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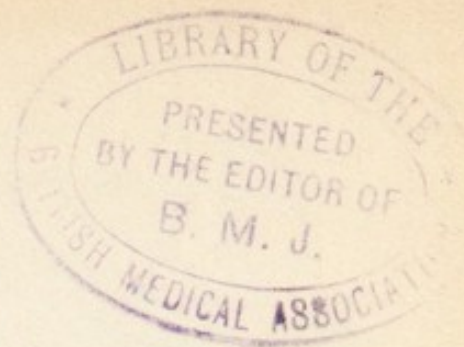
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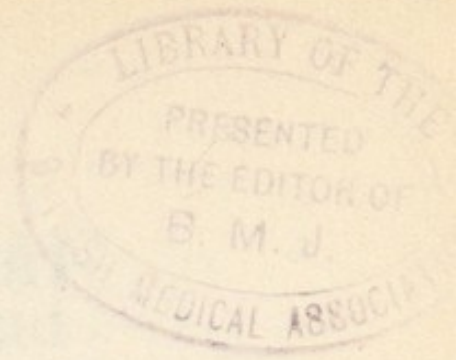
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BLAZING THE HEALTH TRAIL

By H. B. Fager

THE PREVENTION OF THE
DISEASES PECULIAR TO
CIVILIZATION

by Sir W. Arbuthnot Lane, Bart., C.B.

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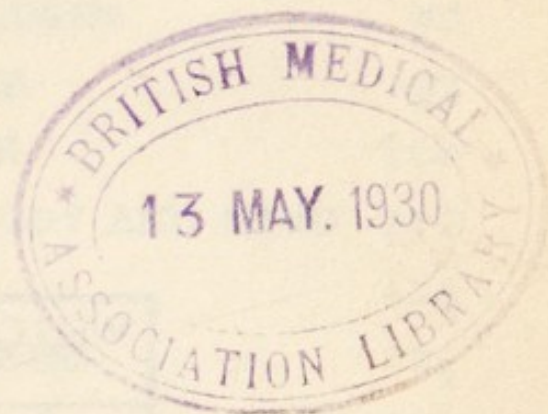
BLAZING THE HEALTH TRAIL

BY

SIR W. ARBUTHNOT LANE, BART., C.B.

CONSULTING SURGEON TO GUY'S HOSPITAL AND TO THE HOSPITAL FOR SICK
CHILDREN, GREAT ORMOND STREET

PRESIDENT OF THE NEW HEALTH SOCIETY.

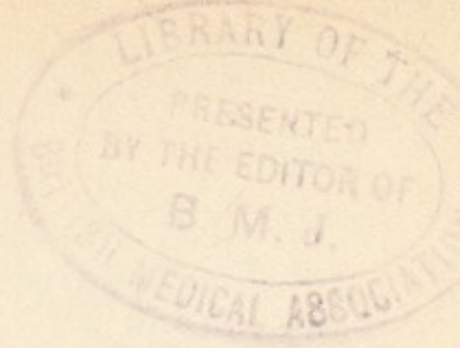


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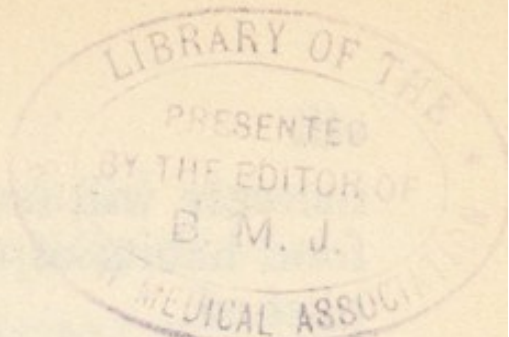
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PREFACE

FOR many years the trend of modern medicine has been increasingly towards the prevention rather than the cure of disease. Yet the public continues to regard the doctor as one who heals rather than as one who teaches, and to seek his aid only in times of trouble.

Basing its policy on incontrovertible evidence, the New Health Society seeks to establish a permanent, intimate and constant relationship between the public and the members of the medical profession, so inducing the people to regard the doctor as their best friend whether in health or illness. To establish such a state of mutual confidence and affection, which at present is not perhaps as well founded as it might be, is surely an object worthy of much endeavour.

The solution of the national health problem lies in health education, and it is the chief and constant aim of the New Health Society to spread amongst the people a knowledge of the simple laws of health. That the diet and habits of civilization are responsible for the bulk of the ill-health so prevalent to-day is a scientific truth established by expert investigators in all branches of medical practice. The marked increase in the incidence of cancer—the last link in the chain of the diseases of civilization—is an alarming phenomenon, and it is safe to predict that this

increase will continue unless a revolution in the food habits of the community is shortly accomplished.

Through the far-seeing and public-spirited policy of the *Daily Mail*, I have been privileged to contribute to that journal a series of articles, explaining in simple and non-technical language how good health is to be achieved by sound dieting and by cleanliness, internal as well as external. In this work I have had the kindly co-operation of numerous distinguished doctors, and the present book is a compilation of these published articles.

Thanks to the publicity afforded by the *Daily Mail*, a deep and widespread interest in the subject of nutrition has been aroused, and one of the most important consequences has been the recent founding of a chair of dietetics at the University of London. It is to the shame of the country that in the past no academic organization existed for the instruction of doctors in this fundamental medical science.

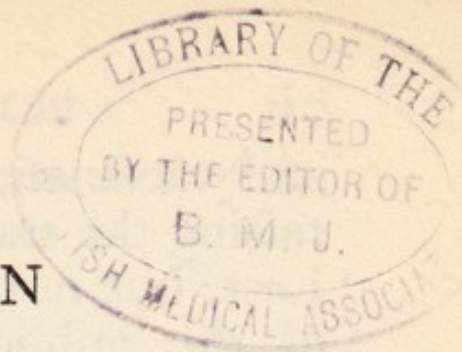
In conclusion it may be stated that, once the British public realizes that it is possible to be healthier, to be able to work continuously, free from the disabilities and diseases that deprive the country and the worker of so many days work and pay, to have children of a finer physique, free from the innumerable minor complaints which make their earlier years a constant anxiety to their parents, *by eating such foods and pursuing such habits as are essential to perfect health*, an

immense improvement in the national vigour, efficiency and happiness will be rapidly effected.

The New Health Society was started with the following objects:—

1. To teach the people the simple laws of health.
2. To make accessible to the people at a reasonable cost such foods as are absolutely essential to health.
3. To endeavour to place on the land a number of those people who lead an unhealthy life in the large towns, and to afford them such opportunity and education as will enable them to obtain from the soil just such fresh fruit and vegetable products as are requisite for health.

W. ARBUTHNOT LANE



INTRODUCTION

HEALTH EDUCATION

So accustomed have we grown to the innumerable benefits conferred upon us by all concerned with the maintenance of public health throughout the country that few of us realize the immense amount of devotion, skill, and scientific care needed for the perfection of such a network of services.

The Ministry of Health, the local health authorities, the medical officers of health for the counties and other local areas, the panel doctors and national insurance committees, health and sanitary inspectors, and a host of other officials and social workers are constantly contributing to the public welfare in their multifarious ways.

When one remembers that it was as recently as 1875 that the great Public Health Act was passed, it is all the more amazing that we can look back upon the wonderful and solid achievement of the public health authorities. The ravages of many of mankind's most terrible scourges have been brought under complete control, and such fevers as diphtheria, scarlet fever, and typhoid enormously reduced in virulence and frequency.

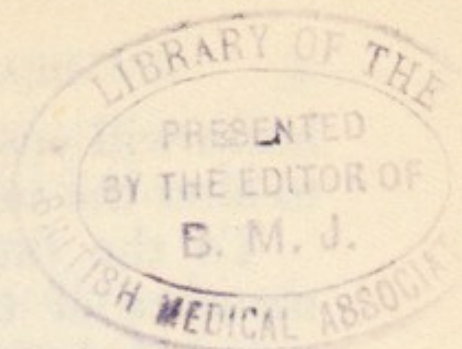
Improved sanitation, segregation of the infected, improved housing conditions and water supply, cleansing of the streets, removal of refuse,

and vaccination have all played their parts in raising the standard of health of the community. Last, but not least, has been the enlightenment of the public, and the steady raising of the general level of knowledge in all matters relating to the health of the community.

The medical officers of health now stand at the important points in an enormous national network whose potential value in health education is simply incalculable. It is the duty of every citizen to encourage and assist their work to the utmost of his or her power.

The prevention of epidemics and infectious diseases on the part of the authorities has become a matter of control and endless vigilance. But a far greater task still remains, namely, that of educating every individual in the community in the promotion of his or her own personal health.

The battle for a better social environment is won. Now we must bend our energies to the business of teaching every man, woman, and child in the community how to maintain their internal environment in a state of complete efficiency. In this the Ministry of Health, the medical officers of health, and the numerous welfare agencies throughout the country, working on the lines already proved so successful by the New Health Society, can lay the nation under an even deeper debt of gratitude than that already freely acknowledged by the people.



CHAPTER I

DIET AND THE PREVENTION OF DISEASE

VITAL IMPORTANCE OF CORRECT DIET

At the James Mackenzie Institute for Clinical Research—a very valuable organization—a paper was recently read by Dr. John Boyd Orr, a portion of which led me to request Sir Bruce Bruce-Porter to write the following article.

THE *Daily Mail* has published many articles by members of the New Health Society pointing out the important part played by a correct dietary in the maintenance of health and the dangers of improper feeding.

Apart from production of a lowering of the general vitality rendering such subjects liable to infections of various kinds, these articles have laid great stress on the danger of intestinal poisoning, the result of chronic stasis, as a predisposing cause of cancer of the bowel and digestive tract generally.

Several well-known medical men have challenged these statements regarding cancer, some by saying that there is no justification for the view that any kind of food will produce cancer, others going even further, saying you may eat what you will, being guided by instinct and no,

harm will ensue, or if it does, time enough then to alter the method of feeding.

To the first group I would say no medical member of the New Health Society has ever contended that cancer has been traced to any single article of diet, believing that the danger of wrong dietary as a predisposing cause in cancer lies not so much in the presence of harmful substances as in the absence of essential ones : in short, in deficiency.

To the second group I would say there is no evidence that civilized man possesses any instinct in the matter of safe dietary, especially when surrounded by devitalized but pleasant-tasting food-stuffs, and it is too late, when damage has occurred, to effect real cures by change in diet.

The danger to the public from such conflicting statements by those who should be the authorized guides on life's highway lies in the bewilderment they produce in the mind of the laity.

It is but human that many will prefer to follow the path which leads to pleasures of the table, even when harmful, if they can console themselves with the thought that the finger-post which points that road as a safe one has been erected by members of the medical profession.

Many seriously minded members of the public are seeking guidance, as they realize that if the medical advice be proved bad, while the doctor may be sad in mind they will be ill in mind and body. Under these circumstances the evidence must be placed before the public, and

they must in this as in many other affairs in life, having heard both sides, decide which has the greater evidence of truth and safety.

The *Daily Mail* articles have repeatedly pointed out the grave danger of intestinal stasis, and the fact that the only real preventive of this condition lies in correct feeding. Experiment after experiment has proved this, but the latest of these experiments, published in the *Lancet* of October 29th, should be brought to the notice of everyone.

Dr. John Boyd Orr recently read a paper at the James Mackenzie Institute for Clinical Research in which the following findings are given :—

‘The composition of the diet had both an immediate and a remote effect upon movement, the remote effect being produced by alteration in the circulating fluids of the body.

‘One of the most interesting results of experiments with deficient diets was not the gross disturbances in the body which followed their use, but the disturbance of intestinal movements which led to lesions such as inflammation and ulceration, especially in the pyloric and cæcal regions.’

Can those who contend that diet plays no part in the causation of cancer of the digestive tract continue to lull the public into a false sense of security much longer in the face of such experiments as those referred to above?

The *Daily Mail* is rendering an immense service to the general public by its simple health

articles, and at the present stage, when there is no small degree of want of knowledge, even among those who should know, and the conflict of medical opinion on diet still continues, it is of vital importance that the public be placed in possession of facts that will allow them to decide for themselves which is the safer path to follow in the matter of dietary.

SOWING SEEDS OF DISEASE

It is unfortunate that the time allowed for the midday meal is often much too short, either because of the distance of the restaurant from the office in which the individual works, or because of the delay which results from large numbers all desiring to be fed at the same time.

In consequence food is swallowed, or rather bolted, without previous mastication, and the stomach, missing the necessary preparation which mastication affords it, is not ready to receive the food and to deal with it effectively.

The undigested material remains and stagnates in the stomach, digested insufficiently by the secretion of its mucous lining. Fermentative changes take place in it and gas is produced in a greater or less quantity.

It is the presence of this gas which causes what is called 'flatulence', and this produces a varying amount of pain or discomfort. The gas also forces its way up through the *æso-phagus* or gullet into the mouth, and forces some of the decomposing and partly digested food into the mouth, producing a condition called 'heartburn'.

These consequences are exaggerated by constipation, which brings about an accumulation of material which stagnates in the bowel beyond the stomach and tends to oppose the normal evacuation of the contents of this organ. If this condition is allowed to continue, the seeds of disease of a more or less serious character are sown. It is surely unnecessary to urge on such individuals the insanity of allowing such an insanitary and unhealthy state of affairs to continue.

To avoid this they should choose for their luncheon just such foods as afford the maximum of advantage and necessitate their being thoroughly chewed and masticated.

Plenty of stale wholemeal bread and, better still, Swedish rye or wheat biscuit, butter, cheese, and some fruit, such as an orange or an apple, will provide an excellent and most nutritious meal.

In order to prevent any 'gobbling' or 'bolting' of the food, it should be eaten dry; *any liquid which is desired should be taken at the end of the meal*. In this way the saliva permeates the food which is being masticated and affords the most important ferment which digests the starch and renders it capable of absorption.

Mastication stimulates the stomach in a reflex manner to prepare for the entry of food by the abundant secretion of gastric juice. This preparation is absolutely essential to the perfect and effective digestion of the meal.

Eat in haste and repent at leisure.

SUMMER DIET

Most people are fully aware that the diet they consume and require during the trying and often treacherous months of winter is not altogether very suitable for their requirements during the short period when we are able to see and feel and enjoy the sun in all its glory, and to benefit by its health-giving capacity.

In order to keep thoroughly fit during the hot weather it is advisable to be even more careful about diet and the regularity of our functions than in winter. It is well to eat little animal food and to enjoy the fruit and salads which are then plentiful at a comparatively reasonable price. If possible, half a grape fruit should be eaten at the commencement of each of the three meals. The advantages which this delicious and highly appreciated article of diet affords are that it is very nutritious, is rich in vitamin content, is a fruit that one never tires of, and prepares the palate for the foods which follow its use.

In summer, breakfast should be a good meal—perhaps even more so than in winter, since the desire for luncheon and dinner is less insistent at this time of the year. This is particularly the case when one is on a holiday.

After the grape fruit has been enjoyed some rolled wheat is most beneficial. It is well to remember that whole wheat is a far better food than oatmeal, since it contains a much larger proportion of Vitamin B. It may be eaten cooked, but a better way is to add to some of the

cooked wheat a quantity of uncooked material.

To this sufficient Grade A. milk should be added, and, if desired, some sugar. This mixture requires a fair amount of mastication, and also exerts a wonderfully laxative influence upon the whole gastro-intestinal canal.

If this does not satisfy the appetite, an egg with wholemeal bread and butter will furnish all that is necessary. As regards luncheon and dinner, the less animal food that is eaten the better. Seed soups of all sorts are much appreciated, while steamed vegetables, salads, and fruit, with fish and eggs served up in the many various and tasty forms to which they lend themselves so readily, with cheese and ices, will serve to complete an agreeable and nutritious meal which will cause no inconvenience or discomfort to the diner.

There is much room in the cuisine of this country for improvement in salads. Only those who have travelled much in the south of Europe, can realize the variety and charm of salads properly prepared or treated freely with plenty of olive oil. This subject should engage the close attention of the wise housewife.

Light wines, lager beer, cider, and what the Americans call 'soft drinks' should replace spirits, heavy wines, and stout. Plenty of water should be drunk at intervals between meals.

HOLIDAY DIET

Those who pay due care to the nature of their diet, and are by this means able to secure such a

regular habit of body as is essential to perfect health and freedom from disease, are not likely to eat too much in the course of their holiday, providing they are able to obtain good natural food and are not obliged to subsist on the hopelessly unsuitable diet that is provided for them in some establishments which they have to frequent.

The choosing of diet and its character involves a responsibility upon the individual who, if he has benefited by the articles and instruction afforded by the *Daily Mail*, must insist on being provided with natural healthy food.

Just as it is with the bakers, so it is with the caterers of food. They are imbued not merely with apathy and conservatism but have a very active objection to making the necessary change required by the public. This can only be ensured by a determined demand by those who are trying to derive health and happiness from their holiday, and have no reason to wish to return home with their digestive system impaired by bad food, if not worse.

Let the holiday-maker insist that he is supplied with real wholemeal bread, plenty of good fresh butter, cheese, milk, eggs, vegetables, fish, and any fruit and salad that is available. If he is particularly fond of meat, *and does not suffer from indigestion*, let him make sure that made-up dishes are not served to him, but let him ask for freshly cooked mutton, meat cut from the joint, and also chicken served entire.

He can eat good healthy food as much as he

pleases, providing he takes such an amount of exercise as is suited to his usual habits of life, and that he pays great attention to the normal functioning of the intestine. This last is often impaired in regularity and efficacy by changes in surroundings, temperature, and diet.

The secret of a successful holiday is to be reasonable and moderate in all things.

DIET FOR THE ELDERLY

As the body approaches its allotted term of years, both its need for food and its capacity to deal with food material diminish.

With old age come a slowing down of the chemical processes of the body and a lessening of muscular activity. The fires of life burn less brightly and the bodily machine works at a slower pace and puts out less energy. The engines of the body require less fuel.

Also there is less breaking down of old tissue substance and less building up of new substance. Therefore less building material is needed for purposes of repair.

The total quantity of food taken should therefore be gradually lessened as we pass from a more active middle-age to the comparative quietude of later life. Food taken in excess of the bodily requirements throws undue strain on the digestive and eliminating organs of the body. These organs are no longer in their prime; they are beginning to show signs of wear and tear even in the healthiest.

It is, therefore, all the more important to avoid

overworking them. They no longer have the reserve powers of youth. So the diet must be simple in character as well as spare in amount. Now is the time gradually to return to the diet of early childhood, when the activities of the body and the digestive and eliminatory powers had not yet become fully developed.

The wise individual of advanced years will return to the milk and cereal diet of early childhood—use eggs, cream, cheese, and fish rather than butchers' meat, and these only in small quantities. He will also eat not more than two meals a day—breakfast and midday—substituting a cup of milk food for the accustomed evening meal.

It is remarkable on what a very limited dietary elderly people leading a sedentary life can subsist, and yet be capable of all the bodily and mental activity suitable for their years. It is much more difficult, indeed, to eat too little than to avoid eating in excess of the bodily requirements in advanced age.

Those who have learned through life how little and how simple is the food they can get along with, rather than how many heavy meals they can consume without discomfort, will avoid many of the bodily discomforts, indigestions, and rheumatic affections which so often make life a burden for old folk.

ESSENTIAL FOODS

Fresh Fruits.—Fruits constitute excellent and essential food at all times of the year, but as

they are particularly abundant in their fresh form in the summer we should never fail to include them in our diet at this season. The fruit salad is a particularly pleasing combination, and infinitely to be preferred to the heavy puddings, still too popular in this country.

It is only a few years since it was discovered that the health-giving properties of fresh fruit juice are chiefly due to the substance now known as vitamin C, the preventive of scurvy. Some fruits, especially oranges, and tomatoes contain also vitamin A, while the vitamin B found in fruits is mostly in the seeds.

