrange* it so that any habits, directly or indirectly responsible for disease, may be eliminated.

Here lies the *crux* of the whole question. The majority of doctors are, through their upbringing and training, the most stubborn defenders of the 'status quo', especially in modern man's habits of eating and drinking. Unfortunately for them the origin of disease and the key to health have been found to lie 90% in just these habits.

The very fact that medical students are recruited mainly among the best situated and most cultivated classes tends to prejudice them against any changes in established ways of living. The medical training itself, being chiefly built upon the ability to memorise, and the great expense that this training involves, largely add to these tendencies. The newly-created doctor is often involved in debts. He has spent £2000

or more during the period of his tuition, and he is anxious to get some return as soon as possible. He has furthermore to establish himself, to buy costly apparatus and instruments, keep a motor car etc., and he must above all see to it that he does not starve. In these circumstances, how can he possibly risk his position by striking out for new methods and applying new ideas which may ruin him financially, bring him into disrepute among his colleagues and cause him to be struck off the register, since he has solemnly pledged himself to apply the rules and methods laid down by his profession?

"Few improvements are to be expected from a man who might ruin his character and family by even the smallest deviation from an established rule," wrote the same Scotch doctor, *William Buchan*, nearly one hundred and fifty years ago. Things have not changed since then, only become worse. For even if inclined to apply any new principles, the newly created doctor will in most cases *lack the ability* to do so because, of all his faculties, that of philosophising and criticising has been the least developed - indeed, the least wanted. Dr. Buchan predicted that this would always be the case with the majority of the members of the profession:

"An implicit faith in the opinions of teachers, an attachment to systems and established forms, and the dread of reflection will always operate upon those who follow Medicine as a trade."

One hundred and fifty years later Dr. Howard Criswell in an article, "Are Modern Doctors more Efficient?", in "Health for All" for June 1933, actually bears him out in the following statement:

"One wonders if the mere increase in the years to which the medical candidate is exposed really sifts out the weaker students. It may sift out those financially weakest - for the training required to qualify in this type of blundering is very expensive, and represents a severe struggle to the self-supporting student. But is the rich man's son, who can survive this (financial) weeding out of the weaker students, necessarily a better student, more deserving to survive and become the one privileged to practise?"

"As for weeding out the students weakest in ability, it appears that the tremendous increase in the load heaped upon the present-day student tests one thing only - *his memory*. *Is his critical capacity whetted, encouraged, developed? It is not. Let him so much as question anything, and he becomes the clown of the class. It simply isn't done.* And, among educational hypocrites, this is more withering than the best reason! *He is taught to accept unquestioningly, to swallow, and to swallow whole.* In fact, this is made imperative by the overwhelming rate at which the work is crowded on to the student. *Reflection? Impossible! How can one reflect when there is barely time to gulp and on to the next!*"

Similar views, expressed by none less than the Professor of Physiology in the University of London, *V.H. Mottram*, were published by the British Broadcasting Corporation in *The Listener*, Wednesday, August 22nd, 1934, under the title *The Frustration of Medicine*:

"A cynical remark about the teaching of medicine, that it takes ten years to get a fact or theory into a text-book and the rest of time to get it out, is almost justified, and it is worth our while to consider why this lag in time between the discovery and its general application comes about. *It is to be found in the method of recruitment of medical men, in their education, and in the lack of time they have in practice to keep abreast of modern research.*"

"*In the first place* it is not too much to say that no poor person, no one without well-to-do relatives to back him, can easily enter the medical profession. A career is not open to talent unless there is financial backing. Between five and six years'

training is essential before a man can take a degree in medicine, and *even then he is unfitted to go out into general practice*. At the end of his training he is stranded, for he has either to purchase a practice or squat in some neighbourhood and wait for a practice to grow - a heartbreaking process if he has no private means. On the other hand, the well-to-do with moderate ability only finds his way to a practice made simple. If his father is a physician so much the better. *He is pushed, pulled, or crammed through the necessary examinations, and steps into his father's shoes when the time comes. Many a man enters medicine because his father has a good practice and from no inherent enthusiasm for the healing art.*"

"*Second, it may with certainty be said that the academic part of the medical student's training is hopelessly inefficient.* While it may be admitted that medicine is still an art and not a science, it is fairly clear that to understand and apply the modern discoveries of medical research a medical man must have a severe training in scientific method. *He must develop a critical and scientific outlook.* This his academic years in biology, chemistry, physics, physiology, and anatomy are supposed to give him. *We may confidently assert that in ninety-nine cases out of a hundred he sloughs his scientific training when he enters the wards. In fact he is often advised to forget all the physiology which he has learnt. Possibly this advice is wise, for it is to be doubted if it is of the slightest use to him.* The fact is that in trying to study biology, chemistry, physics, physiology, and anatomy in two-and-a-half to three years he gets but a smattering of these subjects, and of their serious import nothing. *He acquires but the bare bones of these subjects, and of their living spirit not a jot.* It is only by a deep, critical study of a subject that a man can begin to discover the spirit of scientific work. *When he has finished his academic work scarcely a man is equipped to read an original article in the sciences he has studied (or shall we say 'learnt?') and give a judgement upon it. Nor is he fitted to do any original work.*"

"Only when the medical student is at last in the wards of a hospital does he come into contact with his life's work... He learns a hundred and one other things which certainly he will have to do in practice. On the other hand, he will not obtain a general oversight of the problems of health and disease as he will meet them in practice. He will obtain a distorted view of the prevalence of venereal diseases. *He will learn next to nothing of psychology, of sex, or of diet, three subjects of the utmost importance in private practice.* He will go out into practice to find that half his cases suffer for psychological reasons, from faulty sex adjustments and faulty diet, and that a large proportion of the ills of the rest of them are due to minor infections of the respiratory tracts."

"*Third, so soon as a practice becomes at all profitable, the physician is so 'run off his legs' that he has no time to keep abreast of modern research in medicine. Who has not smiled to see stacks of The Lancet and the British Medical Journal on his doctor's consulting room table, with not even the wrappers removed? And if he has no time to study journals, how can he get away to the necessary post-graduate work to keep him up-to-date?*"

The result of all this is, as Professor Mottram concludes, that *"in no real science would fads and fashions, comparable with those which beset medicine, be possible, or would nostrums, such as the majority of patent medicines and patent foods, hold the field as they do in medicine."*

The fact that this sweeping verdict by a person in a high authoritative position has been published by the official organ of an English Government Institution for Broadcasting indicates to what an extent a general discontent with the present way of treating disease and lack of interest and understanding for the laws that govern and

build up health has been spreading during the last years to all classes and is actually undermining the position that the medical profession still holds in our social life.

This state of affairs has become so obvious to most observers that even orthodox medical periodicals like the *Lancet* and the *Medical Press* cannot help occasionally 'letting the cat out of the bag'. The former wrote some years ago:

"At present we are turning out of our medical schools men with a smattering of many sciences, *but with little practical ability to heal the sick.*"

The latter stated:

"The medical man or graduate is turned out from school or university a highly finished educational product, charged with a vast amount of information *that will be simply an encumbrance to him* when called upon to discharge the end and aim of his adopted career, namely, to comfort and *heal the sick.*"

"Are those medical students sifted out, the ones who are weakest in ability to diagnose?" asks Dr. Criswell. "They are not. *Examinations are passed by quoting authority, not by thinking. Etiological errors in reasoning, if committed by the authorities, are about as religiously copied in our medical schools as errors were copied and perpetuated by the Scholastics of the Dark Ages.*"

Is not Rubner's great blunder, exposed in Chapter XXII, an excellent instance of how the grossest "errors in reasoning, if committed by the authorities, are religiously copied and perpetuated?" In this case it brought about the starvation of 70 million people in the midst of an actual abundance of food and caused them, according to many thinkers, to lose the Great War. The allied powers had, during the war, no more powerful and efficient ally than Rubner! If it had not been for the starvation brought upon the Germans by his teaching in dietetics no one knows what might have happened or where the war would have ended.

Any layman, whose attention had been drawn to the way in which Rubner arrived at his figures concerning the indigestibility of bran, would at once have discovered the mistake. But laymen are supposed only to accept humbly the 'dicta' of the profession which looks upon them as being unable to understand the mysteries and intricacies of its methods and the profundity of its learning.

If exposed, the profession has recourse to exactly the same methods used by the Inquisition in the Middle Ages. Some years ago Dr. Paul H. De Kruif, Professor in Bacteriology in the U.S.A., published a book entitled "Our Medicine Men", containing some scathing criticisms of present day medical men and methods. "His book, plates, and all publishing rights were purchased by the American Medical Association and destroyed." Only a few copies are still left.

Why destroyed? If what Professor De Kruif had published were not true, what an easy thing it would have been for the powerful Medical Association of the wealthiest country in the world to expose his fallacies and refute his statements. But the profession thought it wiser to buy up and destroy the book, thereby showing that what Professor De Kruif had published could not be disproved.

To be afraid of truth and criticism is one of the surest signs that something is fundamentally wrong.

Dr. T.L. Bradford, in his book *The Logic of Figures*, relates the following incident:

"During the visitation of Asiatic cholera in England, in 1854, the Government directed the General Board of Health to make the necessary arrangements for collecting statistics of the various methods employed in the treatment of cholera. A medical council, composed of the most eminent practitioners in the kingdom, was accordingly formed with the late Dr. Paris, President of the Royal College of Physicians, as chairman."

"When their report was submitted to the House of Commons, it was noticed that the returns of the homoeopathic practitioners were left out, and a demand was made by the House for them or 'for copies of any returns that have been rejected by the medical council'. Accordingly Dr. McLaughlin, an eminent member of the profession and Government inspector of cholera hospitals, *presented the missing report, showing an average mortality of but 16.4 per cent. under homoeopathic treatment while the results under the ordinary treatment showed a death-rate of 59.2 per cent., a very substantial reason, on the part of these magnanimous gentleman, for attempting to suppress these returns.*"

Dr. McLaughlin, in a public letter to one of the physicians of the London Homoeopathic Hospital, afterwards wrote:

"You are aware that I went to your hospital prepossessed against the homoeopathic system; that you had in me, in your camp, an enemy rather than a friend, and that I must therefore have seen some cogent reason there, the first day I went, to come away so favourably disposed as to advise a friend to send a subscription to your charitable fund, and I need not tell you that I have taken some pains to make myself acquainted with the rise, progress, and medical treatment of cholera, and that I claim for myself some right to be able to recognise the disease, and to know something of what the medical treatment ought to be; and, that there may be no misapprehension about the cases I saw in your hospital, I will add that *all I saw were cases of true cholera in the various stages of the disease, and that I saw several which did well under your treatment, which I have no hesitation in saying would have sunk under any other.*"

"In conclusion, I must repeat to you what I have already told you, and what I have told everyone with whom I have conversed, that, although a regular doctor by principle, education, and practice, yet were it the will of Providence to afflict me with cholera, and to deprive me of the power of prescribing for myself, I would rather be in the hands of an homoeopathic than an orthodox adviser."

"The aggregate statistics of results of orthodox treatment of cholera in Europe and America show a mortality of over 40 per cent., while statistics of homoeopathic treatment show a mortality of less than 9 per cent."

In spite of this magnificent rehabilitation by a prominent member of the profession, which gives as much credit to the rehabilitator as to the rehabilitated, the orthodox majority of the doctors launched an attack a few years later upon those members of their own profession who had adopted homoeopathic methods in their practice. An Act designed to strike them off the register was placed before the Parliament but was defeated at the last moment in the House of Lords by Lord Ebury who proved that *"during the cholera epidemic in London the percentage of recoveries in the Homoeopathic Hospitals had been three times as great as the percentage of recoveries in the orthodox hospitals."*

But what about the wonderful progress made by Medical Science, of which the congresses and papers of the profession are full? - This question could not be answered in a better way than on pages 18 and 35 of Ellis Barker's book "Good Health and Happiness": -

"We often read of the wonderful progress made by medicine, surgery, bacteriology, etc., and the beneficial effect of these sciences upon the health of the people. It is true that the mortality from certain diseases, particularly dirt diseases, has been greatly reduced. On the other hand, the mortality from avoidable, self-inflicted, and degenerative diseases, such as cancer, arteriosclerosis, heart disease, diabetes, etc., has very greatly increased. Besides, *reduced health and semi-invalidism are more wide-spread than they have ever been before.* That may be seen by the

unprecedentedly large sale of patent medicines, chest protectors, varicose vein stockings, hernia trusses, suspensory bandages, flat-foot supports, abdominal supports, spectacles, false teeth, etc."

"The people have become much dissatisfied with the state of their health and profoundly sceptical about medical science. Notwithstanding, or perhaps because of, the great advance of the medical sciences, the prestige of doctor and surgeon has much diminished. With sound instinct the masses of the people refuse to take part in the blind worship of the laboratory and of its mystic rites. They notice that many doctors who can talk learnedly and imposingly about bacteriology, endocrinology, catalyzers, enzymes, etc., have often little or no knowledge about ordinary, commonplace matters, such as diet. Their scepticism has been increased by the fact that physicians and surgeons are not a very healthy set of men."

"According to official statistics, the mortality among doctors and surgeons is greater than it is among clergymen, gardeners, agricultural labourers, farmers, railway guards, barristers, solicitors, builders workers, etc. This high mortality among medical men is by no means entirely caused by infection and strain connected with their professional duties, for among them the mortality from diseases caused by faulty food and feeding is relatively great."

For centuries not only the ordinary practitioners, but even the leading specialists of the West, have concentrated all their attention upon treatment, *disregarding prevention*, and some of them have grievously suffered in their own person through their neglect of this all-important matter. Gout can easily be prevented, but not easily cured. The great Sydenham, the 'English Hippocrates', who wrote a celebrated treatise on gout, was martyr to that disease for more than thirty years. Sir Jam Mackenzie, the greatest British heart specialist of modern times, died of heart disease which need never have arisen had he lived more wisely. Professor Atwater, the leading American authority on "scientific" diet, died apparently from over-eating. Dr. John Harvey Kellogg states on page 157 of his book, 'The Natural Diet of Man': -

'Atwater, an advocate of the high protein diet, died of arterio-sclerosis after having lived for two or three years a completely helpless, imbecile paralytic.'

"Certain eminent authorities on dietetics with whom I am acquainted proclaim by an offensive breath the fact that the scientific diet which they themselves advocate leads to very evil results in their own cases. Some have been operated on for the results of bad feeding. Many toothless professors are teachers of preventive dentistry, and some well known cancer researchers have died of cancer. One of them, a personal friend of mine died from cancer in the stomach. He had studied the cancerous cell with the microscope and by experiments on animals for years, but he confessed to me that, *in addition to wrong diet and very irregular habits, he had ever since he could remember, started breakfast with two cups of coffee as hot as he could get them*, which means about 150°F. No animal and no savage will take such hot drink, however tempting. Cancer of the stomach is in innumerable cases associated with the habits of drinking excessively hot liquids during twenty years or more, as I have shown in my cancer book. Had my learned friend used his plain common-sense, instead of keeping his eye glued to the microscope, he might still be alive, and he might have discovered the cause of cancer in mistaken methods of living. The fate of some of the eminent men mentioned and of many others proves that prevention is more valuable than cure. The toothless professors of dentistry might have kept their teeth, exactly as my unfortunate friend need not have died of cancer of the stomach.

Medicine is not a dead mechanical science, but a *living common-sense science*, and an art, and to some extent the old saying, 'The outsider sees most of the game', applies

to the art of healing and of health preservation.

In reality the great saving of human life is due, not to the medical profession, but to the despised and persecuted *outsiders* who have done all the pioneer work in sanitation."

Mr. Ellis Barker is, of course, "persona ingrata" with the medical profession.

In the first place he cured himself on quite unorthodox lines after having been in failing health for years, having been treated by dozens of doctors and having tried all their drugs and methods.

In the second place he is a prominent thinker, scientist and critic, with a penetrating mind and a great ability for sifting "the grains of gold from the dross", no matter to what subject he turns his attention - a faculty never appreciated by those who make people believe that the dross they are offering them is real gold.

In the third place he wrote a book on cancer of which Sir Arbuthnot Lane said: "*I know nothing similar in medical literature, and I should not be surprised at all if professional and non-professional opinion would declare Mr. Barker's book to be easily the most important practical work on cancer existing in English or any other language.*"

Dr. Albert J. Ochsner, *President of the American College of Surgeons*, expressed his opinion in much the same way in a leading American periodical, 'Surgery, Gynaecology and Obstetrics', of March, 1925. He wrote:

"With the notable exception of a most remarkable book: 'Cancer: How it is Caused, How it can be Prevented', by J. Ellis Barker, we find that in all of this enormous literature there is but little reference to even an attempt at prophylaxis, aside from the advice to eliminate irritation of every form. This book should be read by every physician and surgeon and by every layman throughout the whole world. This work analyses practically all the known facts concerning the disease and comes to conclusions which should be considered by all. It does not settle the cancer question but it gives an abundance of food for thought which will go far to prepare the public mind for active work in the line of prophylaxis."

Sir William Milligan, Professor J. S. Haldane, and many other high authorities in medicine hailed Mr. Barker's work as a very remarkable and important contribution, but not so the *Journal of the American Medical Association* and the *Lancet*, one of the leading medical periodicals of England. The *Lancet* described Mr. Barker's book as '*ill-informed*' whilst the American journal actually wrote:

"A book such as this of Mr. Barker's will incline the lay reader to believe that his cancer may be prevented or its growth deterred *by eating proper vitamins or practising good personal hygiene*. There is not the slightest evidence to warrant such a belief at the present time. This book can be considered only as *a pernicious and harmful piece of literature.*"

A deliberate statement by a leading medical journal that the eating of proper vitamins or practising of good personal hygiene *has nothing to do with the prevention of such a disease as cancer!* The statement is diabolic because it is calculated to put people off "eating proper vitamins and practising good personal hygiene" with the hope of becoming more healthy and acquiring immunity from disease, whilst the fact that cancer is non-existent among those people who live on a more natural diet than civilized man, speaks strongly in favour of the views put forward by Mr. Ellis Barker. This is also admitted by the American Journal *in the very same paragraph* from which the above quotation was taken, in the following words:

"While Mr. Barker's view that cancer *may be deterred by rational living is undeniable, since rational living may deter any disease*, this is in no sense to be

recommended as a suitable book for laymen interested in cancer."