The fruits combined in the salad form—strawberries, apples, cherries, pineapples, bananas, oranges, and grapes—all have their own particular virtues, and, mixed with cream, make a most wholesome, agreeable, and well-balanced food.

The following table shows the comparative figures for several common fruits, based scientifically upon the minimum amounts needed daily for the prevention of scurvy, but to ensure good health larger quantities should be taken.

Orange, lemon, tomato, 1 oz. = $\frac{1}{2}$ an orange.

Pineapple, fresh lime, 2.5 oz.

Peach, 5 oz.

Apple or banana, 7 oz. = 2 apples or 2 bananas.

Grapes, 30 oz. = $1\frac{1}{2}$ to 2 lb.

Raspberries, gooseberries, cherries, and other soft fruits would appear to be intermediate

between apples and oranges, while grape-fruit is probably equal to the orange.

The natural sugar in fresh fruits is far preferable to refined sugar, which is not a natural food, and the enormous consumption of which in recent years has undoubtedly been detrimental to the health of the people. More fresh fruit should be eaten instead of sweets and chocolate.

One of the most tenacious popular errors is that acid fruits cause acidity of the blood.

Green Vegetables.—When I recommend people to eat plenty of fresh green vegetables they frequently write to me and say they cannot afford this—that vegetables are too dear.

No doubt when we needlessly import so many of our fresh vegetables, instead of growing them for ourselves, the prices are high, because of the cost of freight and so forth. But one of the most important factors in the high price of green vegetables is the horrible way in which the outside leaves of cabbages, cauliflowers, celery, and so on are wasted.

For my own information I have recently walked through several vegetable markets, and I find the streets and floors smothered with thoroughly good food material. A short time ago I was in a London hotel, and from the window I could look down into a very large vegetable market, the floor of which was littered some eighteen inches or two feet deep with celery and cauliflower leaves, ruthlessly chopped off and thrown away.

As I watched the scene some Roman Catholic

nuns came in with large baskets and sacks, and gathered up large quantities of this residue, which was given to them free.

The scientific advisers of the New Health Society tell us that the cauliflower is one of the most valuable and most easily digested vegetables, and the outside leaves can be cooked separately as a delicate kind of cabbage. Cooked separately in inch-long pieces and served with butter sauce, they are excellent; but on no account must these leaves or other green vegetables be spoilt by adding soda to the boiling water. They should be cooked quickly, just sufficiently to soften the fibres, in a very small quantity of water; then drained and served at once.

All vegetable liquors should be used for soups and gravies, or taken as a vegetable-essence beverage, useful and necessary for aiding in eliminating waste products, and for other reasons.

The outside leaves and tops and roots of the celery should also be cooked and made into appropriate dishes, which are not merely inexpensive, but cost nothing if they would otherwise be thrown away.

Spinach is another very valuable green vegetable, especially when cooked with about one-quarter to one-half of sorrel. Sorrel cooked by itself is practically a broom for the intestinal canal, and it should be eaten freely by itself and used with omelettes. It is most valuable. A cheap substitute is the turnip top.

Watercress is very good and very cheap, and it

can always be fresh in the home because, if two or three bunches of watercress are untied and put into a deep basin of water, the watercress grows freely, and a fresh cutting can be made for several days in succession. Boiled watercress is a cheap and wholesome dish frequently used on the Continent.

HEALTH VALUE OF TINNED FRUITS

The Food Committee of the New Health Society has recently conducted a most important investigation into the tinning of foodstuffs and its relation to the health of the nation.

Tinned foods play an immense and increasing part in the dietary of all civilized nations. Therefore it is of the utmost importance to ensure purity and unimpaired food value. Such popular prejudice as still persists against canned foods in general must disappear when the scientific facts are made known. Modern methods of canning have succeeded in preserving the vitamins unimpaired.

The concentration of large masses of the population has rendered imperative the practice of tinning and bottling, which alone solves the difficult problem of linking up food production and easy and cheap transport, providing nutritious and appetizing food for millions of people.

Canning also prevents an immense waste of seasonal fresh foods not immediately needed for local consumption, where even quick transport could not dispose of the whole of perishable food supplies.

The economic and food value of crops is thus extended over long periods and made the utmost of, to the great benefit of the people. The range and choice of diet are vastly increased throughout the world, since food produced under varied local conditions is made available thousands of miles from the source of production—Californian fruits, Norwegian sardines, Canadian salmon, British tomatoes and countless other foods. Canning also enables strictly seasonal foods to be made available all the year round.

Other good effects of modern canning are the enormous increase of production, and therefore of the world's wealth, the revolutionizing of the dietary of seamen, pioneers, prospectors, explorers, and travellers, and the more equitable distribution and greater variety of the world's best foods.

Of the many new industries for the prosperity of which canning is partly responsible the most important is that section of the tin-plate industry which supplies the metal. In America, where the canning industry is among the most important of economic occupations, the tin-plate industry has enjoyed enormous prosperity in consequence.

As is well known, in this country that industry has for years suffered a grievous slump. Should the efforts now being made by the New Health Society to promote modern methods of food canning be successful, the tin plate industry must enjoy a revival of prosperity, with corresponding advantage to many thousands of our fellow citizens, while the great benefit to the home grower of foodstuffs is obvious to all.

CHAPTER II

THE CAMPAIGN FOR WHOLEMEAL BREAD

A 'NEW HEALTH' MANIFESTO

THE value of the campaign in favour of wholemeal bread which the *Daily Mail* has long and successfully carried on has received striking and convincing confirmation. Every argument that we have put forward in support of wholemeal bread is borne out by a manifesto issued by thirteen distinguished medical men and scientists, all of whom have achieved the highest eminence in their own branches of research.

As the manifesto by these medical and scientific authorities points out, *white flour is not a complete food for man or animal*, being deprived of many of the most valuable constituents of the grain by the process of milling.

No more emphatic and convincing proof could be furnished of the utility of the 'Standard Bread' campaign which the *Daily Mail* has so long supported than the unanimity of opinion displayed by these unbiased and unchallengeable experts on dietetic questions.

The manifesto says :

We, the undersigned, members of the New Health Society, desire to express our opinion that wholemeal flour and wholemeal bread are superior in nutritional

value and vitamin content to white bread and white flour.

Wholemeal flour and bread contain valuable vitamins in considerable quantity which are practically absent from white bread and white flour. It is an established scientific fact that white flour is not a complete food for man or animal, since the milling processes have removed some of its most valuable constituents. It is false economy to purchase white bread and flour when this entails the purchase of other and more expensive articles of diet in order to obtain essential vitamins.

A certain daily quantity of vitamin B is absolutely essential to health, and in very many dietaries this quantity can only be ensured by the use of wholemeal flour.

Since bread and flour form a large part of the diet of children, and at least two-fifths of that of the mass of the population, the advantages gained in health by the use of wholemeal rather than white flour are obvious. We therefore urge the public, in the interest of their health, to demand an ample supply of wholemeal flour and genuine wholemeal bread.

Francis J. Allan, M.D., D.P.H.; S. Henning Bel-
frage, M.D.; Bruce Bruce-Porter, M.D.; Kenneth
Goadby, L.R.C.P., D.P.H.; E. A. Gregg, L.R.C.P.I.
& L.M., L.R.C.S.I. & L.M.; Frederick Hobday,
F.R.C.V.S., F.R.S.E.; Alfred C. Jordan, M.D.;
Arthur Keith, F.R.S., F.R.C.S., M.D., D.Sc., LL.D.;
W. Arbuthnot Lane, M.S., F.R.C.S.; Nathan Mutch,
M.D., F.R.C.P.; Herbert J. Paterson, F.R.C.S.;
R. H. A. Plimmer, D.Sc.; Caleb Williams Saleeby,
M.D., F.R.S.E., F.Z.S.

A COUNTER MANIFESTO AND THE REPLY

Doctor Gladys Hartwell, Sir Thomas Horder,
Dr. S. G. Moore, Professor V. H. Mottram, Dr.

H. E. Roafe, and Professor T. B. Wood sign a manifesto in the *Lancet* of July 22nd, placing on record their belief that the current statements that cancer, appendicitis, and many other diseases are the result of the use of white bread are unwarranted, there being a complete absence of scientific data to justify them.

The manifesto also states :

While we readily admit that vitamin B, which is essential to health, is present in wholemeal flour and practically absent from white flour, we do not subscribe to the statement that it is not contained in white bread.

The fact is that any lack of vitamin B in white flour is definitely remedied when the flour is made into bread by the addition of yeast, which contains plenty of it.

. . . In our opinion

(1) The case for wholemeal bread has been overstated.

(2) The allegation that white bread is responsible for certain grave illnesses is not supported by scientific facts.

(3) Although wholemeal bread is a good article of diet for many people, white bread of good quality is also a wholesome and nutritious food.

(4) There are no good reasons for thinking that the substitution of wholemeal bread for white bread in the national diet would make for material improvement in the national health and physique.

WHITE BREAD FALLACIES

In the following article I deal with some of the arguments put forward.

Recent statements regarding the value of wholemeal bread are a matter for the considera-

tion of the expert on dietetics rather than the physician.

The New Health Society is informed by one of its experts on dietetics, a man of world-wide reputation, that these criticisms of wholemeal bread are incorrect and are only likely to mislead the general public to the detriment of the health of the nation. They demonstrate again in the clearest manner possible that the time has come when medical students and medical men should receive instruction in what is by far the most important ground of health.

To state that white bread contains sufficient yeast to provide the B vitamin is absolutely false. Recent experiments carried out prove quite definitely that wholemeal bread contains not only the richest form of B vitamin but also other vitamins which are essential to life, as well as certain mineral salts, such as phosphorus, so vitally necessary to children and nursing mothers.

To suggest that in a teaspoonful of distillers' yeast there is sufficient B vitamin to feed a household is ridiculous. To suggest that sufficient B vitamin is available in articles of our diet other than wholemeal bread has been definitely proved by experiment to be wrong. One has only to note that the majority of the people are taking purgatives of one sort or another as the result of the use of white bread. Wholemeal contains the elements which are essential in preventing constipation, the condition which causes almost all our ailments.

It is stated that white bread contains more

food calories than wholemeal bread. All food experts now agree that calories are not the essential part of a diet which they were believed to be.

The War proved this conclusively, especially at Kut.

For the labouring classes the cost of providing B vitamin in such foods as eggs, peas, beans, and lentils is a serious consideration, and such foods are apt to be excluded from the diet of the child. If wholemeal is stated to contain too much cellulose, there is vastly more contained in peas, beans, and lentils than in wholemeal. It is not true that eggs are as rich in the B vitamin as wholemeal bread, since it requires at least 40 per cent. of eggs to make the diet sufficient.

WHOLEMEAL BENEFITS

As the controversy concerning white versus wholemeal bread continues to arouse widespread interest, and the evidence of dietetic scientists is alone of value in this connection, I have asked Professor R. H. A. Plimmer, D.Sc., the distinguished diet expert, to deal with the matter.

Sir Thomas Horder in his recent MacAlister lecture makes statements which are inaccurate. Regarding the quantity of food he states : ' There is no general consensus of opinion as to what this requirement in calories actually is.'

The subject is not one about which ' opinions ' can exist. Calorimetry is an exact science, and the calorie requirements of individuals under various conditions, whether engaged on physical

or mental work, have been accurately measured.

It is unfortunate that Sir Thomas Horder is 'unimpressed' by data obtained by precise methods. There is no doubt about the accuracy of the data. During the War the Royal Society issued a report upon the average calorie requirements of men and women of diverse occupations, and the practical value of these figures was proved by their successful use in the rationing of the fighting forces and of civilians.

The best account of this work is given by the late Professor E. H. Starling in *The Feeding of Nations*. In everyday life such calculated economy of calories is not necessary, and the tendency is to eat rather more than is actually necessary.

With reference to the comparative caloric values of wholemeal and white bread, both kinds give an average of about 1,000 calories per lb., variations being due to differences in the water content. As to the amount of fibre, white bread has from 0.2 to 0.5 per cent. and wholemeal from 0.5 to 1.5 per cent.

The difference is not great, and this small percentage of fibre cannot adversely affect normal digestion.

The question really at issue is in respect of the quantity of vitamin B in these two kinds of bread and in the diet as a whole.

The addition of yeast to white flour in the baking of bread is not overlooked by scientific workers, but the point is that not enough yeast is added to compensate for the loss of Vitamin B

from whole grain in milling. *Ten per cent. of bakers' yeast is needed to make good the loss, while bread, as usually baked, contains from 1 to 2 per cent.* As much white flour is consumed in the form of cakes, pastry, puddings, and the like, in which there is no yeast, as is consumed in the form of bread.

The argument that 'it is of very minor importance' as to whether we use wholemeal bread or not, because 'other common foods, namely, eggs, peas, beans, lentils, and nuts are very rich in this same vitamin', is fallacious. The quantity of vitamin B in these foods and the quantity of these foods actually consumed are disregarded by Sir Thomas Horder and others. *If the quantities of these foods which are eaten are actually measured, it will be found that we do not eat enough of them to compensate for the absence of vitamin B from white flour, sugar, chocolate, fat, and meat.*

WHOLEMEAL FOR HEALTHY DIET

The actual quantity of vitamin B in any food-stuff cannot yet be measured directly, but the minimum quantities of the various foodstuffs needed to supply enough vitamin B for health have been determined by Dr. Harriette Chick at the Lister Institute, and also by my own experiments.

I have found that the B vitamin requirement could not be measured in terms of a daily dose, but that the supply must be proportional to the total caloric consumption. The vitamin B value

of various foodstuffs was estimated by feeding experiments upon birds and rats, and the applicability of the results to man has sometimes been questioned. We know, however, the proportion of whole barley required in the ration to prevent beri-beri in the Japanese Navy, and find that this corresponds with the requirements of birds.

To provide enough vitamin B in a diet otherwise devoid of it, at least 40 per cent. must consist of wholemeal or some equivalent foodstuffs, such as pulses or nuts. In most households these foods are seldom used, and then only in small quantities.

To get enough from eggs, the commonest daily foodstuff apart from cereals, it has been found that almost half the diet must consist of the yolk. Green vegetables and fruits contain very little; potatoes are better, but must be eaten in the proportion of 9 parts of potato to balance 1 part of white flour or sugar, etc.

Reviewing the average daily consumption of all the foods supplying vitamin B in the ordinary mixed diet, the total is not sufficient to balance the white flour, meat, sugar, and other foods devoid of vitamin B. The easiest and cheapest way to ensure enough is to use nothing but wholemeal flour in all bread, cakes, puddings, etc.

The other alternative, if white flour is preferred, is to include some food very rich in vitamin B, such as dried yeast, in an amount equal to 4 per cent. of the whole diet, or wheat

germ equal to 6 per cent., or marmite equal to 10 per cent. These are the minimum quantities.

It is well known that absence of vitamin B leads to beri-beri, which is seldom or never seen in this country. McCarrison has pointed out that the early stages in the disease are digestive and heart troubles. The symptoms found in my animals and birds on too little vitamin B were dilated heart, intestinal stasis, swollen appendices. These symptoms are more fully described in the recent and important paper by Dr. M. J. Rowlands.

On the shortage of vitamin B these symptoms are chronic, instead of being the early stages of beri-beri. They are the common everyday troubles from which many people suffer, and their cause is most probably from a shortage—i.e., too little vitamin B.

This is the crux of the food question at the present time. There is no doubt that the daily food contains too little vitamin B. Do we get enough of the other vitamins? In many cases there appears to be too little vitamin A and D, as evidenced by rickets.

Do we get ample vitamin C? Probably most people do, as the fresh fruit and vegetables consumption is fairly large. *These points are not considered in Sir Thomas Horder's lecture but are of importance in the study of dietetics.*

THE BEDROCK OF ILLNESS

The suddenness with which the supporters of white bread have flared into public notice is

highly significant. The flour-milling organization of the country has, of course, during the past generation, been planned almost entirely for the production of chemically treated flour. It is now definitely feeling the effects of the educational propaganda of the New Health Society.

This discussion inevitably points to the vital importance of the establishment of a Chair of Dietetics, not only at London University, where one will soon be established, but also in every university and medical school.

It is hopeless to deny that the public are forming the opinion that medical men are sharply divided among themselves as to the value and usefulness of various articles of diet, and that in too many instances they teach views in direct contradiction to those of expert dietitians who have spent their lives in the study of food and who alone are able to speak with authority on this subject.

In addition to the great authorities I have already quoted, I would draw attention to the opinion of one of the most eminent dietetic specialists in the world, Col. Robert McCarrison, of the Indian Medical Service, Honorary Surgeon to the Viceroy of India: '*This vitamin (B) is absent from polished rice, white flour, cornflour, sago, tapioca*', and a long list of other refined foods follows, 'and is very deficient or wholly lacking in the refined foods of the modern food industry.'

In a private letter to me recently he says: 'For myself, I work on more and more amazed

day by day, by the extraordinary effects of faulty food on the animal organism. I begin to think that faulty nutrition is the bedrock cause of the vast majority of tissue ailments.'

A report on the diet requirements of children has just been issued by the New Health Society, prepared by Sir Wilfred W. O. Beveridge, K.B.E., C.B., D.S.O., Miss Harriette Chick, D.Sc., Professor J. C. Drummond, D.Sc., Sir Kenneth Goadby, K.B.E., Professor R. H. A. Plimmer, D.Sc.

In the course of this valuable document we find the following statements :—

'Wholemeal flour is essential to ensure an adequate supply of vitamin B, and a due proportion of "roughage". Wholemeal flour should be used in all puddings and cakes . . .'

The assertion that this absolutely essential element can be obtained from other parts of the diet begs the whole question. The only true test of the value of a food is whether by itself it contributes an adequate supply of the vitamins essential to health.

Any individual who attempts to sustain life on a diet of white flour will very soon die, while the same individual will thrive and be healthy on a diet of wholemeal. No supporter of white flour will venture to contradict that assertion.

CLEAN BREAD

Everybody must have seen numerous cases of the uncleanly way in which loaves of bread are

handled before they reach the persons for whom they are intended.

It is bad enough that they should be repeatedly picked up by dirty hands, but they are generally thrown uncovered into a dirty cart, distributed from an even dirtier basket, exposed to the dust of the streets, and often dropped on the pavement or in the roadway, and then replaced without even being wiped.

That dangerous germs are thus accumulated upon one of our staple foods has been proved over and over again. Fruit and vegetables similarly treated have at least the advantage of being peeled or cooked, the germs being thus removed or destroyed. But there is no protection for bread except by hygienic methods of wrapping.

Anyone who has seen the way in which this problem has been solved in America must know that the bread is wrapped by machinery in grease-proof, air-tight paper. Not only does this process keep it fresher, but it also protects it from flies and other carriers of disease.

The delivery of bread in such sealed packages would be most welcome to the British housewife, and it is certainly remarkable to see so much of the nation's bread handled without any wrapping whatever.

Against such an essential reform there are no arguments, and it has no opponents. Medical officers of health throughout the country have been advocating this hygienic method for years past and voted unanimously in its favour at a recent annual conference.

Several of the most important women's organizations are continually demanding it, but progress has so far been very slow. With the powerful educational influence of the *Daily Mail* it may now be hoped that the hygienic handling of bread will become universal in this country. The New Health Society has arranged for the publication in its journal *New Health* of a series of articles on the cleanly handling of bread and other foodstuffs, and it will carry on this campaign throughout Great Britain until the necessary change in public opinion has been effected.

The possibilities in this regard are clearly shown by the example of Glasgow. After a brief campaign in the Press, all the big bakers in that city adopted bread wrapping, and today no less than a million and a half loaves are sold daily to the public in hygienic wrappings. *There has been no increase in the cost of bread to the consumer, and the enterprising bakers have found that the demand for bread has increased.*

Why cannot London follow this excellent example? A small number of London bakers have already shown sufficient enterprise in this direction, but it should be quite possible to reach the ideal state of things when no bread whatever is sold without being hygienically wrapped. The requisite machines are available, the public always welcome the innovation, the economic cost is quickly repaid. It remains only to convert the bakers, and that will quickly be done when the public are awakened to the great need for this essential protection of their health.

CHAPTER III

THE WAY TO ELIMINATE CANCER

THE INCREASING TOLL

THE report on the state of public health in England and Wales, published by Sir George Newman, Chief Medical Officer of the Ministry of Health, is of intense interest.

It would at first strike one as being of an optimistic character, suggesting that possibly too much stress has been laid upon the matter of diet, and especially upon the burning question of the relative value of white versus wholemeal bread.

While everyone is anxious to be relieved from fear, one is appalled by the terrifying statement that cancer, that dread scourge which appears to be inevitably associated with civilization, is claiming greatly increasing numbers of victims every year. The figures Sir George Newman supplies show an increase from 274 per million in 1847-1850 to 1,362 per million in 1926.

This immense rise in mortality from this appalling disease has occurred in spite of all the research work done in innumerable laboratories, both in Great Britain and elsewhere, and of the increasing knowledge, experience, and skill of the surgeon in his operative measures for the removal of the disease as soon as it is recognized.

As the report indicates, the main incidence of cancer is in the digestive tract, a situation in which its recognition is never possible in an initial stage, when operative measures can alone effect its removal with any prospect of success.

Naturally, one shares Sir George Newman's hope that some means shall be discovered by which cancer can be treated by methods other than operative, but both commonsense and experience offer little prospect of success.

This report strengthens immeasurably the attitude taken up by the New Health Society in its articles in the *Daily Mail*, since it demonstrates unmistakably the intimate association which exists between food and disease—a fact proved conclusively by the experimental work of Col. McCarrison, Prof. Plimmer, Dr. M. J. Rowlands, and a host of distinguished observers.

All this affords the strongest evidence in support of the view that *the future of medicine lies in prevention*. Again it emphasizes the vital and urgent importance to the British public of the formation of Chairs in Dietetic, not only in London University but in all the medical schools in the country, in order that every doctor shall be thoroughly familiar with that factor which is most responsible for the health and happiness of the public.

CANCER—THE LAST LINK

It must seem somewhat futile to pick out cancer, that last link in the chain of conditions

which result from the absorption of poisonous products from a dirty intestine (commonly spoken of as intestinal auto-intoxication) and to consider it apart from the many other diseases which *do not exist* in communities that eat proper food and have normal habits.

Let the public consider this matter for themselves and realize that disease, as we know it among white people, is due to a single cause, and that the elimination of that cause can free the community from an immeasurable amount of illness. It is necessary to quote one statement alone, made by perhaps the most expert observer in dietetics. Colonel McCarrison, who is employed by the Indian Medical Service to study food and disease, writes as follows :—

‘ For nine years of my professional life my duties lay in a remote part of the Himalayas, among isolated races, far removed from civilization. Certain of these races are of magnificent physique, preserving until late in life the characters 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.’

This statement is irrefutable and is the experience of one of the most able and practical researchers in the world, who combines the usual

laboratory knowledge with an extensive medical experience, a combination which is as ideal as it is rare among researchers.

Let us act upon this knowledge and do not let us lose our *common* sense in the development of *special* senses.

The general principle underlying the diseases of civilization is a matter that can be realized by every citizen.

My association with the British Empire Cancer Campaign at its initiation ceased abruptly as soon as I realized what appeared to me to be the utter futility of its methods and objects. In spite of the vast sums of money expended on cancer research in America nothing of a practical nature has resulted, for this reason—that research has fallen into the hands of experts who dealt only with one result of civilization and had no grasp whatever of general conditions.

Not until a broader inquiry is undertaken into the causation not only of cancer but of *all filth diseases* which exist only in civilization will any real result be obtained.

CANCER AND DIET

By Professor Frederick L. Hoffman, LL.D.

On the possible relation of diet to cancer a considerable literature exists, which seems to justify preliminary conclusions favourable to the conception that certain forms of diet, and particularly a tendency toward hyper-nutrition, may produce the irritating factors generally associated with the development of malignant diseases.

The questionnaire method of inquiry provides a large amount of supplementary information strongly suggestive of an excess of meat and an excess of sugar in the diet, and the presence of intestinal stasis in quite a considerable proportion of the cases under observation. In developing my own conclusions on this point, I have been strongly under the influence of the teachings of men whose scientific qualifications are unquestionable.

The American Indians.—A few returns have been made of cancer cases among native Indians. But no far-reaching conclusions can be drawn from such cases as represent non-Europeans living under the conditions of an American civilized environment. The Division of Vital Statistics of the Census has kindly furnished me with advance statistics for 1923 of deaths among the entire Indian population in the registration area, according to which out of 1,195 deaths of Indian males 21, or 1.8 per cent., were attributed to cancer, while among 1,128 deaths of Indian females 36, or 3.2 per cent., were from cancer. Of the latter none were from cancer of the breast, while 11 were of the female generative organs.

It is suggestive in this connection that in view of the large outdoor exposure of our Indian population only three of the 57 deaths for both sexes should have been caused by cancers of the skin.

The question of cancer in native races is, in my judgment, one of the most important phases of

cancer investigations, and while the evidence is largely negative, it could be utilized to exceptional advantage in the ascertainment of the conditions under which cancer is not likely to arise, and its relation to habits, exposure, and, possibly, skin pigmentation.

I myself have never argued that any particular diet was productive of cancer, even if taken in excess, or that abstinence from any particular article of food was likely to be beneficial. I have simply argued as a matter of everyday observance that our modern food practices differ so enormously from those of previous generations that a qualified examination of the whole subject might possibly provide evidence useful for the purpose of elucidating some of the more obscure aspects of the cancer problem. In any event, I am satisfied that natural food habits are conducive to a low rate of cancer, while civilized food habits are conducive to an excessive rate of cancer. Furthermore, I believe that two meals a day is sufficient for the purpose on the part of most people not engaged in arduous labour, or that three light meals a day better serve the purpose, at least in adult life, than four or five meals providing more nutrition than is required.

What I insist upon is that our modern food largely represents a quantity of eatable materials, the nature of which we do not understand. The conviction has been forced upon me that the elimination from this material of many of the essential mineral constituents of natural food represents one of the insidious factors responsible

for the enormous increase in cancer during the last fifty years. I therefore insist that likewise the rarity of cancer in native races should receive more serious attention than has heretofore been given to it, as likely to prove far more productive of good and practical results than the vast amount of laboratory study on animals and even plants.

Summarizing my personal convictions on the subject, I may say that all my investigations prove the vast superiority of a natural diet over an artificially concocted and excessive diet, and that no progress towards a substantial reduction in the cancer death rate will be achieved until more natural habits of eating plus other natural habits of living prevail in the population at large.

CANCER NEVER ATTACKS HEALTHY TISSUES

I have frequently quoted great authorities to show that cancer is practically non-existent among native races living under natural conditions, uncontaminated by association with the white man.

I have also laid it down as an irrefutable principle that cancer never yet affected a healthy organ. The life and habits of civilized man involve all kinds of departure from the natural diet and habits of his ancestors.

In the following article Dr. Saleeby, one of the founders of the New Health Society, again draws attention to the preventable character of cancer, particularly in regard to the factor of irritation, external and internal.

The Problem of Irritation.—The recent decennial supplement published by the Registrar-General offers his great authority in support of those of us who have long declared that cancer is in large part preventable, even though the greatest doubt still exists as to the nature of the germ, if any, which causes it.

Let us begin with an instance. Everyone knows that chronic exposure to irritation by the X-rays is liable to cause X-ray cancer. Germs may be involved, or constipation, or hereditary predisposition, or they may not; but if we are not exposed to X-rays, we do not get X-ray cancer.

That disease is now prevented, because we know, and exclude, one factor—the X-rays—essential for its development. Probably not another case of it is being begun anywhere in the world. X-ray cancer is preventable.

Certainly it is not the only kind of cancer which similar knowledge can and should prevent.

The X-rays cause cancer by chronic irritation of the skin of the fingers and forearms which are exposed to them. Let us look for other surfaces which are also exposed to chronic irritation, followed by cancer, and perhaps we can prevent that also.

The Registrar-General shows that, for instance, cancer of the skin and of the mouth is much more frequent among classes of persons who do not protect and care for the skin and the mouth than among those more leisured and fortunate persons who have the time and money and training which enable them to protect these

organs. If similar protection existed in all classes much cancer would be prevented, says the Registrar-General, and clearly he is right.

We are not required to assert any complete theory of cancer; we do not need to believe or disbelieve in a germ; we need not say that 'chronic irritation causes cancer'; we may be sure that not *all* forms of chronic irritation contribute to the causation of cancer.

But we cannot be wrong in avoiding and excluding, for ourselves and others, all forms of chronic irritation, acting on any surface, external or internal, so far as we can. We shall thus assuredly prevent much cancer.

As a beginning, let us all resolve to have clean and non-irritated mouths henceforth. This is merely extending generally the principle which Sir Arbuthnot Lane has taught us all in respect of the bowel, irritated by constipation, and developing cancer there. Burke, with an extra word, was right; *intelligent* 'fear is the mother of safety.'

We must have Radium.—Beyond all dispute, if the International Cancer Conference of 1928 had a hero, that hero was radium.

Despised and decried for years, radium now definitely undertakes to relieve the victim of cancer of the tongue or cancer of the womb from the ministrations of the surgeons, and can safely achieve results vastly superior to their dangerous best.

Nor should we forget that women doctors have done magnificent service, especially to

their own sex, in helping to establish radium—though no one would guess from the Conference proceedings what the women's share had been.

Wherever cancer is treated, there radium should be available. The day before the Conference I published the prediction that the many surgeons who then decried radium would not decry it a week later, nor ever again. The discussions were final, and constitute the one positive achievement of a lamentably disappointing week.

Radium is very dear and very scarce. It is only available as yet for a tiny proportion of the vast host who need it. Medical and other women have lately asked for money for radium and have had a miserably poor response. So long as we continue to ignore the prevention of cancer we must have radium.

We must have radium, either through a national radium fund, or an allocation made by the Exchequer, as is the case with munitions in an ordinary transient war. That would be a long business, I fear, with vested interests in the way.

If the Conference had been conducted on the usual lines which lead to success, its final meeting would have discussed this question, which would not have been left to be dealt with by any single pen, or even by any single newspaper.

But, somehow or other, we must have radium.

The foregoing, written in 1928 just after the International Cancer Conference, may now be provided with a sequel. A National Radium

Fund, such as I then asked for, has been set up in thanksgiving for the King's recovery from dangerous illness. Several grammes of radium are being purchased at the date of writing, and will be used under the recently appointed Radium Trust. This is the latest, but will not be the last, victory of science over the Knife and Bottle Cult that we have inherited from the Dark Ages.

CHAPTER IV

THE CAMPAIGN AGAINST RHEUMATISM

PRIMARY CONSIDERATIONS

I WOULD submit for the consideration of readers the following brief questions and answers, and would urge on them their importance.

I would also ask for their moral and material aid in helping the New Health Society to attain the useful objects for which it has been organized. It is only by the powerful voice of the public, as voiced through the Press, that any real progress will be effected.

This is a matter for the people of Great Britain to deal with in their own interests.

1. *What is rheumatism ?*

Rheumatism is a tragic condition which affects people of all ages, but its manifestations are more serious and more frequently followed by fatal results during the early years of childhood. It is also a source of great financial loss to the nation.

2. *Is it a fact that rheumatism affects only such people as are badly fed ?*

It is the universal experience of those who have to treat acute or chronic rheumatism that it only affects those who are improperly nourished.

3. *Do healthy robust races living on a correct diet suffer from rheumatism?*

That vigorous native races living upon a proper diet and enjoying normal habits never suffer from rheumatism has been demonstrated beyond all doubt by many observers who have studied the lives, habits, and diseases of these people for many years.

4. *What are the factors which determine rheumatic manifestations in ill-nourished people?*

The factors which determine the manifestations of rheumatism in its various forms in ill-nourished people of all ages are those which lower the vitality or resisting power of the individual. Such exciting factors are cold, damp, exposure to privation, exhaustion, sudden climatic changes, etc. These agents can exert no influence in the production of rheumatism in vigorous native races who are so frequently exposed to them.

5. *Is the treatment of rheumatic conditions by drugs and by any other means satisfactory?*

The international conference recently held at Bath shows only too clearly that the treatment by drugs, etc. affords no effective means of dealing with this serious morbid condition.

6. *Is there any natural means of meeting the prevalence of rheumatism other than by prevention?*

It is obvious to any person possessed of ordinary commonsense and without any special knowledge of medicine that the only rational way to meet this serious situation is by *Prevention*.

Would it not seem advisable that the Health Department of the Government and other bodies interested in health should co-operate promptly with the New Health Society, and with the help of the powerful educational Press develop an intensive campaign, with the object of impressing on the public the vital importance of correct diet and habits of life, so that rheumatism in every form shall be eliminated from the community and the general health of the nation be enormously improved ?

PREVENTION OF CHRONIC RHEUMATISM

An eminent specialist in rheumatism has been good enough to supply me with the following valuable information.

Chronic rheumatism is responsible for much ill-health and disability. Out of nearly 11,000 workers absent from work by reason of ill-health or accident, 940 were disabled by rheumatic affections of various kinds—roughly, one in eleven.

The cost to the nation in loss of time and wages, to say nothing of the suffering entailed, caused by this disease is therefore a very serious matter.

Chronic rheumatism is a manifestation in some part of the body of a state of chronic poisoning. Damp and exposure are contributory factors but do not affect healthy tissues. This poisoning is the result of the growth and activity of micro-organisms (germs) in some part of the body

quite remote from the actual site of the pain and inflammation.

The enemy are entrenched in some hidden corner, where they give rise to and pour out toxins (poisons) into the blood stream, in which these are carried to some weakened part of the body, there to set up inflammation. So we have:

- (1) The hidden source of poison:
- (2) Some part of the body weakened by overstrain, chill, exposure, or injury:
- (3) Inflammation causing pain and stiffness in the affected tissues.

It is perfectly obvious, therefore, that any treatment which does not deal with factor (1) is dealing with results and not with the cause. Still more is it evident that if we wish to avoid becoming rheumatic we must not allow foci, or centres of infection, to form in the body.

Chronic rheumatism may affect the muscles, as in lumbago, the tendons and ligaments (sinews), as in a stiff neck and painful heels, or the nerves, as in sciatica and other forms of neuritis. Or it may attack the joints, giving rise to the conditions known as rheumatoid arthritis, arthritis deformans, etc. This often results in complete disorganization of the joints, with severe crippling and terrible deformity.

Focal Infection.—In attempting to cure or to prevent rheumatism we must seek out any possible focus or centre in the body from which these germs and poisons may emanate.

The commonest focus is to be found in the gums or the sockets of the teeth. Infected mouths are the cause of a very large proportion (possibly half) of cases of chronic rheumatism.

With or without infected teeth we find in other cases infected tonsils, which may become a very hotbed of infection. Associated with and probably the cause of the infection of both teeth and tonsils is an infected bowel, the result of wrong feeding and of constipation. Readers of the *Daily Mail* are now familiar with the teaching of modern medicine on the importance of keeping the main drain of the body in a clean condition.

Rheumatism is one of the commonest results of failure to do so. How then to prevent rheumatism? The whole secret lies in so fortifying the resistance of the body against the attacks and lodgment of the infective germs that they are unable to obtain a footing in these vulnerable parts of the body.

The power of resistance can be strengthened by obedience to the primary laws of health, especially by the taking of foods which provide a full supply of vitamins and serve as good building material for the teeth of the growing child. Foods must also call for hard work on the part of the jaws and teeth and provide good 'roughage' for the intestine.

When, however, a focus of infection has been set up, medical advice must be sought early. Regular visits to the dentist are of the greatest importance throughout life and are the best safeguard against becoming rheumatic. Fre-

quent sore throats call for medical advice, especially in young children. Constipation must be dealt with by a radical reform of diet and habits.

Avoidance of fatigue, undue exposure, chill and damp is necessary for those who have a tendency to rheumatism. Such conditions tend to lower the resistance of the body to infections and thus increase the liability.

GUARDING AGAINST NEURITIS

In response to numerous requests from correspondents, I have secured from a distinguished London physician the following clear and valuable information on the important subject of neuritis.

The painful disease known as neuritis is an inflammation or irritation of the nerves. It is not a fatal disease, except in its rare and severe varieties. Pains produced by more serious troubles are often loosely attributed to neuritis, and the diagnosis should never be adopted unless made deliberately by a qualified medical man.

There are two entirely different forms of neuritis. In one, a main nerve trunk is involved, such as the big sciatic nerve in sciatica. The pain is often intense, but is generally confined to a single limb or to a very circumscribed area on the trunk or head. Its commonest cause is a centre of sepsis in some part entirely remote from the site of the pain.

Infected teeth, tonsils, and intestines account

for the majority of cases. Prevention necessitates the strictest cleanliness of the mouth, throat, and bowel, and wholehearted treatment of any inflammation which may arise in these areas. Inflammations of tissues other than nerves are often painless and therefore easily overlooked. A dead tooth may have a chronic abscess at its root without causing any pain. Tonsils damaged in childhood may be thoroughly septic without making the throat feel sore.

The second form of neuritis is more diffuse and affects both sides of the body, starting in the hands and feet, and spreading towards the trunk. The first warning may be a persistent sensation of pins and needles, but the disease may progress and end in widespread paralysis.

It is caused by poisons circulating in the blood. The lead palsy of plumbers and painters, arsenical neuritis, and that following diphtheria are well-known instances and may end fatally. Government regulations and the staff of the fever hospitals are the nation's safeguards against such catastrophes.

The commoner, mild non-fatal forms are usually due to auto-intoxication from the bowel, and their prevention is in our own hands. Over-indulgence in alcohol is responsible for a very serious form. Deficiency in vitamin B, the vital element present in wholemeal bread, but entirely absent from white flour, causes a most distressing and dangerous multiple neuritis known as beriberi.

The general process of poisoning which occurs

in constipation and intestinal stasis, when food stagnates and putrefies, is one of the commonest causes of all. It can be avoided if evacuation is regular and effective, if fresh fruits, raw salads and unspoilt cereals are used as the foundation of a mixed diet, if the body is exercised properly, and sunlight and wind are allowed a reasonable access to the skin.

CHAPTER V

BEVERAGES AND COMMONSENSE

DIETETIC VALUE OF WATER

FEW people apply their intelligence to the common facts of life as associated with that portion of their anatomy to which health is so very intimately related.

Most households have at one time or another experienced such difficulty with the drainage system of their houses as has necessitated their having recourse to a flushing tank, which has afforded them invaluable results from its use.

This method consists in the introduction into the drain of a considerable quantity of water at regular intervals, which, flushing the drain, displaces any sticky material which has adhered to its wall and reduced its calibre, and in this way it renders the action of the drainage scheme efficient. If the public apply such a simple mechanical method to their own digestive systems and drink a large amount of water, first thing in the morning, at a suitable interval between meals, and last thing at night, a vast amount of benefit will result to their health.

Some of the water drunk is picked up by the blood vessels and is carried to every cell in the

body, whose products of digestion are expelled into the blood stream and are borne to the kidneys, where they are excreted.

The balance of the water drunk passes through the intestine, rendering its contents more fluid and less plastic. It assists very materially in their rapid expulsion after every meal, with precisely the same regularity and certainty as the cesspool of the house discharges its contents into the drain in the street when the pan of the closet is emptied.

Many people prefer to adopt a different expedient. They eat greedily of foods which contain an insufficiency of vitamins and of roughage, in consequence of which material collects in the big bowel, or cesspool, where it becomes sticky and later forms a hard lump.

To meet this stagnation and desiccation the constipated individual forces a quantity of water up into the large bowel, in the form of an enema, and attempts to remove the decomposing poisonous and offensive material in this manner. If large quantities of fluid are used in this manner, some of this matter, loaded with poisonous organisms, is forced back into the small intestine, where it contaminates the contents of this portion of the bowel, which should be sterile, and poisons the food supply, being productive of serious harm to every tissue in the body.