What does the American journal really think of the brains of its readers? But fortunately its readers are not laymen but almost exclusively members of the American Medical Association whose special training in consuming "etiological*) errors in reasoning" has made them naturally blunt to errors in logic and hostile to all kinds of books in medicine which might give their patients "an abundance of food for thought and prepare their minds for active work in the line of prophylaxis" (disease-prevention).

*) The science or philosophy of causation, especially an inquiry into the origin and causes of disease, (Gr. *aitia*, cause; and *logos*, discourse).

An ordinary newspaper reporter who so flagrantly made a statement and in the same paragraph contradicted himself by denying it, would be dismissed immediately. But not so the members of a profession writing on questions concerning life and death! Obviously Mr. Barker's book is "a pernicious and harmful piece of literature" because of its manifest desire to help humanity to rid itself of a terrible scourge, on lines which tacitly imply an attack on the mode of living of the doctors - especially their table. It is a fact that can be proved over and over again in every single case that a mild, natural, non-stimulating diet, consisting largely of fresh unmanipulated food, diminishes the pain and discomfort of the cancerous and prolongs their lives, and may occasionally lead to a cure - a fact which has been confirmed by experiments on animals. Yet, any doctor who dares to express this view and suggests dietetic treatment instead of operation runs the risk of being regarded as unorthodox and being boycotted by the profession, as has been the case with Dr Robert Bell of London and Dr. Duncan Bulkley of New York. Hence, the very fact that Mr. Ellis Barker advocates diet as one of the best means of preventing and fighting cancer would have been sufficient to stamp his book as a "pernicious piece of literature" by professional writers, no matter how weighty his arguments and how well founded his views.

This American Journal was furious because Mr. Barker's book on Cancer could not be bought up and destroyed like that by Professor De Kruif. In its fury it pays the highest tribute to the very work it wishes to kill, by committing logical suicide, at the same time showing so unmistakably where the truth is to be found.

In describing Mr. Barker's book as "ill-informed", the English contemporary of the American journal, the "Lancet", also puts the rope round its own neck, for Mr. Barker quotes, in support of his views, no fewer than 150 *leading* medical men and about 20 leading medical periodicals. If those men and periodicals are ill-informed, what about the rank and file of the medical profession? - Mr. Barker has evidently played an unpleasant "trick" upon the whole profession by quoting its leaders, pioneers and greatest authorities to the great discomfort of its rank and file.

And truly, when we read some of the quotations from the works of those men and great leaders of the profession who have gathered enough experience and wealth to be able to express themselves freely, and enough fame to make futile any attempts of their orthodox colleagues to strike them off the register, it is easy to understand the attitude of the rank and file towards lay readers who dare to quote them.

Here are only a few instances:

"The science of medicine is a barbarous jargon and the effects of our medicines on the human system are in the highest degree uncertain, except, indeed, that they have destroyed more lives than war, pestilence, and famine combined." - Dr. Mason Good, a distinguished medical author.

"I scarcely ever enter these wards because patients are compelled to undergo so infamous a system of treatment that I cannot bear to witness it ... The present treatment of patients is infamous and disgraceful, for their health is irremediably destroyed. The art of medicine is founded on conjecture and improved by murder." - Sir Astley Cooper, former president of the Royal College of Surgeons.

"There has been no want of new remedies introduced during the last forty years. Some of these have stood the test of time, but these are nothing to the incalculable mass of rubbish, the offspring of delusion or of imposture, which have been proposed year after year, only to be forgotten after a brief season of unreasonable popularity." - Sir Robert Christison, the greatest authority on materia medica of his time.

"If all drugs were cast into the sea, it would be so much the better for men, and so much the worse for the fishes." - Dr. Oliver Wendell Holmes, a great physician and literary man.

"My opinion is that more harm than good has been done by physicians, and I am convinced that, had I left my patients to Nature instead of prescribing drugs, more would have been saved." - Dr. C. W. Hufeland, the most eminent German physician and medical writer of his time.

"The sick man dies of his doctor." - Dr. Thomas Sydenham, often referred to as the English "Hippocrates".

In reading these extracts the lay reader gets bewildered. He thinks of all the doctors he has met and by whom he has been treated - undoubtedly men of honour, integrity of character and intelligence, kind-hearted and helpful, always ready to assist him, often sacrificing not only their moments of rest in the day but also the hours of sleep at night for the sake of their patients.

This is, in fact, the most bewildering part of the problem. "We adore our doctors," a woman friend of mine once wrote.

Surely, the majority of them are *personally* well worthy of the esteem in which they are held and of all the sympathy bestowed upon them. But that does not exclude the possibility that their activities may be founded on wrong principles, and may be destructive rather than constructive.

The virtues of the workers do not necessarily make their undertakings sacrosanct.

Men and women of high ideals, intelligence and integrity of character, built and populated in the Middle Ages thousands of monasteries and convents where they preached and practised the doctrine of self-sacrifice and self-negation. No one questioned their principles and characters. They were admired and adored. Yet their principles were fundamentally destructive and inimical to life. If carried out on a wholesale scale they would have ended the existence of those peoples who accepted them. A nation of monks and nuns could not continue and would become extinct within a generation.

It was the 'sinners' outside the walls of the monasteries and convents who saved Europe, by leading the very life which was directly or indirectly, condemned by the teachings of their accepted and dominant spiritual leaders.

There are thousands of men and women who will judge a movement, not by its own intrinsic merits but by the qualities of mind and character of its leaders and adherents. They are not aware of the great extent to which mass-movements are ruled by false principles, propagated by mass-suggestion. Even the principles and policy of an individual may be judged in the same way.

The Emperor Nicolas II of Russia was undoubtedly a good husband and a kind-hearted father, a gentle and honest man. As a country gentleman he would have commanded the respect and sympathy of everyone. He loved his country and had its

welfare and future always at heart. Yet all these excellent qualities did not prevent him from being the chief cause of one of the greatest disasters that has ever befallen a people. The principles to which he so stubbornly adhered let loose a carnage which annihilated, in the most horrible way, the educated classes of his own nation and left it in the hands of reckless experimenters.

Life itself is maintained by a balance of constructive and destructive forces. There is not the slightest doubt that at present the activities of the majority of doctors, in spite of their own excellent personal qualities, have to be registered on the destructive side as long as they persist in treating *end-results*, with little or no endeavour to get at and eliminate the very *causes* that bring them about. In doing so they are actually slaughtering humanity and every year destroying more life than any great war, famine or pestilence in history. Humanity is sapped of its vitality. Millions are killed inch by inch daily, maimed and crippled, families are decimated and extinguished whilst the civilized nations are made to believe that they are on the road to progress.

Real progress will never be made unless a fundamental change has been brought about in the present-day outlook upon health and disease. The leaders of the health movement of a nation must be able to point to *positive* health results achieved by themselves in themselves and their children. These results must be built chiefly upon a biological understanding of the normal way in which every organ should function. Men and women who have in this way made themselves immune to disease, who have all their teeth intact and free from decay throughout their lives; who have a normal rhythm of the bowels, corresponding to the number of meals; whose sleep is sound, profound and of the right duration; to whom headaches, minor indispositions and depression are unknown and life is a continuous joy, are self-appointed leaders of the health-movement of a nation. They know how to obtain what is quite beyond the reach of any doctor at present, and they are able to guide their children, not to the temple of healing, but to the temple of health through the gateway of which leads the only road to a more glorious future for generations to come.

This was the vision of the great seer and thinker, Friedrich Nietzsche, when he wrote that wonderful poem in prose which is quoted at the beginning of this book. Struggling against ill-health he felt that disease was chiefly caused by factors in life which humanity had let loose upon itself and which could be removed or mastered. Upon man were waiting a thousand means 'yet undiscovered and unexhausted' by which health could be restored and new health created - impregnable to disease. He saw a new humanity arising which would carry on the creation from man to a being which would be physically, mentally and morally 'more than man'. Only those who were able to point to positive health-achievements in themselves could be called real physicians:

"Physician, heal thyself; so thou healest also thy patient. Let that be his best help, that he may see with his own eyes him who hath made himself whole.

A thousand paths there are which have never yet been trodden, a thousand healths and hidden islands of life. Unexhausted and undiscovered ever are man and the human earth."

The greatest treasure in life is *health*.

"When you have lost your *wealth* you have lost nothing when you have lost your *health* you have lost everything", were the last words written by an American millionaire before he threw himself out of the window into the street from the 35th floor of a New York sky-scraper.

Why did his health fail him when he could have bought the advice and care of all the doctors in the world? - But how can you buy health from those who have not got

it?

The help we get from doctors is like the penny a robber returns to a man whom he has robbed of his fortune.

"Go into the town", he says, "and buy yourself a loaf of bread. You see how generous, kind-hearted and helpful I am."