No engineer would for an instant consider the use of such an inefficient method in the drainage scheme of a house.

PURE DRINKING WATER

It is now common knowledge how dangerous is the practice of indiscriminate use of the same drinking vessels at public fountains. The hygiene of the mouth is to day sufficiently understood to suggest the greatest risks to health that arise from the many forms of infection which the mouth and teeth can convey.

Dr. Haden Guest here describes the manner in which many American authorities have practically eliminated this risk in regard to their supplies of drinking water to the public.

Everywhere in the United States there are veritable drinking fountains. A knob is pressed and water spurts up in a stream six or eight inches high from which one may drink directly. Everywhere, also, there are automatic machines which deliver new fresh paper cups.

One machine, which is installed in many railway coaches, delivers a flattened cup which pulls out with a tag, is used for one drink, and discarded. Another and more picturesque machine is like a large inverted test-tube made of clear glass and about 3 feet high. This machine delivers a tumbler-shaped cardboard drinking cup to you for one cent. put in the slot beside it.

Railway trains in America are usually provided with a supply of pure and ice-cooled drinking water to be found alongside the automatic cup machine.

Public water supplies are guarded from con-

tamination by prohibition of building over large water catchment areas. The series of lakes and dams near Croton-on-Hudson, about 30 miles from New York, provides something like one-third of the water required for the population and is used as a beauty spot. Bathing in the lakes is prohibited, and even the ubiquitous stall selling ice-cream and Frankfurter sausages, known as 'hot dogs', is banned.

The drinking of iced water at meals is universal, and what the effect of this is only observation over a period of years can say. The habit is so well established that some of the larger hotels have iced drinking water laid on to the bedrooms, and in all hotels part of the bedroom furniture is a large glass jug and glasses for the drinking of iced water.

The United States takes its drinks either ice-cold or, if they are tea or coffee, very hot and very strong. The stomach is subjected to extremes, and this may be one of the reasons for the high rate of cancer in that country. But water-borne diseases and contagion derived from the use of the same drinking vessel by many people are certainly largely avoided.

FRUIT COCKTAILS

The word *apéritif* is a much more accurate description of a health appetiser than is the word cocktail. An *apéritif* is a mild aperient and is, of course, extremely wholesome, if properly composed.

The basis of the majority of modern cocktails is usually one or more of the vermouths. Vermouth is alcoholized white wine, rendered aromatic by different mixtures of stimulants or tonics, or bitters, such as wormwood, gentian, angelica, germander, and oranges, all of which have a high medicinal value in stimulating the flow of the gastric juices, and hence preparing the digestive organs for the reception of a good meal.

When these natural herbal tonics are drowned in far too much additional alcohol the cocktail ceases to be a wholesome *apéritif*.

I am informed by one of the cookery experts of the New Health Society that one of the very nicest and most wholesome fruit cocktails is made from the purple granadilla, or Australian passion fruit, as it is usually called here. This is really a South American delicacy, closely related to the pawpaw. Some botanists place them in the one family, and in the juice of these fruits there is an active ferment closely resembling animal pepsin, which certainly aids digestion.

Passion fruit sometimes arrives in this country in a fresh state, but the greater part arrives from Australia exceedingly well packed in glass bottles of different sizes. This bottled passion fruit requires only the addition of a few drops of fresh lemon-juice and a dash of orange bitters to make a perfectly wholesome and most delicious *apéritif* which only requires to be known to become exceedingly fashionable.

Those who like cream cocktails sometimes add

a spoonful of cream to a small glass of the passion fruit juice, and a pinch of bicarbonate of soda turns the pulp into a beautiful foaming beverage.

But, speaking generally, with all fruit beverages it is best to leave well alone. In fact, one might say, Abuse not Nature, she hath done her part; do thou but thine. The juices of the orange, the lemon, the granadilla, and their flavours are complementary and harmonious; and both old and young would benefit by making them a pleasant interlude to a still more pleasant dinner.

ALCOHOL AND HEALTH

While much abuse has been heaped upon me by a very small but singularly active section of the community because I have expressed views in favour of alcohol, this has been much more than compensated by the approval of a vast commonsense majority of the community.

Medical men are generally regarded as competent advisers on the question of alcohol. It is possible to arrive at their views by observing how they carry their precepts into practice. I dine not infrequently with large bodies of members of my profession, which comprises men of varied intelligence. I also dine with very select groups representing the best brains in medicine and surgery.

The number of those who abstain from alcoholic drinks in the larger gatherings, amounting to several hundreds, is, so I am assured by those who are able to form an opinion, exceed-

ingly small. And teetotallers are practically completely absent from among those whose names are household words.

If alcohol in any quantity is a poison and is of no use to us as a food, it is a strange thing that those men upon whom rests the greatest possible responsibility—namely that of life and death—should find considerable solace, rest, and comfort in taking it in moderation.

I may add that, during many years' experience of such dinners in the company of members of my profession, I cannot recall a single instance in which anyone took alcohol to excess.

In spite of this experience, and in spite of the evidence of a long life spent, I trust, to the advantage of many of the public, I am assured that the medical profession is opposed to the use of alcohol, and that alcohol is bad for our race because a certain number of ill-fed, unhealthy, people have recourse to it in excess to meet the misery and ill-health their depreciated vitality entails.

Notwithstanding any criticism, which has not produced arguments strong enough to exert any influence whatever on my views, which are the results of many years' experience, I still assert that alcohol in one form or another is one of the most useful foods we possess.

SAFE DRINKS FOR THE MOTORIST

In view of the vital importance of not impairing the efficient control of the driver of a

motor-car, so important in face of the steady and rapid increase in the number of vehicles now on the road, too much thought cannot be given to the nature of the liquid nourishment which can be made available to him.

The recent experiences of the courts of law have indicated clearly that an amount of alcohol far below that necessary to produce even mild symptoms of drunkenness may be fatal to the proper functioning of the driver of a car.

It seems evident that the vast majority of motorists are not content to drink the so-called 'soft drinks', which are generally regarded as containing no alcohol—most frequently very inaccurately.

The bitter taste of the products of hops appeals to most people, and there is no reason whatever why a good beer or lager should not be accessible to motorists at every public-house and hotel on the road, and why it should not possess a very low alcoholic content, low enough to enable the driver to drink two bottles without risk to his capacity to control the machine he is driving.

The ideal drink for one driving a car is obviously water, and any alcohol should be consumed only when the car has been replaced in the garage. It would appear that it is practically impossible to insist on this counsel of perfection, so that the next best thing is to effect as perfect a compromise as possible.

It is obvious that drivers of cars should abstain totally from spirits or strong drinks while engaged

in this form of activity, and should always bear in mind how *absolutely* necessary it is to possess a brain that can function rapidly and efficiently since the risks to which they and others are constantly exposed are very great.

There is an immense field open to those caterers who will put on the market such a beer as is here described. Those who were familiar with the beverages so popular in Germany, especially in Munich, know how safely the delicious brews of that country could be drunk in quantities without affecting the mentality of the consumer.

During the War much of its perfection was diminished, or even destroyed, by the use of chemical substitutes for hops. Whether or not it has been restored to its pristine purity I do not know.

I presume British brewers are quite as capable as the Germans of producing a good, tasty beer made from hops, which will be very attractive to the palate and at the same time possess a sufficiently low alcoholic content.

It will yield an excellent return to the manufacturer because of its popularity. It will also eliminate much risk, much injury, much mortality and much unhappiness, besides affording great freedom from anxiety and danger to our excellent and efficient police force.

Cider—A Healthy Drink.—At the same time, I would urge that the cider which is made in England is fully worthy of recommendation for its purity, flavour and health-giving qualities as an equivalent drink.

It has the great merit from the dietetic standpoint of being a pure product of the apple, a fruit recognized by everyone as possessing a fair vitamin content and many other good qualities.

The best cider can be made only from the vintage variety of apples. Genuine cider should be made exclusively from the apple juice, and should contain no addition of water, sugar, or other extraneous matters. It has a low alcoholic content, quite different from the reinforced cider which is made from imported materials, unfortunately in great quantities.

Largely as a consequence of these low grade ciders, and partly because most people have to persevere a little until they have acquired a taste for it, this beverage has not achieved the popularity it deserves.

There is a wonderful opportunity for those manufacturers who can place on the market genuine cider with a low proportion of alcohol. It is notorious that some ginger beers possess a much higher alcoholic content than the best ciders, and are not nearly so tasty. They are drunk largely by teetotallers, under the mistaken impression that they are non-alcoholic.

CHAPTER VI

SMOKING AND HEALTH

The perennial question whether tobacco smoking is harmful to health or not is only less persistent than that concerning the consumption of alcohol.

In response to numerous requests from readers of the 'Daily Mail' for an impartial statement on this question, I have secured from Sir Bruce Bruce-Porter, one of the founders of the New Health Society, the following most interesting and informative article.

The question whether the use of tobacco is harmful or not depends for its answer on the further question, Is it used or abused?

Life under modern conditions would be a sad affair if everything which gave pleasure when used in moderation were forbidden because some folk failed to exercise restraint.

The maintenance of health demands mental repose as well as physical, and there can be no doubt that the moderate use of tobacco has proved a great comfort to millions. On the other hand, it would be extreme folly to contend that it was not capable of causing serious harm when used to excess. Excess cannot be laid down as a measured quantity-standard for everyone.

There are many to whom it is a poison; these are people who have an intolerance of the plant. It is an old and true saying that one man's meat

is another man's poison, and very few of the commonest articles of diet have failed to prove harmful to some stray individual. One person, for example, cannot touch eggs without paying for it with an attack of asthma; another cannot eat gooseberries or strawberries without coming out in a rash.

The young and immature should leave tobacco severely alone. Cigarette smoking by boys and young women is liable to cause irritability of the heart, with irregularity of its action.

The amount of cardiac distress may vary from a feeling of faintness to that of fear of impending death. The extreme degree is known as *tobacco angina*, and may cause absolute terror to those who suffer from it. Fortunately it is easy to reassure the patient, as this is a condition met with usually in the younger smokers.

For those young people who develop what is called tobacco heart complete abstinence from the weed is essential.

In the past, the old clay pipe with its rough hot stem produced so much damage to the tissue of the lip that the primary factor of cancer was able to gain a foothold. The pipe smoker who uses a smooth cool pipe need not fear the prospects of cancer.

Many men who smoke on an empty stomach, and swallow the nicotine from an old pipe, induce digestive troubles, and should avoid continuance of the habit. Sufferers from bronchial catarrh or irritation of the air passages often find it impossible to get rid of their cough, and

medicines are useless so long as the sufferers persist in smoking.

Not infrequently, complete abstinence for a short period will effect a cure and allow safe resumption of the habit.

There is a condition of blindness due to smoking in excess, and patients who are warned by their oculist that their eye trouble is due to smoking are foolish to a degree if they do not cut off their smoking.

Women are more affected by the abuse of tobacco than men, and if they smoke at all should do so in strict moderation. The habit of 'chain smoking', i.e., lighting the next cigarette from the stump just finished, is very bad indeed.

But for those who do not suffer from tobacco intolerance, *pure unadulterated tobacco, of good quality, used in moderation, should do no harm.*

CHAPTER VII

THE BENEFITS OF SUNLIGHT

SUNLIGHT FOR ALL

WE who live in a temperate zone, and enjoy but a very small modicum of the beneficent rays of the sun, do not realize the immense influence which this force exerts upon the virility and imagination of the people who enjoy it.

The public have been filled with admiration for the remarkable and indeed wonderful vigour, and the short latent period (the time between perception and action), exhibited by natives of hot countries who have had none of the previous educational advantages in sport possessed by the youth in our schools. Constantine, the magic cricketer, and Prince Ranjitsinhji afford excellent and striking examples of the stimulating influence exerted by the sun, both coming from countries in which sport in the form of cricket has only existed in very recent years.

Quite apart from the remarkable vigour, elasticity, and energy shown by these people, their happy outlook on life and the cheery, almost boyish ways in which they overcome difficulties and bear reverses, are most striking.

Those who have watched the natives of Jamaica, Constantine's homeland, cannot but be impressed by the happiness which is exhibited

in the faces of the people, so different from the apathy to which we are accustomed. Nor can they fail to be equally depressed by the changes which take place in the health and happiness of these same people when they are confined in such localities as Chicago and have become habituated to the habits and foods of the white man.

This would suggest that we who live in what is practically a sun-free country should take every advantage of such artificial means as are afforded by the many excellent lamps which are now on the market, and should realize the immense advantage to health and happiness which even a brief daily exposure to such rays affords.

Do not let us consider these lamps a luxury, or something to be had recourse to only in impaired health and in disease, but as necessary to our daily life as the bath or other means of establishing cleanliness, to enable us to be more vigorous and robust, to be free from rickets, the result of an imperfect diet, and to be more capable of overcoming the difficulties and anxieties which we cannot escape in our more elaborate civilization.

SUNLIGHT AND HEALTH

By Dr. C. W. Saleeby, M.D., F.R.S.E., F.Z.S.

This 'new' subject, the scientific study of which in this country was initiated on my suggestion only five years ago, is really as old as Hippocrates, the Father of Medicine. The earliest modern name in this very brief historical introduction must be that of the surgeon Bonnet, of Lyons, who was curing tuberculosis of bones

and joints and glands, mostly occurring in children, by sunlight, as long ago as 1845. The scientific discoveries of Pasteur and their application by Lister made possible the surgical attack upon these conditions, and to this day we call them by the name of surgical tuberculosis. The records of this destructive and fundamentally unscientific method are deplorable, and the total oblivion into which Bonnet's work fell, thanks to the blessed discovery of antisepsis and asepsis, is a typical instance of the way in which the human mind progresses by spirals, and frequently forgets one truth whilst half grasping another. Elsewhere I have named Florence Nightingale, and her protest in 1856 against the building of Netley Hospital so as to exclude all sunlight. The outstanding name is that of Dr. Theobald Adrian Palm, to whose utterly ignored work my attention was drawn by a bibliographer in America when I was studying this subject there a few years ago. Dr. Palm (nat. 1848) had seen much rickets as a student in Edinburgh—'Auld Reekie', as the inhabitants call it—and had observed the absence of rickets in Japan, amongst extremely poor people whom he served as a medical missionary for nine years from 1875. Returning to England he made a study of the disease by the geographical method, and published in 1890 a modest but absolutely masterly paper in which he concluded that deprivation of sunlight (as by the smoke of 'Auld Reekie') is the principal factor in the causation of the disease. Glisson himself, in his classical treatise

of 1650, had alluded to this factor, but no more. Two hundred and forty years were to pass before it was truly discovered, and yet another generation ere the discovery was really recognized. A more astonishing instance of human blindness could scarcely be found. But Dr. Palm survived to see his discovery universally recognized.

Finsen, in 1893, began to cure lupus by sunlight. Dr. A. Rollier, at Leysin, began in 1903 to cure all forms of 'surgical' tuberculosis, falsely so-called, by sunlight, as Bonnet had done two generations earlier; and in his great book, *La Cure de Soleil*, 1914, he published photographs showing the cure of rickets (together with other diseases in the same patient) by sunlight. The outbreak of the war caused Rollier's book to be ignored. In 1920 the German, Huldchinsky, cured rickets by artificial light, and at the beginning of 1922, after six months of public advocacy by myself, the Medical Research Council appointed a Committee on Light, as I desired, seeing that not even Rollier himself, consummate and incomparable clinician, could offer, in my view, any probable or reasonable theory of the *modus operandi* of the celestial medicine which he employed with such lovely and perfect results. The Committee has already done much valuable work; the mind of the medical profession and the public is now actively interested in a subject which has been waiting since the dawn of thought for our study—whilst we have dosed ourselves with oceans of poison and died in countless millions for lack of the light of life.

End of Rickets.—Only with its mother can a baby be usefully studied. These twain are one flesh. We have signally failed to save babies under one month old; the neo-natal mortality, as we technically call it, is almost as high as ever, and so is the rate of still-births. We have continually forgotten that babies can be completely saved and cared for only through their mothers, appointed by Nature for the purpose. Here we shall begin with the expectant mother.

The first bed in any maternity hospital in the world for the expectant mother was opened, with a brief, dignified ceremony, in the winter term, 1901-1902, at the Royal Maternity Hospital, Edinburgh, at the initiative of Dr. John W. Ballantyne, the pioneer and founder of antenatal pathology and hygiene. The first patient was a little Englishwoman from smoky Leeds with a rickety pelvis. She did not survive Caesarean section, and soon afterwards her infant died in the arms of the present writer, who was resident physician for that term. It was a tragic beginning for one of the greatest and happiest of ideas in any age.

'A rickety pelvis', 'from smoky Leeds'. A decade before that date Dr. Palm had published the truth that rickets is, above all, due to lack of sunlight—'a disease of darkness', in my more recent terminology.

The expectant mother should have had her share of sunlight in her own childhood, and her pelvis would thereafter not have been rickety. But further, as indeed Dr. Palm indicated, in

effect, in his paper of 1890, we may suppose that the expectant mother should receive enough sunlight in order to ensure the freedom of her child, at birth, from those defects in the development of the skeleton which are really identical in origin with post-natal rickets. I suggest that, in view of the work of Dr. Alfred Hess, which I have observed at first hand in New York, on the enrichment of the blood in lime and phosphorus by exposure to sunlight, we may hope to avert the robbery of calcium from the mother's teeth to serve her unborn child, and may thus make obsolete the saying, 'A tooth for every child', if we practise what I now advocate, the *helio-hygiene of pregnancy*. The expectant mother withdraws herself from the public gaze, and thus actually receives less sunlight than other women, whereas she really needs to be sunlit for two. Space fails to elaborate my thesis here; but I predict that in a decade the use of sunlight or, failing it, artificial light will be regarded as part of the due hygiene of pregnancy. It has now been proved that complete sunlight creates Vitamin D, the anti-rachitic vitamin, in the skin, whence it is absorbed for use.

After birth the infant needs sunlight, and more especially the ultra-violet rays, at about half an octave above the violet, which are the first and most obliterated by the smoke of our cities. At Columbia University, New York, Dr. Hess and his fellow-workers have shown that rickets, when properly looked for with the X-rays, is a disease of the early months of the infantile year, and that

sunlight, or even artificial light, is a specific against it. There should, of course, never be another case of rickets in the world. It is the typical disease of darkness—'*la maladie de l'ombre par excellence*', as Dr. Rollier translates my phrase. The great outstanding need of our infants in this country is their place in the sun, to which they will never be restored until we have abolished the deadly pall of coal smoke against which I have inveighed in vain, day and night, almost without ceasing, for twenty-seven years.

At the beginning of that period, say in the year 1902, infant mortality in this country was marked by a monstrous 'summer peak'—the sharp rise of the curve of mortality during the third quarter of the year—due to summer diarrhoea. There has been no real epidemic of that disease since 1911. My old slogan, 'one in seven', sounded first in 1902, is happily obsolete. The deaths now number only one in fifteen or so. If we are to make equal progress in the next twenty years, we must attack what is now the outstanding highest peak of mortality, the summer peak having gone. Nowadays the *winter* peak stands out. It is due to bronchitis, bronchopneumonia, and so forth, associated with the hibernal darkness of our cities, thanks to the curtain of infernal smoke which turns them into cold hells like no other cities now remaining upon earth. (I have been as far as Pittsburg and the Rocky Mountains in the West and Viborg in the East in this inquiry, and I speak of what I know.)

We must learn, doctors and nurses, and

parents and others, how to use the sunlight when we have it in the summer and when it is restored to us in the winter ; we must *hasten slowly*, protect eyes and head, watch each individual case, use the bronzing of the skin as our index of dosage, devise translucent clothing, value the clear early morning—in short, fear the heat and love the light, keep our children cool and bright.

End of Tuberculosis.—Infancy passed, we still have the risk of rickets, and tuberculosis becomes formidable. Whilst attending to dietetic principles we must recognize in sunlight a factor of nutrition second to none. Along the shores of the Lake of Geneva you may now see children of pre-school age and school children being regularly sun-bathed, under official auspices, on the principles of the ‘school in the sun’, which was founded by Dr. Rollier, near Leysin, in 1910. Go for your daily swim at Pully, near Lausanne, and next to you are dozens of tiny youngsters, illustrating the truth that ‘baths of water are good, baths of air are better, baths of light are best’; and enquiry shows that their parents work outside their homes, and this, in short, is the ideal day nursery. Meanwhile the tuberculosis death-rate runs down fast wherever these methods are applied. ‘Of all flowers,’ as Michelet said, ‘the human flower is that which has most need of the sun.’

Much labour and money are now being spent upon the fight against tuberculosis in this country, but there are limits to the available

supply of both. In brief, how best may our resources be expended?

Doubtless we must continue the prosecution of bacteriology. Doubtless we must provide more sanatoria and means of treatment. But are we to aim at such an object as the provision—now existent in Denmark—of 107 beds for every 100 deaths annually from the disease; say, 50,000 beds for tuberculosis in Britain? Or shall we turn from our idols or images of the cave and the laboratory and look out to the light, as he counselled, in Plato's allegory, whose eyes had been turned to the day and the sky at last?

Let us spend our labour and money on pure air and light, the abolition of slums and coal smoke, the provision of schools and holidays in the sun in summer time, the use of our lungs and our limbs, always beginning with children, in the open air, and on the fight against those who turn our cities in winter into cold hells, calling the process industry, those who imprison well children in shadow in urban schools, calling the process education, and ill children in shadow in urban hospitals, calling the process medicine. Tuberculosis is only secondarily and incidentally a bacterial disease; it is primarily an indoor disease, a deficiency disease, a social disease, a disease of darkness. Not only coal smoke but stupidity and selfish vested interest are to be impugned. The darkness is not only atmospheric, but also intellectual and moral. There is no darkness but ignorance, as Shakespeare

said. We shall have conquered tuberculosis when we have learnt and lauded, taught and practised the laws of Life, 'Whose service is perfect freedom'.

Rickets and tuberculosis I have here specially considered. They are very far indeed from being the only diseases of darkness, or from indicating the whole range of heliotherapy and helio-hygiene. One capital new discovery may be cited to give us some idea of the future range of our theme. Professor Leonard Hill, F.R.S., and Drs. A. E. Colebrook and A. Eidinow, working under the Committee on Light, have used the slide cell method of Sir Almroth Wright to new purpose. Blood withdrawn for the purpose may thus be inoculated with bacteria, and their power of growth, as after 24 hours in an incubator, can be readily estimated by the appearance of the culture. It is proved, in a word, that a single dose of light will so change the blood that bacteria—which may be streptococci, for instance—able to grow freely in it before irradiation, are now unable to do so. Before the light dose they would have destroyed the blood: after it the blood destroys them. The action is found to depend upon the phagocytes, or home-defence-army of the blood and the body. No drug in all our terrestrial, not to say infernal, pharmacopœias has the power thus proved to reside in the celestial source of all life and health and joy. Metchnikoff, the discoverer of phagocytosis, and the demonstrator of the fact that nearly all drugs relied upon by clinicians

paralyse the phagocytes, should have lived a few more years to learn of the real medicine which exalts their powers—thus, as we may believe, revealing the open secret of Rollier and Leysin. I need only remind you of the frequency of puerperal fever in our country, and of the fact that a streptococcus is the infective agent. My plea for the helio-hygiene of pregnancy will thus receive new sanction, quite apart from the questions of rickets, osteomalacia and other developmental conditions which we have already considered.

On the first of July, 1927, there came into force the Public Health (Smoke Abatement) Act, 1926, which attempts to reduce the smoke from our factory chimneys. To some extent this Act—the miserable triumph of a quarter of a century's agitation so far as I was concerned—may limit factory smoke, but in other respects it is reactionary, and it explicitly fails to deal with our new houses. But all new houses henceforth should be equipped, as they can be, for smokeless use. Science has shown us how to distil our coal instead of burning it like barbarians, and thus to get nothing but good out of it—fertilisers for fresh green food from the soil, artificial warmth and light for ourselves, and no obstruction to the Light of Life. Here's to the coming day when the prediction of Shelley will be realized:—

‘ Our toil from thought all glorious forms shall cull
To make this earth, our home, more beautiful;
And Science and her sister Poesy
Shall clothe in light the fields and cities of the
free.’

CHAPTER VIII

HEALTH OF THE CHILDREN

RIGHT DIETING IS VITAL

IN considering the diet of young children it is of vital importance that the amount of nutrient material supplied with the object of building up growth should contain a large quantity of *roughage* which is incapable of being digested, and that the roughage should form a considerable proportion of the meal.

Parents are too much inclined to give the child only such foods as are regarded as being digestible, completely oblivious of the fact that a sufficient amount of roughage is absolutely essential in order to stimulate the mucous membrane and muscular coat of the intestine into activity by forming bulk and so avoiding the stagnation of the bowel contents, which produces constipation and the very serious toxic effects which result from it. Much stress is being laid at the moment on rheumatism in young life and on its treatment, and very much too little upon the fact that only badly fed children become victims to these serious and too frequently fatal consequences of intestinal auto-intoxication.

As in most cases, the general object is to treat symptoms rather than to recognize causes and to

take the steps necessary for their prevention.

The following sentences from an independent source illustrate the vital importance of the part played by roughage in the diet of our nearest relatives, the orang-outangs. They were contained in a letter published in *The Times* of May 21st from Dr. P. Chalmers Mitchell, who is in charge of the Zoological Gardens:

‘Every effort should be made to secure that the bulk of their diet (the oranges) should be itself bulky in proportion to its nutritive value. The digestive apparatus of monkeys is adapted to a rather coarse food, and a diet of cultivated fruits, carefully prepared cereals, and so forth is wholly unsatisfactory.’

These remarks, which are applied to the diet of the monkey, are deserving of the deepest reflection when considering the diet of the growing child, and their supreme importance cannot be too strongly impressed on every member of this community.

While it is not suggested that the growing child shall receive the very primitive food required to keep the monkey in health, the vital principle involved is that while abundance of nutritious food should be given to the child, it should contain as large a proportion of roughage or indigestible material as possible. In this way the child's bowels will act regularly after each meal as do the monkey's and those of the native living in normal conditions, and the necessity of administering the innumerable irritating powerful drugs so generally advertised, often under names

which suggest simple fruits and so forth, will be avoided.

In this manner alone can constipation be eliminated. Constipation has aptly been called *the disease of diseases*, since it is the cause of all the hideous sequence of maladies peculiar to civilization.

Take one of these diseases, such as rheumatism, which is now occupying official attention so conspicuously. That it is consequent upon unsuitable food and bad habits is only too manifest. At the same time it is incapacitating or destroying very many young lives. It is also removing temporarily or permanently from the labour market a large number of wage-earners, to their detriment and loss and to that of their employers.

Do not let us miss the obvious or fail to see the forest for the trees, but as the Americans say, 'Let us get down to brass tacks.'

CHILDREN'S NEEDS NEGLECTED

Very many inquiries come to the New Health Society from parents who have already placed their children in schools or who are desirous of doing so.

They have found that in most of these establishments the food does not conform with that recommended by many books on dietetics, since their attention has been called to this important subject by articles in the *Daily Mail* and by addresses which they have attended.

They have also been surprised by the fact that the number of lavatories is ridiculously out of proportion to the number of pupils and that those in charge pay little or no attention to the importance of their use, since no sufficient time is allowed for that purpose.

Rarely is any instruction or advice given on this important subject or upon the relation which exists between food and the elimination of undigested matter.

The Society has been deeply impressed by the number of these complaints and with the difficulty of giving inquirers the information they desire—namely, where they can send their children with the satisfaction of knowing that their diet and habits will receive the attention requisite for health.

In the old-fashioned schools, usually the greatest sinners in this respect, the applications are so numerous that the authorities can afford to neglect the consideration of the health of those under their care, and meet complaints with the answer that if you are not satisfied you can take your child elsewhere. The difficulty of finding an alternative at this stage of the child's career is so great that most parents feel that the faults must be endured in the hope of their being overcome by care and attention during the excessively long holidays.

There are fortunately some heads of schools who are endeavouring to remove this slur.

THE DISEASE OF DISEASES

Owing to the articles in the *Daily Mail* calling attention to the very defective lavatory accommodation which exists in so many preparatory and public schools, both for boys and girls, a great many complaints have been received from unhappy and angry parents relating to this matter.

They state that, on making inquiry from their children, they find that the accommodation and the time allocated for the most important physiological purpose are disgracefully if not criminally insufficient.

Complaints made to those in charge met with no practical response. It would appear that in many of the older buildings space is so limited that unless some portion allocated for sleeping accommodation is converted, it is impossible to provide anything approaching sufficient lavatories for the pupils.

In some public schools the members of the board of control are aged people, who consider that any suggestion of defective sanitation is impertinent, and consequently give it no consideration. The time has surely come when the school authorities should make a return to the medical officer of health of the district of the number of pupils, the lavatory accommodation, and such time or times as may be allotted to their use.

When will the general public realize that *constipation is the disease of diseases* and that it

causes the degeneration of every tissue in the body, opening the way to all kinds of illness? Many schools are for all practical purposes hotbeds of disease, where the health of pupils is undermined, and the remainder of their lives progressively depreciated, both as regards their usefulness to the community and their happiness.

Many headmasters and mistresses realize only too well the troubles which arise from the present hopelessly defective sanitary arrangements, but because of want of funds or the stupidity or apathy of those responsible they are powerless to effect the necessary alterations.

One should not forget that that pioneer of school hygiene, Dr. Squeers, was held up to ridicule and contempt for the effort which he made to ensure the health of the children in his charge, the only recorded case of a benevolent and Mussolini-like attempt on the part of a schoolmaster to take into practical consideration the physical and mental efficiency of his pupils.

SOFT BONES AND POOR NUTRITION

The condition called 'bow legs' is due to the inability or neglect of the mother to supply her child with such food as is absolutely essential to the perfect growth of its entire body during the first year of life.

In consequence of this deficiency in diet every cell in the body suffers. The bowing of the legs is the result most conspicuous to the public, and it remains during the lifetime of the individual.

This bowing of the legs develops when the child attempts to stand and while it is learning to walk. The extent of bowing varies with the degree of malnutrition.

To the casual observer this acquired deformity of the legs is apparently the sole evidence of the condition which is popularly described as 'rickets'.

Apart, however, from bow legs, it is necessary to remember that the general softness of the bones of the skeleton due to malnutrition produces deformity of the pelvis. In proportion as the calibre of the pelvis is modified, so does the mother experience difficulty in child-birth. Even a moderate alteration in the shape of the pelvic cavity may render it impossible to permit of the passage of a living child through it. This shows how much child-birth is influenced by the character of the nourishment of the infant during the first year of its life.

The very obvious frequency of bow legs explains the difficulty which mothers experience in child-birth in civilization, as compared with the facility found in native life.

Again, the spinal column, composed as it is of vertebrae and of fibrous ligamentous discs connecting them, is, under the influence of the weight of the head, chest, and arms, telescoped in its length, and the shape of the trunk is correspondingly shortened and the figure rendered squat. The bones and cartilages forming the chest, being also abnormally soft, become changed in form if a cold or cough interferes

with the free entry of air into the lungs.

Nature, realizing that the brain is the most important portion of the child's anatomy, does its utmost to protect it from injury. This it effects by depositing a layer of bone on the outside of the softened skull-cap, so making the head large, heavy, and unwieldy. The cells forming the softer tissues which enter into the formation of the body suffer even more markedly from the deficiency in the diet, but not so obviously as do those cells which form the bony skeleton.

Therefore the most delicate and the most important of all the soft structures in the body—namely, the cells which compose the brain, spinal cord, and nervous system—suffer most. In consequence the subsequent career of the individual, in so far as it depends for its efficiency on the development of the brain, is influenced most materially by the poverty and deficiency of its nutrition during the earliest and most important period of its life.

It would not be fair to assert that those who are bow-legged possess a mentality that is lower than those whose skeleton is normal, though I believe that in advanced cases it is certainly the case; but I have no hesitation in asserting that if bow-legged people had been properly nourished during the beginning of their lives, their brains would have been better developed and they would have been more capable of competing with their fellows in the struggle for existence. The heart muscles and other organs suffer in a

corresponding manner, and the bow-legged girl pays a terrible penalty for the neglect, incapacity, and ignorance of the mother, and she in her turn produces an infant whose puny form is built on her model.

Besides the mental disability associated with bow legs are the diminution in height of the whole body, the short squat trunk and the handicap of childbirth, and innumerable other complications and diseases from which the well-fed infant is quite free. Few people realize the great responsibility which the production of children entails, and a still smaller number take such precautions before and after marriage as are requisite to render them fit mothers and capable of producing and nourishing a healthy, vigorous offspring.

It is to prevent such evils as this appalling frequency of bow legs, and of the general disability of which they are merely one indication, that the New Health Society is labouring constantly to teach the people how to live long, happy, vigorous lives free from disease. Let the health authorities realize the immense importance of health to the community, and not confine themselves to dealing with the end-results of bad feeding by means of hospitals, asylums, and gaols.

It will be infinitely more economical than the present popular laissez-aller system, or, in other words, the policy of drift.

THE PROBLEMS OF NERVOUSNESS

The term nervous is applied to children in a very casual way by parents and teachers.

Some mothers who regard the word as being a slur on the heredity of the child prefer to describe their offspring as being 'highly strung'. That it is difficult for many children to accommodate themselves to the conditions of life to which they are exposed is natural. Many nurses and parents seem to take pleasure in exhibiting them to strangers and stimulating their brains unnecessarily, in the hope that their friends and acquaintances may regard them as being very intelligent or even paragons.

A very similar condition of nervousness is shown by country visitors from some dull neighbourhood who are suddenly plunged into London, and are obliged to cross roads along which motor-cars are flying at what must appear to them to be a terrific pace in a wonderful state of confusion.

It is absolutely essential that the environment, both physical and mental, should be accommodated to the child and that no attempt should be made to accommodate the child to its environment.

The result of excessive excitement is to stimulate certain ductless organs unnaturally, so that serious changes take place in the digestion of the child and in the nutrition of its brain and other tissues. Constipation also plays a large

part in the make-up of the nervous child and exaggerates all its abnormalities.

One aspect of this nervousness is seen in an exaggerated manner in the epileptic child, whose fits are explosions of the motor functions of the brain when it is in a state of abnormal nutrition.

While many of these epileptic children are very dull and stupid, others are abnormally intelligent. Parents cannot be too careful in arranging the surroundings of their children so that they may gradually accommodate themselves to them and steadily acquire confidence in their behaviour.

That nervousness is best controlled by practice is realized by those adults who have to speak in public. Repetition alone affords them the facility for overcoming their original nervous anxiety. Even the practised speaker may become nervous if his digestion is upset.

Parents must realize that sympathy plays a vital part in the treatment of nervous manifestations. Any attempt to counteract the nervous tendency by scolding the child or by ridiculing its fears is fatal to the success of their efforts. Patience and understanding are essential if the nervous child is to be saved from its fears and anxieties.

PHYSICAL TRAINING IN OUR PUBLIC SCHOOLS

The boys in our public schools suffer from three very serious disadvantages. Their food is most unsatisfactory, as has been proved by experts who have examined the diets of several schools, and have reported fully on them. Their

sanitary arrangements are too often hopelessly insufficient, in some cases so defective as to amount to criminal neglect. Their physical training, such as it is, is carried on in the most hopelessly casual manner possible.

One of our most experienced anæsthetists said to me that perhaps what he considered his worst risk was the public school boy of about sixteen years of age, for the reason that he was badly fed, badly drained and badly trained physically. While the evidence of the faulty diets and insufficient sanitary arrangements is overwhelming and generally recognized, the public are very ill-informed as to the damage these boys sustain from excessive exercise. In Canada and in the States the greatest attention and care is given to this question, and as the result one sees magnificent physiques as a rule in those countries.

For example, in the University of Toronto the boys are collected in large buildings, where they have the advantage of a magnificent gymnasium, bathing pools, etc. They are carefully examined by medical men who are especially trained for this purpose, and they are graded as to their capacity to perform physical work. Some form of exercise is insisted on for two or three years, but it bears a definite relationship to the physique of the individual. After the boy has left his college or university, he joins a club, in which he pursues from habit such games or exercise as his physical condition permits of.

Contrast this with the arrangements in our public schools and in our old Universities. They

are usually small, antiquated, ill-constructed buildings, in which there is no sufficient accommodation or arrangements for such efficient physical training as exists on the other side of the Atlantic. There is no careful or thorough examination or classification of the boys, and it is usually left to a headmaster with no medical training to decide as to what games shall be played, or what form of exercise shall be taken in the event of a boy not wishing to play games. While some masters may occasionally consult a doctor, the majority exercise an ignorant and autocratic control which is too often productive of disastrous results to the boys under their care.

Medical men are only too familiar with the cardiac and other changes which result from this most imperfect and casual treatment, but do not display any very active interest in the matter.

I would suggest that a highly competent man be sent to such a University as that of Toronto, where he can have an opportunity of studying the very thorough supervision of the physique and exercises of the youth, and on his return to England he can stimulate the authorities of our public schools and the Government to take the matter in hand, and to deal with it thoroughly.

In England we seem to do everything in a half-hearted way, being satisfied because we occasionally secure prodigies, frequently from the Dominions, but we lack altogether that thoroughness which alone makes for success and for a healthy vigorous race. This thoroughness

accounts for the steady advance of our opponents in games of all sorts and explains the deterioration of our representatives in the field of sport.

There are two reasons for the failure of our public school system in the matter of the physical training of our youth. One is financial, in that the boys are collected in comparatively small separate buildings and we do not possess men of the great philanthropic type that exist in the Western Continent, who are sufficiently interested in the future of their race to build magnificent establishments for this purpose.

The other reason is the appalling conservatism of our people in Great Britain. I would exclude those of the Dominions. It is only the other day that they developed enough intelligence to permit of the youth of the country deriving any benefit to their health from Sunday, by permitting them to play games on that day, the only one on which the vast majority of our workers can take any exercise. Anything more devastating to physical and moral health than the mid-Victorian Sunday would be hard to imagine.

This control is limited entirely to those who most require such exercise in the open air, since the rich can and do not only spend Sundays to their greatest advantage in the open air, but they are able to indulge on other days in the week than Sunday.

However, the masses are now realizing the importance of health, and they will force those in control to permit them to lead healthier and happier lives, free from the dominating influence

which has till very recently been exerted to their disadvantage.

That this influence is employed to the very serious detriment of the physique of the boys in the public schools can be readily demonstrated by watching the way in which they spend their Sundays. They, however, unlike the boys in the working classes, get plenty of exercise during the week and do not call so much for our sympathy, however greatly one may regret the system.

Instead of limiting the opportunities for exercise of those who have got to work hard for their daily bread during the week, let us do everything in our power to encourage them to make the most of Sunday and to afford them every opportunity and facility for doing so.

HEALTH IN GIRLS' SCHOOLS

The importance of health as a necessary condition of all education has been held by educational theorists from earliest days, and 'the sound mind in the sound body' has been put before schoolmasters as the goal of their endeavour.

The formation of good habits is now seen to be the most valuable outcome of early training, whether in the moral or the physical sphere, and school life, perhaps more readily than that of the modern home, makes possible such training.

In the larger girls' schools the house system

has been generally and wisely adopted. The construction of the houses, the size and arrangement of the dormitories, the number of bathrooms and lavatories in proportion to the total number of inmates are all matters which require careful consideration. The size of the houses varies from school to school, but a house of twenty-eight to thirty girls would seem most suitable for the combination of the cheerfulness and corporate life which numbers can evoke with the possibility of that individual care which every mother would desire her daughter to receive. Each house is presided over by a housemistress, assisted usually by a matron, who is responsible for the health of the girls.