Through their manifest ignorance of and indifference to the essential factors that build up health, the doctors rob us of the best part of our health-inheritance, and give us back - perhaps a "penny" in the shape of a successful cure for a minor ailment, or an operation.

Certainly, *surgery* is a wonderful art, and its achievements are miraculous.

If it had not been for a master-surgeon, a great friend of mine, I should still be hampered in all my sports and physical activities by a rupture in the right groin.

He operated on me one day in a small private hospital, built by a magnate and presented as a gift to a much-loved daughter.

The hospital was a dream in stone, beautifully decorated by prominent artists and filled with works of art. Every single detail, from the exquisite reliefs of the portico and the handle of the entrance door to the frescoes on the walls in the hall and statuettes in the corridors, was thought out with the minutest care, love of real art and disregard for expenditure. The nurses were the best type of Scandinavian girls, radiating health and beauty.

Outside - the vast interminable sea, beating its rhythm to the tune of the winds and the crying of sea-gulls and sea-swallows, whose wings were dyed crimson and gold by the rays of the setting September sun as he bade farewell to his northern haunts.

Surely, this was a temple sacred to Asklepios, the god of healing. The surgeon who performed the operation was a true son of his. My sojourn at this place was a feast which I shall never forget. Nor shall I ever forget my gratitude to his servants.

They returned to me - not a 'penny' but a golden 'sovereign' of the fortune of which I had been robbed in the prime of my youth. For it was in my right groin, which had been so greatly weakened by appendicitis, that the rupture had occurred, because of the ignorance of and indifference to the great problems of feeding manifested by the high priests of his profession.

Asklepios is a robber. His priesthood must rob us of our health in order to bring us as worshippers to his temple. I swore in my youth never to join that priesthood, though many of his servants are my friends and truly worthy of their laurels.

His realm must ultimately be confined to a few temples where none is brought because of self-inflicted or avoidable disease, but where the wounds inflicted by the unavoidable accidents of life are healed, and broken limbs mended, whilst Nature's greatest task of carrying on evolution through generation after generation towards more highly-developed specimens of humanity will be left to those who worship - not in the temples of Asklepios but in the temples of the goddess of eternal youth, *Idun*.

With the waning influence of *Asklepios* and the increasing power of *Idun* a new era will arise in the history of the European peoples.

"Verily, a place of healing shall earth become! And already a new odour lieth round it, an odour which bringeth salvation - and a new hope."

XXVII.

IDUN.

Awake and listen, ye lonely ones! From the future winds are coming with a gentle beating of wings, and there comes a good message for fine ears.

Ye lonely ones of to-day, ye who stand apart, ye shall one day be a people: from you who have chosen yourselves, a chosen people shall arise: and from it 'more than man'.

Friedrich Nietzsche.

How I got to know her?

I was a boy of fourteen and sea-mad. My father sent me to sea for three months with a friend of his, the captain of an old windjammer.

I had the time of my life. The kind captain assigned to me the top gallant sail of the main mast which was used only in fair weather with moderate wind.

Seldom has a sail been better looked after, and most certainly never more loved. - For I hung like a monkey on the, sheets and clew-lines of that sail and often fell asleep on its yard - to the horror of the good captain who thought I might easily lose my balance or my grip of the lines in my sleep and fall on to the deck or into the sea.

But I did not. I suppose the inherited instincts of untold generations of tree-living ancestors emerged from the physical and mental recesses of my being and guided my movements - awake and asleep.

When ashore once more after those three months, another deep-rooted instinct suddenly manifested itself in a way I have never been able to forget.

We landed the day after the worst storm that had swept the Baltic for a century, in August 1890. To see other people, trees, houses, dogs and other animals again after three months among winds and waves and sailors, was an unforgettable experience, but nothing compared with, being offered a basket of apples by a kind-hearted lady, the wife of the ship-chandler. I looked at the apples and thought I had never seen anything more wonderful. I plunged my teeth into one and experienced a joy which made me forget the rest of the world. When the captain and his old friend, the ship-chandler, had finished their talk, there was not an apple left in the basket out of twenty or thirty. His amazed wife looked at my pockets but they were as flat as a parson's purse in the time of the great Linnaeus. *)

*) He gave the name *Capsella Bursa Pastoris* to a plant, the fruit of which had both the shape and the slenderness of a parson's purse.

I suppose she wondered for the rest of her life where those apples had gone. As for me, I had discovered the apple for the first time in my life. Having arrived home in the midst of the apple season, I ate apples like a monkey for a week, after which I again found them quite ordinary. But no matter how many varieties of apple I tried

during that week, which was a regular pomonic feast, I could not get hold of the same kind as those the kind-hearted wife of the ship-chandler had offered me. Nor have I since been able to find it.

For it is non-existent!

Only if another boy is sent to sea for three months and forced to live on the same kind of food as I did, will the same wonderful fruit ever be discovered, no matter what kind of apples are offered him. He will have the feast of his life and then seek in vain for the same variety as long as he lives

To a hungry man in the forest a piece of coarse bread is worth a kingdom. To a vitamin-starved boy with a touch of beri-beri and scurvy in his system, there is no more wonderful fruit or food in the world than an apple.

How strongly our sea-faring forefathers must have felt this when they made *Idun* the goddess of Eternal Youth, who hid this very fruit in a golden casket and offered it to the gods when they grew old and tired. "And the gods ate thereof and regained their youth."

I first met Idun in the wonderful tales of our old 'Sagas' when a child. I learned to know her when I landed, starved of life-giving food-elements, at the age of fourteen on the shores of Scandinavia. But when for the first time I entered the main hall of the student-federation of Dalecarlia, she greeted me with an apple in her hand,

It was the statue of a beautiful Scandinavian girl with a diadem on her hair and a basket filled with apples on her arm. But being a freshman and just entering, as an Alumnus, the oldest University of Scandinavia, I saw her as if in a vision. The old tales and the memory of that wonderful basket of fruit once offered me, gave life to her apples and colour to her cheeks. She became, for ever, the goddess of my life.

In the whole assembly of Nordic gods there is not one devoted to the art of healing. This is of the deepest significance. If a newly-born child was found unfit to live, it was taken into the forest and left to fall asleep for ever in the arms of Nature. Of ailments and diseases our forefathers were equally ashamed as of infirmity and decrepitude. They simply did not tolerate them in themselves or their surroundings.

Ruled by these gods, the North produced a race of which the world has never seen the like in physical, mental and moral vigour.

It is upon the 'health-capital' they built up that their descendants of thirty generations have been drawing for over a thousand years.

At present the whole of the Nordic race is bitten to the marrow of its bones by wrong principles of living, and to the core of its being by a wrong outlook on life.

The race is rotting and is in danger of being swept off the surface of this globe unless a revolution is brought about. - Not a social or industrial revolution concerned with money hoarded in the vaults of banks, nor wealth of buildings, ships and machinery, but a physical and moral revolution concerned with riches of another kind, stored up in tissues, blood and bones, and in those moral fibres which produce healthy minds and strong characters to whom disease is infamous and fear unknown.

One of the main features of disease is that it produces a corresponding outlook upon life, calculated, like the scavengers that settle in the organs and tissues of a diseased body, to accelerate its decay and terminate its existence. For Nature, in her philosophy, is whole-heartedly on the side of our forefathers. Her aim is the production of the highest type, not that of a people in decay or the care of weaklings.

"We must be cruel to be kind." Nature's cruelty is her greatest kindness; man's kindness is his greatest cruelty.

No system of feeding and healing is better calculated to produce an ever-increasing amount of physical, mental and moral suffering than the present. Consequently

'suffering' is glorified as a moral asset just because of its ubiquity.

Never has man lived in a poorer state of health and in a greater abundance of food. Consequently 'the soul' is glorified and the body looked down upon - as if the soul could ever reach its height and fulfil its destiny in a decaying body!

Where is the man or woman with any insight into eugenics who believes for a moment that, with the present state of health and way of living, a single descendent of the millions which now populate this great city of London, will be left to carry on after ten generations? *)

*) In "The Frustration of Medicine", referred to in the previous chapter, Professor Mottram expresses himself on behalf of his profession as follows:

"One of the most pressing problems of all civilized countries is how to produce satisfactory children, and from satisfactory children satisfactory adults.... Putting the whole matter on a purely physical basis it will be granted that we make a pretty bad mess of the solution of the problem. Recently it was stated that in the North of England 68 (sixty-eight) per cent. of the recruits for the army had to be rejected for physical u n f i t n e s s. At the other end of the social scale the results are not much better. The boys of the public school class have mostly had to have their tonsils removed and very few have a perfect set of teeth. A high percentage of the children of the well-to-do are forced to wear spectacles. Faulty nutrition may easily prove to be the main cause of maternal mortality, defective teeth, and poor resistance of the body to infection."

And yet their social and political leaders go on talking about economic and political measures as if they were their only concern, and about 'old England' as if it would remain for ever. The cliffs and the sea, the hills and the green fields will remain, but what about the people who once cultivated them and built by their physical. mental and moral qualities the greatest Empire the world has seen?

Without a good sturdy physique, impregnable to disease, the most excellent qualities of mind and character will hang in the air and ultimately disappear.