The exact number of girls in each dormitory is immaterial so long as the cubic contents of the room are correct and the ventilation is satisfactory. Some of the best dormitories I have seen are so constructed that each girl has a window in her own cubicle which is kept constantly open.

Whilst cubicles are essential for all older girls, open dormitories are for many reasons best for junior school children.

The number of lavatories in proportion to the number of inmates and the arrangement of them must be such as to ensure that girls are not kept waiting their turn; such a practice often leads to the omission of the visit, and health inevitably suffers. One lavatory for every six persons in the house is probably sufficient, though one in five is better. The position of the

lavatories as regards the rest of the house is important too, and many of the fine old country houses now adapted for schools are unsuitable in this respect. Girls are often shy of using lavatories conspicuously placed, so that the apparent number is not a reality in practice, whilst much-used lavatories in the middle of the building, in among the bedrooms, are undesirable.

Many expensive girls' schools in the past have been open to criticism in these matters, and it is doubtful even today whether all approach the accommodation demanded by the Board of Education's Regulations for Secondary Schools.

The number of bathrooms should be such as to allow of every girl having three hot baths a week and a morning cold one if desired and approved. Some schools have a special wing for bathroom and lavatory accommodation, and this seems to work very well.

'Children,' it has been said, 'are what they eat', and the question of diet is very much in our minds today. There is little excuse for ignorance when publicity campaigns are afoot, as they are today. Space will not permit that I should go into detail here: suffice it to say that diet should be both liberal and varied, and should include, every day, fresh fruit and uncooked vegetables, wholemeal or oatmeal bread, butter, cheese, and milk. Children on coming to school often evince a dislike for 'brown bread', and I have known parents foolishly complaining when this is supplied, but children very soon fall into

line and do what they see others do, and such distaste is seldom lasting. It is good to know that we need no longer insist that 'fat', that horror of our childhood, should be eaten.

At least as important as the question of what shall be eaten is the setting aside of sufficient time for purposes of digestion and for the visit to the lavatory. There should be plenty of time and no feeling of hurry between breakfast and the beginning of morning school, and girls should not be encouraged to rush out to games the moment the midday meal is over. Medical authorities now urge that children should be trained to evacuate the bowels three times a day rather than once, as has generally been the case.

The practice of working before breakfast, is, one is glad to note, being dropped in most schools; it was discontinued in many boys' schools during the War, and has not been resumed, as experience showed that the quality of the work improved, and even the quantity was not diminished, when the practice was discontinued. Boys and girls alike need a great deal of sleep, and even senior pupils do best when their lights are out by 9-30 and they are not expected to rise till 7.

The effect of menstruation during school life is important, and has been the subject of careful study; opinion is still to some extent divided, and the whole matter is once more to be submitted to investigation. A medical woman, writing in the *British Medical Journal* in 1920, gave the results

of observation of the menstrual function in 1,200 healthy schoolgirls, the larger proportion of whom were boarders. She stated as her conclusion that the majority were free from any menstrual disturbance, and that the majority was increased when no unnatural restrictions were imposed. She therefore urged that girls in normal health should be encouraged to take baths, an idea which is still regarded with mistrust in many homes, and that they should take their usual exercise.

She told these girls, who were under her supervision, that a hot bath taken at the outset of the period often relieves any slight headache or feeling of local discomfort, and a brisk walk dispels most of the unpleasant sensations connected with menstruation, whereas they are prolonged by lying down.

The advisability of exercise that might be described as violent is, however, a matter on which opinion is still divided; the wishes of the girls are in favour of it, but some doctors advise the discontinuance of gymnastics or athletics for the first two or three days of the period, whilst others feel that care is needed in the days immediately preceding it. Fresh investigation may help, and, meanwhile, experience in each individual case is the best guide.

The writer of the above-mentioned article also found that study, *per se*, had no harmful effect on menstruation, although, if pursued to the exclusion of daily exercise, it may indirectly be a contributory factor of dysmenorrhœa. With

this conclusion the experience of schoolmistresses, I believe, would accord.

Personally, I think that a rather large indulgence must be shown to 'tiresomeness' and 'crankiness' in children during the time just preceding the first onset of menstruation, and a good deal of wise liberty be allowed them.

It is, above all, important that girls should understand that menstruation is not an illness but a natural function, and that the proper thing is for them to feel well and free from pain or any unpleasant sensation.

CHAPTER IX

HEALTH IN THE HOME

SUNLIGHT LAMPS FOR TOWN DWELLERS

THE recently devised sunlight lamps form one of the greatest boons that science has afforded to humanity. They are particularly valuable to those who live in large towns where the pall of smoke blocks out those violet rays of the sun which play such a vital part in keeping the body in health. In no part of the United Kingdom do the inhabitants receive more than a fraction of the advantages of sunlight which are almost always accessible to those living in the south of Europe.

It has been demonstrated over and over again by dietitians, clinical observers, medical officers of health, and others, that the ultra-violet rays exert a wonderful influence upon the ordinary mortal and increase his vigour, energy, and enjoyment of life.

In morbid conditions resulting from bad food and bad habits they play a most important part, enabling the body to combat and destroy the organisms of disease which may have obtained a foothold. This is well recognized in that sunlight forms the essential part of the treatment of tubercular infection of any portion of the body.

When the immense advantages which are

afforded by the many lamps now on the market are generally recognized, the public will insist on their being installed in all public buildings where many people are employed. The time required for the use of the rays is so short—only a very few minutes—that it makes but a very trifling demand on the time of the employee, while it supplies him or her with a great amount of latent energy and capacity to do more and better work.

It is well to remember that the lamp should be used with great caution, and that it should not be placed too near the exposed skin. As in the case of exposure of the naked body to the sun's rays, it produces at first a redness of the skin which may result in acute inflammation of its surface and even ulceration.

Later the skin becomes pigmented, and this pigment prevents any further effect on the skin. If the rays are then used excessively, they appear to have the power of irritating the layers of fat beneath the skin and so rendering it painful and tender.

Again, those employing these lamps must not expose the eyes to the light but must use goggles. If the precautions supplied with the lamps are taken, there is no risk of harm.

Their applicability in the case of the miners, a class of men necessarily deprived of every advantage afforded by the sun's rays in their occupation, was first made practicable by Major Paget, who invoked the co-operation of the New Health Society. The very great benefit which

has been afforded to the miners by this means has been most striking.

ELECTRICITY FOR ECONOMY AND COMFORT

Electricity comes as a timely solution of the servant and other post-war problems, which for a time threatened to disturb that most potent factor in civilization—the Home; electricity provides the modern housewife with a perfect servant—clean, silent, economical. What used to be the labour of hours is now accomplished almost without effort in a matter of minutes by the large variety of electrically-driven devices now available for cleaning and polishing.

Perhaps the most popular, so far, is the electric suction sweeper, or vacuum cleaner. The electric clothes washer, not quite so well known, does the weekly wash in one-tenth the time of the old-fashioned methods, and at one-tenth the cost of laundry prices; moreover, all risk of infection is eliminated. People who have used electric washers and wringers find that their clothes last considerably longer than when the old scrubbing board and hand wringers were in use.

Small motor-driven mixers, designed like the dough-mixers of modern bakeries, but in miniature form, for the irksome duties of whisking eggs, cake-making and drink-making, will be found an invaluable aid in the kitchen. A small electric motor, also, fitted to the sewing machine, is popularizing the old-time and economical custom of repairing clothes at home without the monotonous labour of treadling.

Another popular home appliance, and deservedly so, is the electric iron; worked from the lampholder or plug it is a perfect treasure to women who take a pride in their own dainty wear and in the household draperies. The iron, switched on, heats up at once, and keeps hot as long as it is wanted. The user is able to sit down in a cool room in the pleasantest corner of the house, instead of standing beside a roaring fire in a stuffy apartment.

Lighting the Home.—The cost of lighting the home with the most scientific artificial illuminant available to man is one of the smallest items in the family budget. For instance, in many towns cottages are being lighted for from 6d. to 1s. 6d. per week, and middle-class villas for from 3s. to 4s. 6d. per week.

This statement of fact becomes an important one when the indirect economies of electric lighting are thoroughly appreciated—economies brought about by its intrinsic cleanliness, the fact that it preserves decorations and furnishings in the home.

A valuable characteristic of electricity for lighting is its extraordinary flexibility; for instance, lamps can be controlled by switches placed at any desired distance from the lighting point. By duplicating the switch points, staircases can be lighted from top or bottom, a bedroom can be lighted from the door or bedside, the cellar from the hall, the drive or gate from the porch, and so on. Moreover, these light-controls add to security against intrusion by

undesirable visitors, and are a real boon to the nervous.

Breakages and accidents, too, can be reduced by installing lamps in cupboards, pantries, cellars, stores, and other dark places—a lamp in the wardrobe is a great convenience.

Much has been said and written about the importance of selecting the right shades and fittings. Expert advice is desirable. It should be borne in mind, however, by users and prospective users of electric light, that it is light that is wanted, and not dazzle. Moreover, light should be directed to the object, and not focussed on to the eye. Various types of shades for diffusing the light can be obtained for general room lighting. Others can be obtained which concentrate the light mainly beneath the lamp for reading, sewing and similar uses.

Property owners and owner-occupiers in all parts of the country begin to realize the need for wiring all houses. Electricity is absolutely unchallenged for domestic lighting, and enhances the value of property in which it is installed.

Heating and Cooking.—Thousands of people year after year enjoying the benefits of electric lighting still fail to realize how easily they could increase their comfort and save time by employing electricity for many other purposes.

In almost every district it is possible to obtain electricity for cooking and heating at a low rate—one-fourth, perhaps, of the figure charged for lighting—because the heating and cooking and the small machines for saving work in the home

are used on and off throughout the day over long hours, whereas the lighting all comes on together for a short period at night.

For a modest increase of 10 to 20 per cent. on the lighting bill, a consumer is able to enjoy many electrical conveniences. There is a great variety of neat and robust appliances available to day—reliable in use and safe in any hands.

Consider how useful is the electric kettle. It can be put into any lampholder operated from a plug point, and will provide two or three pints of boiling water quickly in any room at any hour of the day or night. An electric milk warmer is a most valuable adjunct to the nursery—particularly at night.

Amongst other electrical devices and refinements requiring small initial outlay, and giving great comfort at little cost, are toasters, chafing dishes, immersion heaters (just the thing for warming a glass of milk or water), coffee grinders, cigar lighters and a host of other little helpers in the home.

In the Kitchen.—An electric range used regularly for cooking food in an average middle-class household, of, say, five persons, will use about one unit of electricity per person per day. For a larger family the cost will not be increased proportionately, seven persons requiring, perhaps, only six units per day. The actual amount varies, naturally, with the class of cooking practised.

There is no preparation for use; turn on the switch, and you know after a few trials how many minutes must be allowed by the clock for oven

or grill to reach cooking temperature. There is no clearing up after use; turn off the switch and no more electricity is used. The apparatus is ready to start again at any time, and most of the heat left in it can be used to warm up a vessel of water in the oven or on the boiling plates, or for any 'slow cooking' you may have in progress.

Roasting and baking of meat, poultry, pies, cakes or pastry in the electric oven give 'perfect results' every time without excessive attention or any anxiety. In a definite time, after switching on, the oven will be at the right heat, and can be kept so as long as needed. More meals from a roast can be obtained with electric cookery. In roasting there is always some loss of weight. In the electric oven this can be kept down to $1\frac{1}{2}$ to $2\frac{1}{2}$ ounces in the lb. of raw weight; with most other methods of cookery this loss is as much as 3 to 5 ounces in the lb.

GAS FOR CLEANLINESS

The pursuit of comfort and economy, the two things which most influence the householder in his choice of a fuel, involves the abandonment of raw coal. The pursuit of cleanliness involves the same thing; so that when we talk of the comfort or economy of coke or gas appliances, we imply their value as hygienic improvements.

Coke and gas are both smokeless products of coal, which are wasted when it is burned raw. How, first of all, do they affect comfort? The most formidable opposition to their use comes from the man in the arm-chair who has not tried

them. Most of us like the cheerful glow of an open fire when we come home out of the cold of a winter day. What the man in the arm-chair is only just beginning to realize is that the gas fire is an open fire and a very pleasant and comforting open fire giving the best of ventilation and the ideal form of heat—largely radiant heat. A gas fire is not the same as a coal fire, and we cannot like it any better by pretending it is. We only associate the coal fire with romance and comfort because we are used to it and will not educate ourselves to something quite as comfortable and certainly more civilized.

The gas fire has another kind of comfort—the comfort of convenience. It does away with the cleaning of flues, the carrying of coals, the constant attention which means the interruption of other housework. It may even make it possible to dispense with a servant. Gas makes a fire possible in any room at any time, a luxury which is rarely possible in a house of coal fires, on grounds both of cost and of labour.

As far as appearances are concerned, there are few people so prejudiced as to contend that a gas fire detracts from the beauty of a room. In actual fact, the modern gas fire, as any showroom will convince, is a thing of beauty; suitably chosen and well-installed, it often adds character to a hearth. Beautiful hearths are rarer than beautiful gas fires.

For those who do like to keep the hearth, and prefer to burn a solid fuel, coke, either alone or mixed with coal, is a perfectly reliable fuel.

Like most things, it must not be abused; but used in a suitable grate and properly laid, it will give out far more heat than a coal fire. It has the advantage of being lighter, bulk for bulk, than coal, and clean to handle. Those who have used it with intelligence have gone no further in the search for a solid smokeless fuel. Some, who do not mind a closed stove in the living room, have found that coke needs less attention when burned in this manner, and there are certainly many handsome models of closed coke stoves from which to choose.

In the kitchen, coke shares with gas the favour of the housewife. Coke boilers for the domestic hot water supply combine the greatest ease of management with complete independence of cooking operations. Here, again, the lightness and cleanliness of the fuel, as much as its cheapness, account for its popularity. The ideal house would probably have at least one radiator in the hall, to preserve an even temperature throughout, and this can be taken from the same boiler. When more radiators are in use, a separate coke boiler should be used. In many houses, where a separate gas or coke incinerator is not installed, the coke boiler for the hot water supply also fills the office of refuse destructor, a very necessary function which is in no way a monopoly of the coal range, as some die-hards would have us believe.

Gas, of course, is a very practical alternative to coke for heating hot water. For cooking it is excellent and needs no praise. In the

all-gas kitchen we find many other operations carried out by gas which are less well known though just as practical. Of these the wash-copper and the little internally heated iron, at opposite extremes of size, are associated together in making washing simple and unexhausting. All these things, with the increased leisure they provide and the load of housework which they remove from the housewife, make for happier and healthier homes. The cost, which compares very favourably with that of coal, is insignificant in comparison with the relief these methods give and the labour they abolish.

DOMESTIC COLD STORAGE

By Major H. A. Wernher

If there were wanting any proof to convince the sceptical of the efficacy of cold storage, there might be instanced the well-known case of the first glacial period mammoth which was discovered in New Siberian Island at the beginning of the nineteenth century. Ice had so preserved the carcase of this mammoth that, over two hundred thousand years after its decease, when it was brought to light in 1806, dogs were able to eat the flesh.

By this example it is not intended to uphold preserved mammoth flesh as a diet to be recommended, but the illustration serves to show the really wonderful preserving powers of ice and low temperature generally.

In a comparative degree cold storage in the
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home functions in a very similar way. Before pointing out its undoubted advantages, however, it will be as well to explain, in barest outline, why it is that domestic cold storage is so effective and why it should be adopted in the home.

In the first place every cubic inch of the atmosphere which is around us is the lurking place of hosts of bacteria which, in due course, settle upon our foodstuffs and at normal atmospheric temperatures produce therein noxious physical and chemical actions. Secondly, there are inherent in certain foodstuffs, particularly those containing protein, many harmful bacteria, to the growth of which normal atmospheric temperatures are most favourable. Obviously, then, we are confronted with a double danger—danger from bacteria deposited upon our foodstuffs through the medium of the atmosphere, and danger from the development of bacteria which are within the foodstuffs themselves, and the only way to minimise these dangers is either to destroy the bacteria or to curtail their activities.

There are several ways of doing this, among which are drying, the adding of chemical preservatives, boiling, and by the application of cold. Of these the application of cold, or 'refrigeration', is the most suitable and effective for the widest range of purposes, while the addition of chemical preservatives is the least desirable method in any circumstances.

In general, moist foodstuffs are the most prone to succumb to the ravages of bacteria, or, as we say, 'to go bad', and so it is that animal

and vegetable products are the most 'perishable'.

In these foodstuffs, at normal temperatures, the conditions and substance are such as are most suitable for the development of harmful bacteria. Many of these bacteria, however, are exceedingly hardy to adverse conditions. For instance, they will resist considerable heat and even mechanical drying, but for the bulk of animal and vegetable foodstuffs this form of preservation is at least undesirable, if not out of the question altogether. 'Cold', then, is the only practicable method of preventing the development of these disease-producing bacteria, and as a matter of actual fact there is a range of low temperature between 45 degrees F. and freezing point, which is a kind of 'safety area', because within these limits the activities of bacteria are practically inhibited altogether.

With these irrefutable facts in evidence it is remarkable that so many housewives have relegated the subject of domestic refrigeration to the realm of mechanics, and that they have not seemed to realize that it is a subject which has the very closest of relations to hygienic house-keeping and good health.

It must be conceded, however, that in the past the housewife has been given very little encouragement to consider the idea of refrigeration in the home. In addition to being confronted with refrigerating apparatus which required at least some mechanical knowledge to control it, she has not been given any adequate reasons why she should consider the question of

refrigeration at all. But with a full appreciation of the facts combined with the advantages offered by modern machinery, the subject of home refrigeration should take on a fresh significance.

Much has been done in the Press lately to stress the importance of refrigeration, so that the moment is now particularly apt to notice a new apparatus which makes complete refrigeration possible in any home which has a gas or electric supply and a water main. This new type of refrigerator is based upon a principle which is entirely new and different from anything which has hitherto been employed for domestic or other cold storage purposes. The apparatus does not embody a single moving working part. Its freezing unit, which is greater in efficiency than any mechanically operated plant, depends for its action upon simple physical laws governing the convection of fluids and gases. The fluids and gases concerned are hermetically sealed in a steel container, and do not call for any replenishment or adjustment at any time.

The actual 'cold' is produced by the rapid evaporation of ammonia, and this evaporation is started and maintained by the application of a little heat from the gas jet or the electric heater (whichever type is used). This heat sets up the currents of convection within the liquids in the steel container, and so long as the heat is allowed to act, so long do the fluids circulate and the ammonia evaporate to produce the 'cold'. The evaporated ammonia, of course, is collected again by the circulating fluids, and the process is con-

tinued automatically, without loss or deterioration of liquids or gas. From the water main a small stream of cold water is drawn to assist in cooling the circulating fluids; and the whole heat and water supply, and therefore the refrigeration, is controlled by the movement of a single switch.

Thus the refrigerator offers new possibilities to the housewife. It offers her a completely efficient refrigerating plant which is capable of creating and maintaining that essential 'safety area' of low temperature already described, and at the same time it banishes all necessity for her to think about valves, motors, engines or anything complicated which is liable to get out of order. Moreover, the cost of maintenance is infinitesimal.

From the description it will be gathered that this type is an admirably designed cold cupboard. There is ample room for the storage of all those foodstuffs which in the average household need protection from the action of high temperatures and humidity, and there is the added advantage that ice can be made at the same time.

It is easy to understand, therefore, that with an appreciation of the important bearing which cold storage has upon the health, it will not be long before domestic refrigeration is as generally established as electric light or central heating.

CHAPTER X

DRESSING FOR HEALTH

MODERN GIRLS' SENSIBLE DRESS

No fault can be found with the dress of the woman of the present day. It is light, scanty within the limits of decency, and of such a nature as to display the form of the wearer to the greatest advantage.

This is rendered possible by the fact that women have inured themselves to changes in temperature and to wearing clothing of a thinness that could not be endured by the average man. This probably accounts for the greater resistance to disease of the female from earliest youth, and their greater capacity for undergoing operations. This fact is very familiar to surgeons and to nurses.

The exposure of the body to light can afford the woman very great advantages. The absence of constricting corsets and tight dresses enables her to lead a much more active life than was the case in other ages. Anyone watching the rush of the shop girls at closing time to catch an omnibus cannot but be struck by the wonderful agility and activity which the dress permits.

Again, the costume lends itself to a great variety of colours which add largely to the gaiety of life, rendering the wearer much more attractive. Another point of great importance is

that the dress of the girl is very light in weight and compares most favourably with the very heavy, thick, stiff clothing of the male.

The shortness of the hair of the modern girl is a very distinct advantage, for it can be kept really clean and neat. It is, however, unfortunate that the keeping of the hair in constant order is an exceedingly costly business.

It is probable that the intelligence and ingenuity of the sex will supply some means by which this cost can be avoided and that the ugly shaving of the back of the neck which some girls find necessary can be rendered unnecessary. To most men this last part of the toilet of the woman is most distasteful and unnecessary.

VALUE OF ARTIFICIAL SILK

It is fortunate for women that their constantly changing fashions maintain in them a readiness for progress. They have thus achieved an immense advantage over men in the healthy and sanitary character of their clothing.

Men's dress is notoriously too heavy, and it is positively unhealthy, especially in the summer months. It would be an excellent thing for this country if men could be persuaded to adopt the custom of the Americans, who have devised an excellent type of thin cloth, called after their famous health resort 'Palm Beach'.

This satisfies every requirement of health while at the same time possessing the property of retaining its fashionable cut.

We have practically rid ourselves of the frock coat and the silk hat, and are nearly emancipated from the morning coat. A great opportunity is now offered to women of converting men to the use of the healthier kinds of clothing which they themselves have so happily adopted.

It is essential to health that the clothing worn next the skin should admit of the free passage of air through its texture and should not retain in excess the heat of the body. Clothing which hinders natural evaporation is bad for health.

If woollen fabrics are used for underclothing they should be of light weight and loose texture. In summer advantage should be taken of the fact that artificial silk freely admits the ultra-violet rays of the sun. It provides an excellent material for sport and open-air life.

THE 'STRANGLE COLLAR'

At the request of the Editor of the 'Daily Mail', I have secured from a well-known medical man the following informative statement concerning the danger of over-tight clothing:

Hot summer weather, especially when it comes suddenly, invariably brings its toll of collapses on the golf links. These accidents are usually attributed to the heat of the sun—a sort of sunstroke.

Such may be the true explanation, but not often. There is generally at least one other factor, the most common being a tight collar.

Few men now play golf in starched linen collars; fashion prescribes a soft one. The trouble arises from the fact that the theoretical advantages of softness in neck-wear, the quality of yielding to the movements of the head, are completely nullified by the manner in which the collar is made and worn. It is so constructed that it meets, to overlap, well above the Adam's apple, and is retained in that elevated position by a tie so tightly drawn as to act as a strangle-band.

The blood-supply to the brain is a very generous one, and the arteries which carry the blood to the brain and the veins which conduct it away from the brain lie very near the surface—immediately under the skin of the neck, in fact.

If, therefore, the neck is constricted, the circulation of the blood in the brain and the normal ebb and flow to and from that important organ are seriously interfered with.

There is an inevitable holding back of the impure venous blood in very important areas, with the result that a very mild degree of exposure to strong sunshine will bring about certain alarming results which would never occur if the neck were unconstricted.

Nor is this the whole of the sad story. Beneath the skin of the narrow isthmus which is called the neck there are certain very important nerves and glands, and these, too, suffer from the tourniquet action of the tight soft collar and still tighter silken tie.

In comparison with the production of collapse it may seem a minor matter that the strangle soft

collar should be responsible for a muddy complexion and a pimply face. But yet the fact is worth insisting upon, for man, being essentially a vain animal, will often sacrifice fashion on the shrine of his vanity when no consideration of health or comfort would have the slightest effect in moving him to such a course.

CHAPTER XI

GLAND CONTROL OF BODY AND MIND

The attention which is now being given to all questions relating to health has suggested that a short article dealing with the ductless glands would prove of public interest.

The following description has been written by an expert on this subject.

The Work of the Ductless Glands.—Situated in various parts of the body are to be found certain glands which, from the fact that many of them have no ducts or passages down which to pour their juices, are known as ductless glands. The products of these glands have been called internal secretions. There are also in the body other structures manufacturing chemicals which are poured directly into the blood-stream, and not into some structure *via* a duct.

All those glands which secrete directly into the blood are included under the heading ductless glands. The best known is the thyroid. This is situated in the neck, in close apposition to the thyroid cartilage, or Adam's apple.

The *cretin* is a child born without a thyroid, or with deficient thyroidal secretion. Such children are deficient in normal development, both physical and mental. The condition is apt to occur in mountainous or hilly districts, such as the Alps and the Himalayas. The exact causation

is not as yet accurately determined; but, allowing for hereditary factors, the disease appears to depend upon faulty nutrition and infections.

Goitre is a swelling of the thyroid and may be present in several different forms. One variety is associated with prominent eyes and marked nervousness; and this has been shown to be predisposed to by poisoning, especially that originating in some part of the digestive tract. The importance of careful feeding and attention to the functions of the bowel cannot be too much emphasized in any disorder of the thyroid gland.

The pituitary gland is situated at the base of the brain, and, like the thyroid, is intimately concerned in the regulation of the nutrition of the body. Particularly during the years of growth is the work of this gland of great importance. It has been shown that stature largely depends upon the pituitary.

Deficiency of this gland leads to under-developed individuals, with sleepy, sluggish minds and fat, inert bodies. Charles Dickens, in describing the Fat Boy, gave an extraordinarily exact picture of a child suffering from too little pituitary secretion.

Diet and the Ductless Glands.—Large individuals, especially giants—that is, men and women of 7 feet in height and upwards—owe their size to an over-active pituitary. Later in life—when growth has ceased—the gland usually becomes exhausted, and the individual suffers from symptoms directly dependent upon pituitary deficiency.

There are, situated in the abdomen above each kidney, two small organs known as the suprarenal or adrenal glands. These are, with the thyroid and pituitary, of great importance in the bodily economy. Their removal or destruction by disease leads to death; damage to their function leads to ill-health of a serious kind.

It has been shown that all the ductless glands, being highly specialized tissues, are very susceptible to any cause which renders the blood impure. Local sources of poisons, such as occur in many parts of the body, dislocate their functions and disturb their smooth working.

The ductless glands must be regarded as a chain of highly important organs, situated in various parts of the body, each contributing its specific product to the blood stream.

If, therefore, each individual secretion is essential to the attainment and preservation of perfect health, the reverse is equally true. Each of the ductless glands requires good clean blood if it is to perform its allotted duty successfully.

As is now beginning to be realized, this can only be achieved by a correct, well-balanced diet. Experiments have shown that the secretion of the thyroid, for example, can be altered, both in quantity and quality, by varying the diet. An adequate diet produces adequate secretion; a diet lacking in one or more of the essentials leads to deficient output from the gland. This, in turn, may result in widespread disturbances of the bodily functions, and in many and various diseases,

CHAPTER XII

CARE OF THE EYES

The great interest shown by readers of the 'Daily Mail' in articles dealing with the care of the principal organs of the body has encouraged me to arrange for others, written by eminent specialists in all cases.

Mr. Percy Dunn, the well-known oculist and editor of the 'Franco-British Medical Review', has kindly supplied me with a short series on the care of the eyes and the prevention of various forms of disease in that organ.

DANGERS OF NEGLECT

THE strenuous demands of education in these days necessarily require close attention to be paid to the eyesight, especially in the young. Conveniently the subject may be dealt with from two standpoints—first, in relation to the diseases of the eye which come under common observation, and secondly, in relation to the defects in the construction of the eye which call for optical treatment for their correction.

It has to be remembered that the nutrition of the eye is delicately adjusted; that is to say, it is easily disturbed by a loss of general health in children. When therefore a child suffers from malnutrition, the effects of which are accentuated by an unhealthy, unhygienic environment, the eyes may be the first sign of trouble.

In such a case an eye may be seen to be inflamed, causing the child to rub it frequently to relieve the irritation.

Next, exposure of the eye to light becomes painful and the lids must be kept continually closed.

At this stage advice may be sought, and expert examination reveals that the cornea, the transparent forepart of the external coat of the organ, has become ulcerated. There is consequently involved a serious danger to the integrity of the eyesight, for should the ulceration have extended into the deeper layers of the cornea, healing can only take place by the formation of tissue which is opaque. The corneal structure, in order to fulfil its function of admitting light to the interior of the eye, must be absolutely transparent, and in the case of the loss of this transparency in the centre of the line of vision, no demonstration or explanation is needed to show how seriously this will affect the vision.

In after years the opacity, being permanent, may come under the notice of the ophthalmic surgeon when examining a patient for defective sight, and generally the patient is able to recall that in childhood one or both eyes required treatment.

CHILDREN'S EYE TROUBLE

The maintenance of good general health during the educational period of children must be regarded as a matter of essential importance so far as the eyesight is concerned.

It is in infancy, too, that the greatest peril threatens the eyes. The eyes at birth are often exposed to infection from virulent micro-organisms causing purulent *conjunctivitis*, officially known as 'ophthalmia neo-natorum'.

In former days this was responsible for 30 per cent. of all cases of blindness. Even in these days, under highly elaborated precautions and treatment, the disease exacts a toll which shows its continued, though reduced, malign influence.

Of the acute infective diseases, the eyes of children are exposed to the evil effects of small-pox and measles. With regard to the former, anti-vaccinationists should note that before the introduction of vaccination many persons became the victims of either partial or complete loss of sight from the disease, owing to the cornea becoming inflamed and the inflammation being followed by ulceration.

In measles corneal ulcers are also liable to occur—a troublesome form, again, of purulent inflammation of the conjunctiva. The mucous coat of the eye sometimes becomes acutely inflamed in measles, and this under bad hygienic conditions may lead to serious secondary infection from virulent micro-organisms, imperilling the integrity of the cornea. Any signs of inflammation of the eyes in children who suffer from whooping cough should at once receive careful attention.

After some children begin school work, irritation of the eyelids may become observable. Apart from the local discomfort, the lids are

liable to pass into a condition of chronic inflammation, with marked redness at their edges, accompanied by a discharge which collects among the eyelashes and dries during the night so that the eyes have to be bathed in the morning before the lids can be opened. In the majority of cases this must be regarded as a symptom pointing to some error of refraction, inducing eye-strain, for which optical relief must be provided.

INFLUENCE OF SELF-POISONING ON VISION

The maintenance of physical fitness by athletes is a problem of permanent interest. Mr. Percy Dunn here contributes a novel and most significant view of the relation between self-poisoning through wrong diet and the eyesight of athletes. Through the observed effect of such conditions upon the vision, Mr. Percy Dunn traces the causes and their prevention.

Athletes and their Off Days.—The athlete who has reached the championship stage must be at the top of his form upon all such occasions. Nevertheless, on the day of a great contest, without knowing why, he may become conscious of something wrong. He may do his best to shake that sinister feeling off. Still the feeling remains. At length it becomes an obsession, and the proof that he is not mistaken is revealed by his failure to reach his best form.

A subtle cause accounts for his experience—something which has slightly disturbed his balance, something, indeed, so slight as to be

unaccompanied by any discoverable signs. So far as he knows his health is normal. Still, he is conscious that the 'high steam pressure' of his capacity and alertness is, in some degree, lacking.

In all games the mind and the body must act in close harmony. If the body is temporarily at fault, it fails to call into activity the full measure of the powers of the mind. Thus it is that even easy putts in golf are liable to be missed, owing to an unusual disturbance of the judgment of distance and the exact force necessary for the accomplishment of the stroke. A temporary disturbance of vision at cricket may diminish the batsman's power to follow accurately the flight of the ball. Similar misadventures may occur in tennis, billiards, steeplechasing, flying, football, shooting and boxing.

The explanation in all such cases is the existence of a mild form of toxæmia, due to some temporary intestinal disturbance. This, technically speaking, is blood rendered impure by a poison invariably derived from putrefactive changes in the intestinal canal.

It is destructive to healthy nutrition generally. In mild cases it usually escapes notice, and it is only after it has persisted for some time and manifested itself directly by becoming the active factor in the causation of various diseases that measures are taken to deal with it. Before reaching this stage, however, it must have interfered greatly with championship results.

Blood, impure in the least degree, cannot ensure healthy nutrition in the tissues it supplies.

Take, for example, the heart muscle. What is known as 'heart strain' in athletic contests is probably attributable to the effects of impure blood. Again, so-called 'stitch', the exact explanation of which has still to be determined, may in some way be assigned to toxic blood of intestinal origin.

These observations have not been conceived from mere empirical deductions, but upon the sure foundation of the advance of scientific knowledge. The putrefactive changes which occur in the intestinal canal are due to toxic organisms—bacteria, which gain access to the body through the food. The toxins they evolve are absorbed by the blood, and are thus conveyed to all parts of the body.

The evil effects of this blood poisoning are reflected upon every tissue, causing disturbance of nutrition, and in every instance tend to subvert the defensive forces of nature against infections—the provision which ensures what is known as 'good resistance'.

But the deleterious influences of intestinal toxæmia are not confined to the physical manifestations with which they are associated. Not infrequently they assume an emotional character. Some people, for example, begin the day's work in an apparently inexcusable state of irritability.

Without knowing the cause, or how to disperse the sudden invasion of a state bordering upon misery, they have in reality fallen a prey to the temporary infliction of intestinal toxæmia, corresponding to that which, in former days,

was ascribed to 'biliousness' or 'a touch of the liver'.

In support of this view, there is the confirmation of Sir W. Arbuthnot Lane, who claims that 'one of the most serious symptoms which result from the damage to the nervous tissues by toxins is the want of control over the temper, which makes the sufferer very difficult to live with'.

But while science has exposed the evils of intestinal toxæmia, it has also solved the difficult problem of how to deal with it—namely, by destroying the bacteria to which the putrefactive changes in the intestinal canal are due; for intestinal disinfection is an accomplished fact. The treatment is perfectly simple and has been known to medical men for some years.

Expediency, therefore, suggests that every player of games, amateur or professional, who has experienced the symptoms above set forth, should make a point of seeking medical advice for the purpose of being relieved of the disability of which he has good reason to complain.

SHORT SIGHT AND SQUINT

By Percy Dunn, F.R.C.S.

Perfect optical vision implies that parallel rays of light entering the eye are exactly focussed upon the retina—the expansion of the optic nerve at the back of the eye—while the eye is in a state of rest.

In order to effect this, the construction of the eye must be normal. If such is not the case, some

visual defect is the result, and eye-strain is the inevitable sequel. Thus in some cases the antero-posterior axis of the eye is too short—in other words, the parallel rays of light are brought to a focus behind the retina: this is technically known as hypermetropia.

In other cases the rays of light come to a focus in front of the retina—technically this is known as myopia or short sight.

Thirdly, without more particularly describing them, there are the cases of what are called astigmatism, due generally to some spherical alteration of the corneal surface.

Of these three chief defects hypermetropia is by far the most frequent; it may be described as congenital, and is not infrequently hereditary.

In young children it is the cause of the development of internal squint, which, if taken in time, can by special treatment be cured without operation.

The history of this deformity shows that, in former days, the only method of dealing with it was to compel children to sit in front of a mirror and spend two hours daily in trying to get their eyes straight. Failure to do so was punished by a whipping.

Then came the operative stage, of dividing the contracted muscle. But the technique of the procedure was faulty; so much so, that afterwards many eyes developed an external squint in place of the internal one.

The eye-strain caused by reading, writing, sewing, and other forms of close use of the eyes

involves pain in the eyes, headaches, congestion of the conjunctiva, blinking and blurring of the near vision, of which hypermetropia is the cause. For the relief of this convex lenses are required, the strength of which is determined by testing the vision.

In all cases of squint in children the glasses must be worn constantly. Myopia, or short sight, is a more serious proposition in relation to the optical defects of the eye, partly because—should the necessary correction be neglected—it is prone to become progressive and proceed to destructive changes in the structure of the eye. Indistinct vision at a distance is the chief symptom. Little notice, however, may be taken of this, since near work is possible without causing any discomfort. In the worse cases the distant vision becomes very imperfect, and pain may be experienced after near use; the eyes tire easily, and black spots before the eyes may be complained of.

LAMPS THAT HELP THE EYES

To the vast majority of the public the lighting of the rooms in which they live and work is a matter of the most vital importance.

It is therefore a striking fact that the subject of illumination is hardly ever dealt with scientifically. Either the candle-power is insufficient, or the lamps are placed in altogether unsuitable positions, or open filament lamps which dazzle the eyes are used.

In most cases the matter is left to a builder or decorator who has no knowledge of the laws

of light and still less of the manner in which unsuitable lights in bad positions are responsible for so much discomfort, mental irritation, headache, and indeed for very much definite disease of this age.

Manufacturers of electric lamps have devoted an immense amount of time to evolving the best forms of lamp. By covering the globe with a thin translucent layer of china clay, which cuts off only 4 or 5 per cent. of the candle-power, the glare of the incandescent filament is removed and a great difference in the character of the light results.

This advantage may be accentuated and also rendered more attractive by colouring the clay. Orange, yellow, green, blue and flame tints are the colours that are most popular, varying with the taste of the individual and the decoration of the room. When used in private houses especially they serve to soothe the eyes and brain, over-stimulated and somewhat exhausted after a long day's work.

Internal 'frosting', again, by the action of a powerful acid, produces a lamp costing no more than the older glaring filament lamp, while it effectually screens the filament and totally eliminates glare and dazzle.

To the writer and student so largely dependent upon artificial light, this type of lamp will be a great boon, since it frees him from so many of the harassing and expensive results of glare, dazzle, or imperfect illumination, the curse of the last century.

CHAPTER XIII

PREVENTION OF DEAFNESS

ADENOIDS IN CHILDHOOD

One of the most eminent ear specialists in London has very kindly furnished at my request the following articles on the prevention of deafness:

DEAFNESS is still one of the great problems of medicine, and we have not made much advance in its treatment since the 'sixties', when the great aurist Sir William Wilde said, in an aphorism worthy of his son the ill-fated dramatist, 'There are two kinds of deafness—the one is due to wax and is curable; the other is not due to wax and is not curable.'

It was only the other day that a well-known aural specialist, when asked what he did for cases of *otosclerosis* (an intractable form of deafness), said that he sent them to his enemies.

Deafness may be due to an affection of the outer ear passage of the so-called 'middle ear' (behind the ear drum and in communication with the throat by the Eustachian tube) or of the inner ear (the nerve of hearing and its terminations in the delicate organ of hearing, buried in the temporal bone of the skull).

Wax is the usual cause of deafness from

obstruction in the outer ear passage, and is easily removed; catarrh and inflammation are the usual causes of middle-ear deafness and will be discussed at length later; and certain drugs (especially large doses of quinine and of tobacco) and certain diseases (influenza, syphilis, and mumps, which have a special effect on the nerve of hearing) are the usual causes of inner-ear deafness.

Of all cases of deafness, however, about 95 per cent. are due to middle-ear causes (catarrh and inflammation), and there is no doubt that most cases of chronic deafness in adult life began as adenoids in childhood.

To prevent deafness, therefore, adenoids must be recognized and properly treated in childhood. In the general recognition of this fact lies the great hope for the prevention of deafness in the future.

A child with adenoids is easily known; the open mouth, thick lower lip and stupid look are characteristic; on looking into the mouth one sees the palate has a high Gothic arch, and the teeth are irregular and crowded together; the child is a mouth-breather, snores at night, often catches cold, often wets the bed, is flat-chested, and sometimes has enlarged glands of the neck.