Geology tells us to what extent small imperceptible causes will bring about great results. The same rule holds good in biology, where small changes in the life of a species may be sufficient either to alter it fundamentally or bring about its extermination.

The causes working for destruction in our habits of life at present are tremendous. The alarming thing about them is that they work so swiftly that we are able to see whole families swept out of existence before our very eyes. But what is, at the same time, so hopeful, is that the forces of destruction can so easily and quickly be staved off if only a helping hand is given to the regenerative forces within us, working in the opposite direction.

Nature is still the great master. But her true artisans and craftsmen are not those who mend or repair but those who *build*.

It is *builders* we want. Our forefathers were true builders. Their world was never ready-made, it was always in making. It did not simply 'exist', it was being built - an enterprise in which man and god worked hand in hand.

The results achieved speak singularly in their favour. The word 'disease' is scarcely mentioned in their literature. They cared so little for the art of healing that it was left in the hands of old women and witches. They had no doctors, no apothecaries, no chemists, no laboratories or other "blessings" of modern civilisation Not a single prescription for the cure of a disease of any sort has been handed down to our days. And yet they far surpassed us in health and vigour. They did not *mend* life, they *made* it so that there should be little need for mending and healing. Their goddess of health was Idun*) the goddess of *eternal youth* or "*life's renewal*".

*) Idunn, actually "life's renewal".

The symbol of this renewal was the apple, the very fruit of which we have today no less than 5000 varieties, or just as many as there are "more important treatises" written by doctors on 'Gastric Ulcers'.

There are many sayings about what would keep the doctor away, but the oldest and best known is "An apple a day keeps the doctor away".

Perhaps we should have had 5000 fewer works on gastric ulcers if doctors had studied the qualities of this wonderful fruit which surpasses, as a health restorer and preserver, all the remedies of the chemists. Doctors never prescribe it. They manifest their belief in the proverb by being afraid of the fruit.

Some century-old nosologies*) enumerate 407 diseases, the modern ones not less than 20,000.

*) The branch of medicine which treats of the classification of disease. Gr. nosos, disease; logia, discourse.

The list is on a constant increase. The discovery of a new disease always brings fame to a doctor. The twenty-thousand-and-first disease was discovered in December last year (1933) and reported in the "Lancet" by Dr. O. Leyton who wrote:

"About fourteen days ago I was developing a cold, but it made no progress. A week ago I awakened about six o'clock and on attempting to read found that the print moved. I got up but had to sit down to wash. The giddiness became intense, and I returned to bed. Any movement of my head was followed immediately by intense vertigo and nausea".

Dr. O. Leyton has christened the new complaint "epidemic vertigo".

Please note that Dr. L. hopefully names it 'epidemic' though there is no evidence yet of another similar case. But it will soon spread, if in no other way than through the newspapers. People will read about the disease - and suddenly the print will begin to move: a doctor will be called in and will diagnose "epidemic vertigo".

In his last book, *The Basis of Vital Activity*, the late Sir James Mackenzie wrote:

"When a symptom has been named, the tendency is to suppose that the name given reveals its nature. This is but seldom the case, and so physicians are flattered by a false sense of understanding. Names and terms are multiplied without any corresponding multiplication of knowledge. A mass of mere words, or at the best descriptions, is accumulated, and becomes so chaotic that it cannot be comprehended by anybody. *Its continuous increase effectively obscures the path of progress.*"

It is a sad thing to contemplate that no doctor, in spite of his great training in memorising, can possibly remember the names and characteristics of more than a few hundred of these 20,001 diseases, and that, according to Sir James Mackenzie, only about 5 or 10% of those he remembers can be diagnosed with any certainty.

Even in such a clear case as that of a perforated gastric ulcer, in a patient well known to have been suffering from a gastric ulcer for years, two of the oldest and most experienced doctors of the district diagnosed - *kidney trouble*, with fatal result.

How many of the 5 to 10% of diseases rightly diagnosed can then be cured with any degree of certainty? - Perhaps, again, at the most 5 to 10%!

For the upkeep of such a fallacious system England alone maintains a staff of not less than 56,000 doctors at an annual cost of millions and millions of pounds, generally paid by those whose capacity for earning an income is already greatly diminished by disease.

If your clock is not working properly, would you take it to a watchmaker who is

known to have most of his own clocks out of order, being unable to put them right, some of which have been so badly damaged by himself that they are beyond repair? And what about submitting your own clocks to his care if it is known that out of 100 clocks that have gone wrong he is able to detect the cause in only 5 or 10, and that out of these he is unable to repair more than one or two, provisionally, without any guarantee that they will work properly for any length of time? Surely, such a watchmaker would soon lose his clientele. *)

*) Some years ago Lady (Warren) Fisher expressed the same view:

"What would the owner of a Rolls Royce say if his chauffeur grossly mishandled his car, used bad petrol and dirty oil, never gave it a rest: forced it up every hill on top gear, never cleaned the engine, never attended to brakes, and when finding it gave serious trouble, sent it to a garage, where sparking plugs were removed because they were clogged, nuts and bolts thrown out because it was blocked or had a kink, or perhaps leaving the car derelict altogether because a joint was out of place? And yet, that is what we do with our bodies when we have tonsils, gall-bladders, and appendices cut out and intestines short circuited. The fact that it can function at all after such mishandling is the greatest proof of the wonderful recuperative power within."

But not so with the doctors. Their greatest achievement seems to be the way in which they have managed to make the civilized world believe that the system they represent is not only effective but that, without it, mankind would go to limbo; whereas the direct opposite is true, namely that with this system mankind is certain to perish.

Is it not high time for the whole civilized world to wake up and take its life and its future into its own hands?

Is the world to be a cauldron of disease, or are we going to be builders as our forefathers were, building up health instead of pampering the doctors and breeding disease?

Whom are we going to serve: Asklepios or Idun?

It so happened that thirty-six years ago an actual contest took place between Idun and Asklepios in what would then have been considered scientifically the most highly developed country in the world, Germany.

Idun had a faithful servant in a citizen of Bonn, Dr. Julius Baron, Professor of Roman law in the famous old University of that town. Baron had evidently had some interesting experience concerning diet and disease which 'had not only severed him entirely from the profession but had caused him to look upon their activities with very critical eyes. When he died in 1898 he bequeathed the whole of his fortune, not less than £30,000 (600,000 Reichsmark) to the city of Berlin for the erection of a home for waifs and strays, with, however, the unheard of proviso that doctors should be as rigorously excluded from the governing body of that home as meat from the children's diet.

This was equivalent to throwing down the gauntlet to the all-powerful medical profession who lost no time in picking it up. The offended doctors of Germany looked with confidence to their greatest authority, Professor Rudolf Virchow, for an answer to the challenge. He had, as a matter of fact, been asked by the City Council of Berlin whether, from a medical point of view, a home for waifs and strays could be run on a meatless diet.

Professor Virchow threw himself straightway into a fierce, sledge-hammer attack on Baron's bequest, declaring the whole scheme of the testator to be an "unwarrantable experiment" to which no responsible doctor could possibly lend his support.

The great name of that high authority impressed the City Council of Berlin to such an extent that they refused point blank to have anything to do with the 600,000

Reichsmark offered them for their waifs and strays, practically throwing the money into the gutter.

There could be no doubt that Asklepios had won the first round, though by an ignominiously engineered attack.

The testator, with great knowledge of his adversaries, had foreseen the possibility of such an outcome and safeguarded his plan from being wrecked by adding a clause to the effect that in case of a refusal by the City Council of Berlin, the offer of his bequest should be turned to the much poorer and less important city of Breslau. Here the second round of the fight between Asklepios and Idun began. Idun found a good supporter in an elementary school-teacher who, to the delight of the town fathers, testified that he had not only lived and brought up his children on a meatless diet, but that as a consequence of this he had scarcely had to pay any doctors' bills. The town councillors of Breslau concluded that what was good for an elementary school-teacher and his children could not possibly be bad for waifs and strays and that, in the circumstances, it would be unwarrantable folly to throw away such a large sum, in spite of what the profession and its great leaders had to say in the matter. Breslau accepted the bequest, the home was built and the elementary school-teacher appointed director of the new institution in which 30 waifs and strays found shelter and care.

Idun had so far gained a decisive victory in the second round. The opinion of the doctors had been slighted and the profession completely shut out. Asklepios was furious and contemplated revenge. His faithful servants predicted disaster. Of all the waifs and strays in Germany these 30 children suddenly became the centre of their interest. They were talked of by the doctors as being victims of an outrageous experiment by laymen who were quite blind to the tremendous responsibility they had taken upon their shoulders. The profession itself had, of course, never made any "unwarrantable experiments" with the destinies of human beings by using doubtful serums and drugs, nor had they ever been responsible for any increase in the number of waifs and strays by the premature death of many mothers - through, for instance, the doctors' refusal to pay any attention for a whole generation to the "conclusive evidence" Semmelweiss had brought forward concerning the alarming death-rate in the maternity homes of Europe. In spite of their protests they found themselves ignored and treated as outsiders. The decision of the experiment was left to Nature as the great umpire of the contest - and Nature sided whole-heartedly with Idun.

It soon became obvious that the thirty waifs and strays not only thrived on the diet but that they prospered to such an extent that even the usual children's diseases, which all doctors consider an indispensable practical training in bacteriology for every child, were, with a very few exceptions, conspicuous by their absence. The annual reports of this institution would almost be considered scandalous from a medical aspect, with their monotonous statement that from "a doctor's point of view there was nothing to report". - "Im übrigen kann ärztlicherseits so gut wie nichts gemeldet werden."

Nature's verdict was decisive. There could not be any question of appeal to a higher court than hers. *She found for Idun.*

Of all the children in Germany, the health record of these thirty waifs and strays was unsurpassed by that of any children entrusted to the care of the doctors. The town fathers of Breslau were right and the great Virchow wrong. In the financial history of one of the best governed states in the world it would be difficult to point to another 600,000 Reichsmark better used than those bequeathed by the professor of Roman law, Dr. Julius Baron of Bonn.

The medical profession which had raised such an outcry about these thirty children placed in the hands of reckless experimenters suddenly lost all interest in the case, or,

to use a colloquial English expression, dropped it like a hot brick.

Though of momentous importance in the real history of mankind this experiment has left no trace in the annals of the medical profession.

And how could it?

The great Virchow himself was the very man responsible for having hatched one of the most preposterous theories to which ever a man of science has lent his name. It was he who declared that diseases were fundamentally local, so that a disease of the nose or the eye or the ear should be looked upon and treated as only a local disease of the respective organ without paying any attention to the conditions existing in other parts and organs of the body. This idea is equivalent to saying that if the water system of a village has been polluted, and diseases break out at various points in the village, these diseases should be treated as strictly local to the people living in the houses in question, with a complete disregard for any cause that might be found some distance away.

The eye, the nose and the ear, being situated half a yard from the big bowel, must not, because of this distance, be looked upon as having anything to do with the disorders of that organ, though it can be proved that the relief from chronic constipation has in any number of cases improved the eyesight and the hearing, and caused various nasal troubles to disappear. *)

*) In my own case my eyesight has improved to such an extent that I have had to have my spectacles altered three times in ten years from stronger to weaker, until I am now able to read even small print without glasses. If I attempt to read with the glasses I used ten years ago, I find that my eyes ache. - The improvement in my eyesight, due to the improvement of the blood and the general circulation, is only an instance indicating a corresponding improvement in the functioning of all the other organs.

In the case of a relative of mine, thirty years of increasing deafness can be put down exclusively to thirty years' suffering from an increasingly severe constipation. Not one of all the ear-specialists consulted ever inquired about the state of the big bowel.

Yet doctors specialise in nose, ear and eye troubles without paying the slightest attention to the state of affairs in the alimentary canal, just as if the blood stream supplying these particular organs with all the vital elements needed, at the same time carrying away their waste products, had nothing to do with the condition of any other organ in the whole system, not even with those which determine its composition. Any layman who takes the slightest interest in these questions will soon find out that the blood rushes through the whole system in 47 seconds, or 1,850 times in 24 hours, and that the functioning of every organ is fundamentally dependent upon *the quality of the blood-stream* with which it is supplied. This quality, again, is - as we have seen - largely dependent upon the conditions prevalent in the alimentary canal and *especially* in the big bowel.

It is partly thanks to this preposterous idea of Virchow's that the world is now full of specialising fools who try to cure the disorders of various organs as if they were as independent of each other as the stars of the heavens appear to be.

In his last book, *The Basis of Vital Activity*, the late Sir James Mackenzie exposed the fallacy of the general view held by men of science that if a man concentrates his attention upon one limited field of study, he will obtain a more thorough knowledge of his subject, "though this limitation of the field in reality also obscures knowledge". "More than a thousand years ago a Japanese writer stated that *specialism was the curse of every subject in connection with which it had been developed. Its evil effects, he declared, were due to a general failure to recognize the limitations of the specialist.*" Sir James Mackenzie takes exactly the same view of the evils of

specialisation.

In the history of medicine the development of specialism indicates the last phase preceding the ultimate downfall of the profession from their present position. Few realise as yet that we are actually on the verge of a great revolution, not only in the history of medicine but also in the life of the civilized races - without doubt the greatest of all the revolutions hitherto recorded.

Every revolution has been directed, more or less, against a certain class of people who have monopolised certain activities of society to their own advantage and to the detriment of other classes. The last and the greatest of all revolutions will be directed chiefly against the medical class who, out of jealousy of their own privileges, 'have shut out the other classes from participation, not only in the art of healing but above all from the *positive* art of *health production* which they have wantonly disregarded and neglected, concentrating themselves upon an inherently *negative* study of disease.

In a brilliant article, *The old Philosophy of Health and the New*, Lady (Warren) Fisher expresses the same views:

"The 20th Century has before it *the biggest and most far-reaching fight yet seen*. We are in the thralldom of one School of Thought on the question of bodily health and disease - that of the medical profession. A great body of public opinion has been built up round this one School of Thought, and no competition is allowed. There is an oligarchy, based, (as in Galileo's time), on the ignorance of people and the inherent fear of death. The superstitions of medical belief have permeated the masses. The belief in the doctor and his bottle of medicine is as great as that of the savage in the witch doctor and his voodoo practices. Medical men can cover up incompetence or neglect under a Death Certificate, and there is no redress. The law of the land, professional etiquette and the ignorance of the public, cover him with a mantle of protection. Faith is not shattered when discovery follows discovery, each proving the last to be obsolete or in error!

"Each discovery, *if from within the fold*, is hailed as *evolution* and is hut another proof of the "wonderful progress" these scientists are making. Each is more 'scientific' than the last, necessitating a huge army, ever growing, of medical men, headed by a medical council (the most tyrannical trade union the world has ever seen). Each is more mysterious than the last. A new language has to be invented to express it, a new crop of specialists to expound it, research in it and vivisect in it, and manufacturers to exploit it. *All these live, and batten, on the ill-health of the millions of people whose lives are in their hands*. Moreover, so long as the present idiotic system of paying doctors during illness persists, (instead of during health as the Chinese have done from time immemorial), so long will they be content to muddle along. Meanwhile disease is on the increase, and the grim total of human and animal suffering grows with it. Millions of pounds are being expended in research and yet cancer has trebled its mortality in 50 years. We are told by medical statistics that out of every 12 groves dug, two are for victims of cancer and one for tuberculosis. The other nine die of various other diseases, acute and chronic, or from operations (which are intended as a life-saving device), and if any escape *recognisable* diseases, and die of old age, they, die of *premature old age* - for *old age, as we know it, is in itself chronic disease*."

To what an extent this all-important part of life, i.e. the building up of health impregnable to disease, has been overlooked and neglected by the members of the profession can be shown by innumerable cases, easily studied and checked by any layman interested in the subject. A single example may suffice:

In glancing through the columns of a leading English paper on the day I was

writing this chapter, my eyes happened to fall upon the following letter addressed to the editor and published under the heading *Heredity and Wise Living*:

Sir, I am the seventh son. My six brothers died before reaching eight years of age; my father died at 38; my mother at 50; my father's brothers died at 17, 18 and 22 respectively; my grandmother at 57. I am over 86 and *always in excellent health*. At 68 I learnt to ride a bicycle. On my 70th birthday I cycled and walked over 50 miles. Every morning and evening I exercise; sometimes skip. I have the windows open day and night and I believe in deep and full breathing through the nose. I drink water daily and eat an apple every morning. I masticate slowly.

G. F.

Mr. G. F. is evidently a man who started thinking over the fate of his brothers, his father and mother and their relatives. He came to the conclusion that according to the family-statistics his life would be a very short one. Any doctor might have corroborated his findings and kindly advised him to resign himself to the dictates of an inexorable fate. But Mr. G.F. thought otherwise. He decided to fight fate, discovered the apple and became a worshipper of Idun. He furthermore discovered the wonderfully rejuvenating effects of fresh air, deep breathing, daily exercise, water-drinking and thorough mastication - and lo and behold, the ominous indications of his devastating family-statistics crumbled to nothing. He passed the age of 50 with flying colours, learned to ride a bicycle at 68 and is still going strong at 86. A miracle of regeneration!

This miracle can be performed by almost everybody. Only three prerequisites are needed:

- 1) a belief in the regenerative forces of Nature;
- 2) the will to be healthy;
- 3) common sense.

It is sad to contemplate to what an extent the doctors, by monopolising the art of healing, have deprived civilized man of all these three essentials. Instead of teaching him to believe in the regenerative forces of Nature they have only endeavoured to keep alive his belief in themselves as the only true guardians of the impenetrable, mysteries of Asklepios. The "*will to be healthy*" has been lulled to sleep by the general spread of their own belief in microbes as the only disease-producers, and in serums and therapeutic tricks as the chief if not the only means by which to fight and uproot disease. The greatest and most precious possession of man, *Common Sense*, has been looked down upon and its voice silenced by the wide-spread illusion, carefully nursed by the doctors, that health production requires years of medical study and extensive hospital training in order to be understood and practised without disastrous results.

I am sure that Mr. G.F. when he set out on the road to health, knew nothing about anatomy and physiology and nothing about medicine. He trusted his *common sense* which not only taught him how to thwart the dictates of fate but also showed him how to produce a state of health impregnable to disease, an achievement utterly beyond the understanding and ability of the doctors.

"Enthroned Mother Nature once more" writes Lady Fisher, "and you will soon see what she can do for you. The science of natural healing starts from a totally different

premise from that of the doctors and *it cuts at the root of medical science as it is known to-day.*"

"This new philosophy of health is based on the recognition of the wonderful curative powers of Nature - the same marvellous power within the body which renews the nail on crushed finger and mends the bones of a broken limb and, making no mistake, joins tissue to tissue and skin to skin. It is the oldest therapeutic method known in the world. The system is very simple - there is no mystery - but it requires great skill and experience in its application to all conditions, to get satisfactory results in long-standing chronic conditions. *It teaches how to get well, and how to stay well.* Its teaching, if followed faith-fully, is so far-reaching that it can very well bring the millennium within measurable distance. The science of natural healing is a method which frees Nature to do her own work, which she does so effectually *if she is only given the chance.* It is based on the premise that *the normal state of man is perfect health;* that the body is always striving to keep or attain the normal and that every disease (so-called) is but a more violent effort of Nature to get rid of the poisons clogging the system. The curative powers within are all the time ceaselessly working, while we are awake and while we sleep, putting right anything which may be wrong in the body. With a perfect diet, if intake of food and elimination could be perfectly balanced, with the right amount of, exercise, sleep, water-drinking and fresh air, perfect health would result.

"Thus it will be seen that medical science and the science of natural healing approach disease from totally different premises. Medical science studies disease (symptoms) to which they say that 'flesh is heir', and search into the infinitesimal (germs) for its cause. The science of natural healing on the contrary looks to the Infinite for the perfect health which is *man's right*, and realises and proves, that it is only the *violation* of God's law of Nature which is the real cause of disease, and that by retracing steps through natural methods perfect health may be attained."

"Medical science looks to the germ as causation of disease. Nature cure welcomes germs as *scavengers* - a beneficent arrangement of Nature! - whose special work it is to break down decaying tissue and to rid life of dead bodies and of organisms not fit to carry on the evolution to something 'higher and still higher'.

A heap of dirt in a stable is covered with fly-scorpions, and it does not matter how many flies are killed, more flies appear to come from nowhere. Other symptoms of that heap of dirt are bad odour and foetid air. They may be suppressed with strong disinfectant but those symptoms are not cured, they are still there (though there is an apparent cure) and the only way to remove the flies, the odour and the foetid air is to get a shovel and remove the heap of dirt outside. The same thing applies to our bodies - the only way to remove germs, aches and pains, discomfort, *disease*, is to remove the toxins, deposited filth, the root cause, outside. The body is in fact a self-renewing self-cleansing machine, and Nature has provided these wonderful but simple ways and means whereby we can be renewed and re-made."

"The Medical Profession looks to the germ as causation of disease and have reached something like a mirage since they have discovered that the germ of cancer is unfilterable! It cannot be seen or detected in any way, *yet they are sure it is caused by a germ!* Their trade union will not permit them to listen to the 'Galileos' of this age. Any discovery, *from without the fold*, is not even *investigated*, their trade union condemns it from the outset, and; its exponents are branded under the name of 'quack'. *Medical vested interests are at stake!* - the 'Galileos' must be crushed! - Is there not a carefully built-up law to protect the public *and* medical science? The 'Galileos' are ridiculed, hounded down and persecuted in different countries as the law permits..."

And what are the 'Galileos' preaching? What is this hope they bring and what their message? Such a simple one! 'Look through the right end of the telescope and see *Big*, sweep the heavens and the wide spaces - the sun is in the sky and the winds of heaven blow fresh and clean. Research into the *infinite* and see HEALTH."

The master surgeon who operated upon me for a rupture in my right groin, and who had never yet had to register a single failure out of an average of four similar operations a day, was, like most of his colleagues, ignorant concerning all questions of feeding, but he was interested - in health. His father had died of heart failure and he was himself suffering from heart disease. "My colleagues", he said, "all tell me to rest as much as possible, lying on a couch. That is the only advice they are able to give me, though continuous resting must necessarily weaken the heart still more. I reason that, on the contrary, I should gently exercise my heart every day by walking etc. But they won't understand. *None of them is in the least interested in health.*"

How could they be, having studied disease all their lives under teachers devoid of all real interest in health? The studies of health and disease seem to be as far apart as the mind of the healthy and that of the sick, and just as foreign to each other as pessimism is foreign to optimism, and lamenting and wailing to the real joy and happiness of life.

Here again, as so many times before in the history of medicine, it is the *laymen* who will have to give the profession the lead.

Health production depends chiefly upon observation and a very simple sifting of facts concerning various methods and ways of living. There is no need for laboratories, for everyone is endowed with the best laboratory in the world in his own body. The first rule is:

Observe and think for yourself!

The first observations made and the first conclusions arrived at by a layman who has set out to discover health for himself are more valuable to him than all the theories and knowledge of the most learned doctors.

In the first place it is *his own* knowledge and *his own* thinking. Even if faulty and incomplete they constitute, nevertheless, *his first steps towards health, without which no further steps could ever be taken.*

A lot of prejudices and fallacies will thus be got rid of. The first and most important one that the joy of life lies chiefly in the actual enjoyment of drinks and drugs, without paying any attention to their ultimate effect upon health. Modern man has lost the instincts for feeding and right living, which have guided him through millions of years, chiefly through allowing fire to act upon and break up the food constituents and compositions of Nature.

For years and generations man will have to guide himself by the aid of his reasoning and his findings until his palate has acquired its original taste for the food elements that suit him best. Therefore, the second rule will be:

Eat with your brain and not with your palate, until the original instincts have been restored to your palate!

No chef in the world will ever be able to give the same wonderful flavour to his culinary achievements as a natural unsophisticated appetite to a slice of coarse bread enjoyed with butter and a glass of milk after a day's exertion in the fresh air and sunshine of the mountains and forests. The third health-rule will therefore declare that:

The greatest joy in life is derived from an unsophisticated appetite and a good digestion.

Anything that clogs, poisons, or hampers the organs in their activities will

immediately be felt as a lowering of the vitality and a subsequent decrease in the capacity for enjoying life. Therefore:

The intensity of the life-feeling corresponds directly to the way in which every organ of the human body is working.

Any deviations from these simple rules have proved the stumbling-block to the progress of the nations all through history and have ultimately caused their downfall.

It was the wealth of health amassed in the mind and body by their simply-living forefathers that brought Greece and Rome to their heights, and it was this wealth, squandered by a life devoted to the enjoyment of luxuries with a complete disregard for the real values in life, that caused their downfall.

Our civilized nations of to-day pride themselves on not squandering their physical health inheritance on orgies in Roman palaces, nor the soundness of their minds at feasts of slaughter in Roman arenas. They are outwardly industrious and well behaved, all for moderation in their habits and a balanced budget in their social affairs. Nevertheless they are rotting inwardly, through their indulgence in luxuries far more deadly than those of the Greeks and the Romans, who were fortunate enough not to know the art of modern chemistry and food adulteration.

The nations of the past were saved by an agricultural population continuing its simple life more or less untouched by the adventurous mode of living in the great centres of civilisation. This safeguard of almost unlimited resources of healthy blood and tissues is now being jeopardised, either by uprooting the country populations and turning them into dwellers of the towns, or through undermining their health in the rural districts by bringing the luxuries of the towns to their doors.

Still our politicians go on talking and acting as if the fate of nations hung solely upon economics and a balanced budget, excusing themselves for their apathy towards the imperative demands of the fundamental laws of health by the continuous assurances of the doctors that all is as well as it could possibly be in the circumstances and that there could be no more efficient health-guardians and health-guides for their people than the profession.

The fate of the nations is now in the hands of great democracies. They may appoint dictators and entrust the leadership of their affairs to oligarchies, but these dictators and oligarchies will soon be overthrown if they do not function effectively. They are the trustees of the nations, whose fate, no matter what politicians will say to the contrary, ultimately depends upon the thinking and the activities of the man in the street, behind the counter, handling the spade and directing the plough. Any government or any class neglecting or looking down with contempt upon them, refusing their collaboration, will soon bring disaster upon themselves.

This is exactly what the medical profession has done. It has severed itself from the people, looking down with contempt upon their contributions to the art of healing, arrogantly refusing their collaboration.

Hippocrates, the father of modern medicine and "the greatest of all physicians" thought differently. In his *Precepts* he says:

"In medical matters experience and common sense are far more valuable than scientific theories, however plausible. Do not hesitate to inquire of laymen in their opinions are likely to advance medical science and the treatment of the sick."

In his book on *Ancient Medicine*, written twenty-three centuries ago, we read this warning which the medical men of twenty-three centuries have managed so grossly to disregard:

"And most especially it appears to me that whoever treats of this art should treat of things which are familiar to the common people. For of nothing else will such a one

have to inquire or treat, but of the diseases under which the common people have laboured, which diseases and the causes of their origin and departure, their increase and decline, illiterate persons cannot easily find out themselves. However, it is easy for them to understand these things when discovered and expounded by others. For *it is nothing more than that every one is put in mind of what had occurred to himself. But whoever does not reach the capacity of the illiterate vulgar and fails to make them listen to him misses his mark.*"

Far from "reaching the capacity of the illiterate vulgar" medical science has missed its mark and become exclusive and esoteric.

Dr. William Buchan, who lived from 1729 to 1805, wrote in his book "A Treatise on the Prevention and Cure of Diseases":

"Medicine has been studied by few, except those who intended to live by it as a business. Such, either from a mistaken zeal for the honour of Medicine, or to raise their own importance, have endeavoured to disguise and conceal the art. Medical authors have generally written in a foreign language; and those who were unequal to this task, have even valued themselves upon couching, at least, their prescriptions, in terms and characters unintelligible to the rest of mankind."

"Disguising Medicine not only retards its improvement as a science, but exposes the profession to ridicule, and is injurious to the true interests of society. An art founded on observation can never arrive at any high degree of improvement while it is confined to a few who make a trade of it. *The united observations of all the ingenious and sensible part of mankind, would do more in a few years towards the improvement of Medicine than those of the Faculty alone in a great many.*"

"Very few of the valuable discoveries in Medicine have been made by physicians. They have in general either been the effect of chance or of necessity, and have been usually opposed by the Faculty, till everyone else was convinced of their importance."

Sir George Newman, the Chief Medical Officer of Health in England, a man of vision and with the undoubted courage of his convictions, seems to have realised the danger of a medical art that has become exclusive and esoteric. In his report, *Public Education in Health*, he says that the knowledge of preventive medicine can do nothing in itself to prevent diseases and to safe-guard health *"unless it be understood, accepted and practised. So long as preventive medicine remains exclusive and esoteric it can accomplish little, it can work no mighty deeds.* It must filter down to all sections and conditions of society. *It must become the common property of the people. It must arrest the attention of the individual and create in him a desire to know and to act on his knowledge.*"

Sir George Newman speaks on behalf of his own profession. For my part I am convinced that the health-salvation of the people must be the work of laymen, by laymen for laymen, and that no revolution in habits of life, and especially in dietetics, will take place unless laymen give the lead and set the example. Far from "filtering down", preventive medicine - or rather the art of health-making - must rise upwards. For the upper classes are, in the nature of things, the- most conservative in their habits, and therefore likely to oppose instead of assist any reform which aims at revolutionising what has become not only an integral part of their mode of living but also, according to prevailing views, a material enjoyment without which life would not be worth living. "Well-to-do people do not like to have their diet interfered with. That is well understood by every doctor," says Ellis Barker on page 96 of his book: *How to Cure the Incurable.**)

*) I am quite aware of the great interest taken in food reform by a large minority of people of all

classes, but I have invariably found that the putting into practice of this reform is inversely proportionate to social standing and engagements, so that many friends and visitors and the necessity of accepting invitations and of entertaining stifle interest and bar the way to the attainment of a standard of health impregnable to disease.

This standard has been reached in many instances by middle class people where intelligence and a restricted income have been working hand in hand and even minor ailments have had an immediate effect on the family budget.

"We had better change our diet for we cannot afford to be ill, and certainly not to lose you," the wife of a bread-winner once said to her husband at a consultation.

The very fact that their views are shared by the majority of doctors makes an exclusive reform-movement by laymen still more imperative, and justifies the prognosis made by the well known American authority on Public Health, Professor W. A. Evans, according to which "little can be accomplished in a health way until the people themselves have *'an active interest'*." In his introduction to "The Essentials of Healthful Living" by Professor W. S. Sadler. he actually states:

"Health cannot be greatly improved from above down-wards."

Health-improvement must. come from people in all classes who are interested in Health, and cannot be promoted by a professional body of men chiefly interested in disease.

Years spent in the study of *disease* will never breed apostles and guides in health and health production.

Sir Ronald Ross, the great discoverer of the fundamental causes of malaria, wrote on pages 8 and 252 of his memoirs:

"Nearly all the ideas in science are provided by amateurs, the other gentlemen write the text books and obtain the professorships ... They stick to their prejudices like limpets to rocks - the tighter, the more one tries to pull them off."

It will take generations to undo the present prejudices and fallacies of the medical profession, but they will crumble and fall to pieces within a comparatively short space of time from the very moment the laymen of every country start working out their own health salvation.

Of course, circles and societies will be formed for this purpose, but I go so far as to say that membership of these should be limited to laymen, to the exclusion of people of any denomination who have made the study of disease or health their speciality and livelihood.

The admission of *professional* men as members to health-circles, health-organisations, and health-institutions, formed and directed by laymen would in all probability act as a wet-blanket upon their activities and might ultimately destroy their purpose:

1) because of their training which tends to breed actual disregard and contempt for the very subjects they are studying and especially for the organs of the human body which they are called upon to handle in a state of arrested decay in their anatomical institutions and in an abnormal and often more or less filthy state in their hospitals.*)

*) I have never yet come across a doctor filled with deep reverence and admiration for Nature and her masterpiece, the human body. On the contrary both are looked upon, more or less, as failures, which the doctors have come to mend, improve and put right - a view equally disastrous to humanity as to themselves.

2) because men with already fixed views on a subject, in which they have had years of special training, cannot - even with the best intentions to the contrary - help influencing laymen directly and indirectly with their views, causing in them a feeling

of 'knowing so little' and of the 'futility' of their search, whereas in reality their freedom from fixed ideas and special training may prove their greatest asset, helping them to find the truth where professional men fail because they "*cannot see the wood for the trees*".

3) because professional men think and speak in terms foreign to laymen, so that most even of their 'popular' writing is difficult to understand and often incomprehensible to the uninitiated.

I am looking forward to a renewal of medicine in a much more practical and useful sense and above all to the creation of a new literature - at present much wanted - which will be automatically forthcoming as soon as laymen begin to work out their own health salvation. For only those citizens who have found their own way to health, made their own mistakes, and discovered how to adjust and correct those mistakes, will find anything of real value for themselves, their wives, their children and the society to which they belong.

On my way through life I have met hundreds of men and women who e taken their health in their own hands and achieved such wonderful results that I cannot help but find Nature all-powerful in her ability to stamp out disease and build up health, if he laws are but rightly understood and her means used in the proper way *with a readiness to sacrifice any personal prejudices and ingrained habits of wrong thinking and living for the sake of achieving the great goal which has been obscured and withheld from mankind for so many centuries.* *)

*) The r e j u v e n a t i o n that takes place in people even beyond the age of fifty and sixty, when no organ has been irreparably damaged and these principles are judiciously applied, is so astonishing that Dr. Hindhede's humorous exclamation "they seem almost unable to die!" - may be said to have come true. In a forthcoming work, P a n d o r a s B o x, detailed rules as to diet, etc. will be given.

When I settled in England I found to my great surprise that according to the customs and views still prevailing among certain sections and classes of the people, mental diseases and alienation of mind even in minor forms were considered almost shameful. If any member happened to be stricken in this way, often the whole family shut themselves up in their house as if in quarantine, refusing to see visitors and keeping the reason for doing so as secret as possible.

I believe this attitude is a direct inheritance from our forefathers who considered not only alienation but any kind of disease a shame, refusing to see visitors and cutting themselves off from all communication with others as long as this state of affairs lasted, an attitude radically opposed to the one taken at present according to which a man is almost looked down upon when in good health, but becomes the object of interest, care and compassion as soon as he is stricken by disease.

There can be no doubt whatever that the attitude of our forefathers was biologically right, though their methods and means were in accordance with the life-outlook of their age. The elimination of the weakest will automatically be accomplished as soon as civilized man directs his efforts to the positive task of co-operation with the regenerative and constructive forces within him, which are sufficiently powerful to turn a weakling into a first class life within a comparatively short space of time.

There is practically no limit to what can be done on these lines, just as there are no more powerful means of creating real happiness than those Nature holds out to civilized man if he will only accept them.

The well of wisdom is still at the root of the Tree of life.

A drink from that well will solve many hitherto insolvable problems and will soon make suffering humanity visualise a competition among the nations totally different

from the present commercial one with its aim of hoarding material wealth. As soon as the nations discover the fallacies upon which they have built their existence and realise that the health of a people is its true wealth, represented by its freedom from physical and mental disorders of every kind and from disease of every description; by the smallness and leisure of its medical staff; the solidness, durability and perfection of its anatomical structures; the perfect working of all the organs of the human system; the high quality of its blood-stream; the youthfulness of its centenarians; the happiness, joy and visions of its citizens; and the unsurpassed beauty and greatness of their works of art; a new era with new moral and mental values and a new outlook upon life will arise, transforming this globe and its mankind utterly beyond the reach of our imagination.

It will be the visions of our forefathers, embodied in their dreams of an Olympus and a Valhalla, made real by man when once he has made *Asklepios* surrender for ever his realm to *Idun*.

And the gods met on the hill of Ida,
Spake of the giant Serpent - now slain
But once of the Earth the awesome
Embracer,
Dwelt upon deed of their mighty past.
And on runes of Odin, of gods the father,
Which now had been found in the grass
hidden:
The runes of wisdom on golden slates
written,
Their greatest treasure from time
immemorial.