Adenoids may be present at any age in childhood, and usually begin to disappear after puberty. But a child may be born with adenoids present, though they are usually observed about the ages of three to six or seven years.

CAUSES OF ADENOIDS

It is obvious from the list of serious disabilities that follow the presence of adenoids that this complaint means more than just an enlarged little pad of tonsil-like tissue between the nose and the throat.

It seems difficult to believe that such a long train of serious symptoms should arise from this comparatively insignificant cause, even though it does make a child breathe through its mouth instead of through its nose. There are various theories to account for the development of adenoids, and probably not all cases of adenoids arise from precisely the same cause.

For example, a severe 'cold' or scarlet fever or measles may all cause a permanent enlargement of the postnasal pad which is called 'adenoids'. Again, the baby's 'comforter' has been rightly blamed for causing adenoids sometimes—not because it is constantly held in the mouth, but because it is an unclean thing and causes a septic condition of the mouth and throat, breeding germs that cause the adenoids.

The best informed opinion today, however, is that most cases of adenoids are related to rickets, and are due, above all other causes, to deficiencies in feeding. But, one may object, how then can a child be born with adenoids present, when the cause is a deficiency in feeding? The answer is that the deficiency is not only in the feeding of the child who has the adenoids but also in the

feeding of the mother and father who produced that child.

It is a curious fact that in prosperous communities like Great Britain, the United States of America, Australia, and New Zealand, the climates of which are favourable on the whole to health, adenoids are most common among the children.

In New Zealand, perhaps the most generally prosperous middle-class community in the world, the infantile mortality is lower than in any other country, the children are well known to be well cared for and healthy in other respects, yet adenoids are extremely common. The reason is that in New Zealand, as in Great Britain, America, and the other English-speaking countries, starch (carbohydrates) has been the foundation of the food of the children of the present and of past generations.

PREVENTION OF ADENOIDS

To have said bluntly, at the beginning of these articles on deafness, that the work of the New Health Society in regard to feeding was the chief hope for the prevention of deafness in future generations might have seemed an exaggeration, but we have allowed the facts to speak for themselves.

Adenoids in childhood are the most common cause of deafness in adults; the most common cause of adenoids is deficiency in dietary caused by too starchy feeding of children, both today and in the past.

As for the treatment of adenoids once they are present, that is another matter. Up to the present there is no known cure except operation, completely carried out by an expert. When operation is proposed, parents often object (and very rightly—no one wants an operation if it can possibly be avoided): they say that the adenoids will disappear as the child gets older, or that the adenoids will grow again, or that the child is in poor health and will not stand the operation.

The answers to these objections are: (1) although the adenoids will disappear by adult life, the mischief they have done (flat chest, facial deformities, and especially deafness) will remain behind; (2) the adenoids will not grow again if they have been expertly removed; (3) one of the reasons for the child's ill-health is the presence of the adenoids, and the health will not improve until the adenoids are removed.

In the present state of our knowledge, a parent whose child has adenoids must turn deaf ears to those advisers who suggest, as substitutes for operative treatment, such remedies as nasal drill, breathing exercises, iodine, vaccines, artificial sunlight, and so on. Such methods are of no value once adenoids are recognized to be present, however valuable they may be in other circumstances.

To sum up, therefore: the only hope for the prevention of deafness is the prevention of its causes, and of all these causes the most important is adenoids in childhood, the original source of which is intestinal auto-intoxication, i.e. self-poisoning through constipation.

CHAPTER XIV

CARE OF THE NERVES

A well-known London doctor of great practical experience, one of the founders of the New Health Society, has kindly furnished me with two articles on the important subject of the care of the nerves.

HOW SOME PEOPLE SUCCEED

INDIVIDUALS vary enormously in what we may call, for want of a better word, 'driving power'. Our American friends call it 'pep'.

We see on the one hand a man or woman radiating energy into every activity of life, into every bodily movement, pushing through life with both arms outstretched to grasp every opportunity as it arises, filling his or her life with ever new interests, always scheming and planning.

On the other hand we see men and women drifting through life, letting their opportunities go by ungrasped, lacking interests, never thinking for themselves, but swayed by every new influence, tired and depressed, and knowing nothing of the joy of living.

We cannot all be Napoleons. Much depends on heredity, on climate, on racial tendencies. Some are born to be leaders of men, others to be led.

But few of us make the most of the nervous energy with which we are endowed at birth. Childhood is usually for all of us a period of superabundant vitality, overflowing with energy and enjoyment. All too soon this vitality becomes sapped.

The cause of this failure to sustain the nervous energy with which we are born is often-times a slow, steady poisoning of the nervous system, the result of harbouring micro-organisms in some part of the body. It is our old friend 'focal infection', to which we have traced rheumatism and many other manifestations of ill-health.

It is true that many individuals with poor general health possess exceptional ability and capacity for work. Robert Louis Stevenson, Lord Curzon, and Carlyle may be quoted as examples. We can only wonder what the world has lost because such men were so greatly handicapped.

Then, too, we have to recognize that many of us are spendthrifts of nervous energy. We live on our capital; we work our nerve cells—our accumulators—to a low ebb and fail to replenish them with the proper sources of fresh energy.

The best type of nervous system can exhaust itself by the constant sapping of nervous energy with too infrequent periods of rest; much more so a second-rate nervous system. It has been well said that, compared with other animals, man does not know how to rest. Animals showing great vitality and activity sleep and rest more often and more profoundly than we do.

HOW FAILURES ARE BRED

Nervous exhaustion, or neurasthenia, is a very common condition in civilized communities.

The neurasthenic is unstable, unreliable, lacking in self-control, lazy or energetic by fits and starts, too easily depressed or excitable.

Another type is always tired, lacking in energy, discontented, irritable; he worries over trifles and is no good to himself or to others.

The first-mentioned are often mentally brilliant and sometimes possess genius and creative power. Heredity plays an important part. Education is, however, a more potent factor. Much nervous instability originates in faulty methods of education and faulty environment in early life. Proper feeding of the growing child is of the greatest importance in building up a strong, stable nervous system.

A badly nourished child is naughty, peevish, irritable, easily tired, sleeps badly, and will tend to grow up into a nervous individual. Criminal tendencies not infrequently owe their growth to improper feeding in early life.

In adult life the nervous system similarly requires the right kind of nourishment. Mineral salts and vitamins play an important part in building and repairing the nerve cells and nerve fibres. The abuse of stimulants and narcotics such as tea, coffee, alcohol, and tobacco, has a serious effect on the central nervous system. They act as cumulative poisons when taken in

excess—though excess for one person may not be so for others.

The worst kind of nerve poisoning is due to toxins produced by micro-organisms, or by abnormal chemical products absorbed from the waste material of the food as it lies in a sluggish bowel. Constipation induces all kinds of nervous disorder.

So-called 'biliousness', with its well-known depression, sense of fatigue and good-for-nothingness, is due to poisons from the bowel which our bodies have failed to deal with.

Foci, or centres of infection, in the teeth, tonsils, or bowel are responsible for much nervous disorder. Even actual insanity may be caused by, and may often be cured by the removal of, such a source of chronic infection.

Finally, proper hours of sleep, rest, and relaxation, both mental and bodily, are necessary if we are to preserve our nervous energy. To learn to rest is a lesson greatly needed in these days of haste, noise, and excitement.

CHAPTER XV

PREVENTION OF BALDNESS

PERHAPS nothing is so distressing to the man who is still young than the discovery that his hair is becoming thin on the top of his head, and that the applications, chemical, mechanical, or electrical, so highly lauded by his hairdresser, result in little or no improvement.

We will do well to consider the conditions which in most cases are responsible for the production of the atrophy of the hair follicles, upon the vigour and health of which the growth of the hair depends.

There are three factors at work in bringing about this wasting of the skin and of the hair of the scalp. The primary cause is one upon which the nutrition of every tissue in the body depends, namely, the use of such food as will supply the cells with nutrition and will establish a normal functioning of the digestive system. In practically every case of baldness arising early in adult life, the food and habits of the individual are markedly at fault.

It is hopeless to expect any real results from any local treatment to the scalp till the nutrition of this, and indeed any other portion of the body, is dealt with thoroughly. Therefore, the sufferer must consult his medical attendant, who will from time to time consider with him the

best means of effecting a perfect functioning of his digestive system by food and by exercise, avoiding constipation even in its mildest form with the greatest care.

The second factor is to eliminate any such constriction of the blood supply of the scalp as results from wearing a tightly-fitting hat. The top hat and the older types of heavy bowler were responsible for much interference with the free circulation of healthy blood in that portion of the body since the scalp is placed at a mechanical disadvantage from the point of view of gravity. Those who served in the recent War are only too painfully familiar with the fact that the tin hat produced or accentuated previously existing baldness in a very marked manner.

The third factor in producing a lowered nutrition and vitality of the scalp is the absence of the rays of the sun, since in civilization it is customary to prevent the healthy action of even the occasional glimpses of sunshine with which our climate is sometimes favoured.

Attention to these three factors will in many cases afford excellent results. It should be realised that incipient baldness is an indication of a general defective condition of the nutrition of the entire body and is an indication to investigate the manner in which that most important drainage scheme is behaving.

CHAPTER XVI

SUPERSTITIONS ABOUT HEALTH

WE moderns are too apt to sneer at the medical and surgical treatment of the ancients.

We imagine that, as the ancients had no powerful microscopes, X-rays apparatus, and so on, they were ignorant, and that their treatment was merely based upon superstition. A lecturer can easily arouse the hilarity of his audience by telling them that the doctors of the Dark Ages used toads for medicinal purposes. Actually the toad, though perhaps disgusting to most of us, produces two drugs of the very greatest curative value in the large oval glands behind the ears. One contains a secretion equivalent to adrenalin, which is indispensable in some operations, and the other produces a substance equivalent to digitalis, which is irreplaceable in treating heart disease.

I intend to consider medication of the past not with sneers but with respectful admiration.

In the London Museum, behind St. James's Palace, there is a prehistoric skull about 20,000 years old which has clearly been carefully trepanned, opening up the brain over a surface as large as a shilling. Thus 20,000 years ago the ancients, using stone knives, knew how to open the skull. Wherever skulls of the Stone Age are found we find trepanned examples, indicating that the openings produced were healed and that the patients survived.

Very likely some primitive form of antiseptics was used 20,000 years before Lister and Pasteur; and anæsthetics were used thousands of years ago. That is apparent from Homer, the Bible, the ancient Hindu writings, and the writings of Pliny and Dioscorides.

Bacteriology is a science of yesterday. Exact knowledge of germ diseases requires the use of powerful microscopes. However, the ancients knew far more about bacteriology than most of us would believe. Only a few decades ago we discovered that malaria and yellow fever are carried by mosquitoes, and that bubonic plague is spread by rats infested by fleas, which carry the specific micro-organism.

A Babylonian clay tablet, baked over 3,000 years ago, bears in cuneiform signs the name of the 'Fever-Fly', and in the First Book of Samuel we read, in chapters V. and VI., a vivid account of bubonic plague among the Philistines.

The Greek Health Temples contained sacred snakes. Æsculapius, the God of Healing, was depicted as accompanied by one of these snakes. The ancient Greeks pitted the snake against the plague-carrying rat, exactly as the Egyptians pitted the sacred cat against the mouse, and the sacred ibis against the 'winged snakes' of the irrigation canals, which carry formidable parasites hostile to man.

Vaccination and inoculation are as old as civilization. They were practised by the Hindus and Chinese thousands of years ago. Many of

our most potent herbal and chemical remedies were used continually from the dawn of history.

The most modern forms of treatment are treatment with glandular extracts, treatment by sunlight and open air, treatment by faith, and psychological treatment. From the writing of the ancient Greeks and Romans we know that glandular treatment in a crude form was currently used from the dawn of history. The great Greek hospitals were at the same time devoted to religious service and to medical treatment.

The ancients were far better supplied with sun-baths than we are at the present moment. Even in the sunny lands of Greece and Rome 'solaria' (sun-bathing establishments) were universal. Pliny the Elder wrote *Sol est remediorum maximum* (the sun is the greatest remedy of all).

Ancient Rome was far better supplied with water and public baths than modern London. The ancients, like us moderns, combated fever by draining towns and marshes. The greatest physicians of the past, among them Hippocrates, the Father of Medicine, recognized that prevention is better than cure. They anticipated the teachings of the New Health Society, and we can learn a great deal by studying their writings.

Maxims of Hippocrates.—If we read Hippocrates we find many maxims which ought to be learned by heart, not only by every layman but by every doctor. I would quote a few taken from the most celebrated work of Hippocrates, his 'Aphorisms', which were apparently written about 2,300 years ago :

‘Purgative medicines agree ill with persons in good health. Persons in good health quickly lose their strength by taking purgative medicines or by using bad food.’

‘Neither repletion nor fasting nor anything else is good if carried to excess.’

‘When more food than is proper has been taken it occasions disease.’

As the *Daily Mail* has frequently advocated the use of wholemeal bread and of a wise diet, it is worth while to quote to its readers Hippocrates’s views, as expressed in his book, *Ancient Medicine*:

‘To the human body it makes a great difference whether the bread be made of fine flour or coarse, whether of wheat with the bran or without the bran, whether mixed with much water or little water, whether strongly kneaded or little kneaded, whether thoroughly baked or underdone—and a multitude of similar differences. Whoever pays no attention to these things or who pays attention to them without full knowledge, cannot understand the diseases which befall men.’

‘Strength, growth and nourishment result from right food. It appears to be necessary 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.’

CHAPTER XVII

LIFE EXTENSION

PREVENTION AS OPPOSED TO TREATMENT

SURELY the time has arrived when the public must realize that the present relationship of the medical profession to them is not only unsatisfactory but also extravagant in the extreme.

It is extravagant from a financial standpoint, it is even more so from an intellectual or moral aspect. The cost of an illness or of an operation is considerable, while the mental anguish entailed by illness is very great. To the rich the financial expenditure involved is trifling, but in regard to the illness itself they are by no means free from anxiety. To those in moderate circumstances the cost of medical and nursing services may be so great as to cripple their financial position, perhaps for years.

No sane person would think of treating his motor-car in a similar manner. A skilled chauffeur attends to the purity of the petrol and of the oil supplied to it, and to the absolute cleanliness of every detail. In this way the machine is kept in perfect order, and can be relied on to do its work as long as the texture of its several parts remains intact—in other words, till it is worn out.

While the owner of the car takes all these precautions to ensure that his car shall be always in

perfect running condition, and that it shall last as long as possible, how little attention does he devote to the care of his own body! He has rarely any knowledge of the nature of the food he should eat, and of the vital importance of the regular evacuation of the decomposing food lying in his own digestive system and of the necessity to take regular and sufficient exercise.

Instead of employing an expert medical adviser to examine him, and to discuss at regular intervals with him any defects in his diet, exercise and drainage schemes, he eats such foods as are placed before him, choosing especially such as he considers appetizing and tasty. Too often he takes irritating purgatives to meet his stupid action.

It is not till some portion of the human machine has become defective in consequence and till it is crying aloud, as manifested by pain, discomfort, inability to work, or misery, that he thinks it necessary to call in the doctor. Can anything be more utterly futile and silly than this procedure?

A wise man will make some arrangement with his medical attendant that he and the members of his family shall be examined at fixed and regular intervals, so that any fault whatever may be recognized and dealt with promptly.

The advantage of such a procedure is demonstrated in the clearest manner possible by the great success that has resulted from the activities of the Life Extension Society of New York, whose president, Mr. Harold A. Ley, has just

been over at his own expense with the object of interesting our insurance companies in the advantages of regular examination of their clients, and to induce them to benefit equally with the insurance companies in the States.

The cost of the systematic examination at regular intervals of the members of the public would be small as compared to that entailed by a breakdown of the machinery, while the enjoyment of life and the capacity to do work would be enormously enhanced by it.

REGULAR TESTS OF HEALTH

Roosevelt initiated the thorough medical examination of every officer and every man in the American Army and Navy once a year, and at a subsequent period this very complete annual examination was extended to the members of their families in this way under the ægis of Dr. Gorgas.

A great movement was thus evolved which resulted in a very marked and progressive improvement in the health of every branch of the naval and military services of the United States, together with that of their wives and children. These medical examinations are obligatory and are made by the medical officers of the services, who have every possible equipment afforded to them for making complete records of the state of health of every individual, male and female.

This information has been given to us by

Admiral Cary Greyson, who will be remembered as physician to President Taft and later to President Woodrow Wilson. He is intensely sympathetic to the method of systematic health examination, and applies the same principle to his own life with great advantage.

It would be interesting to know how far such a system has been initiated by or adopted in the services of this country since if it is not the case it would seem advisable, because of somewhat unsatisfactory reports which are current as to the health of the Navy. To this there is the marked exception of the extremely thorough examination of the military and civil air pilots every six months.

It is obvious that such a system of health supervision as obtains in the services of the United States, carried on authoritatively, will form a most important stepping-stone to that of the general public.

PERIODICAL EXAMINATION FOR ASSURANCE COMPANIES

By Sir Bruce Bruce-Porter

It has always been a puzzle to me why Assurance Companies do not arrange and pay for periodic examinations of their assured persons when the sum is over a moderate amount. If you possess valuable jewellery and insure it, periodic examination of the setting is the rule. Surely there are no jewels so precious as life and health. There can be little doubt that practically

every man and woman in the country would have their life span increased by a yearly medical examination with advice. Even those who might be excluded from such a sweeping statement, i.e., those who die by accident, would in many cases have been saved the accident had they been in good health and so alert. Many fatal accidents are due to lack of mental alertness.

In the case of Companies carrying policies for large sums, my contention is easy of explanation.

If an assured person is paying on a policy of £10,000 at 4 per cent. rate, the premium would be £400 a year, and if that life were prolonged a year, you could add to that £400 at least £400 for the value to the Company of the policy money being still in their hands. You have therefore a value of £800 for each year during which that life can be maintained. What is the equivalent in medical examinations? The most dangerous life-shortening diseases are the insidious ones of the kidneys and blood vessels, which give no warning before they have gravely damaged the organs concerned; early recognition and treatment can prolong such lives, not by one, but by many years. The only stipulation an assured person would need to insist on is that the findings of the examination shall be confidential as between doctor and patient.

It is human nature that a man who is under examination for purpose of being insured will put forward the best side of his health in order that he may be accepted at ordinary rates, and as he may wish at some time to increase his in-

surance he will hesitate about placing his cards of ill-health face upwards on the examiner's table if they are to be exposed to the Actuary of the Company; whereas if he is seeking help, all cards are likely to be turned face up. The Companies may contend that if they pay for the examination, they are entitled to know what is found. Such an outlook is short-sighted, as under such conditions the examinations will not be submitted to. The benefit to the Companies is the one I have pointed out. Extension of life pays them infinitely more than they pay for the examination.

The greatest Assurance Company, I suppose, in the world is the Metropolitan of New York, with some 25 million policyholders. The whole concern has been built up on the foundations laid by the late Mr. Haley Fiske, and in view of the millions of assured people who are on their lists in U.S.A. and Canada this Company has spent millions of dollars on health teaching.

The Company is not a philanthropic society but a business one, run by hard-headed business men, but because of their power of imagination they can see far ahead and have been content to spend the money and await the harvest.

In these days of mechanical transport it should be unnecessary to stress the value of periodic examination of the human machine, but if we are to judge by the expectation-of-life statistics, it is evident the need for periodic examination has not yet been borne in on our people. It is more than strange, with the colossal experiment of the great

Assurance Company I have alluded to, ready to hand for all to study, that there is so little imitation by our great English Companies.

Hesitation might be understandable if, in our conservative England, the directors of old-established Companies were asked to depart from the accustomed habit of their office to try an experiment; but the experiment has been tried for them. From the ordinary 4,000,000 policyholders some 350,000 examinations have been made by the New York Life Institutes, and in this group the death rate has been 18 per cent. below the actual mortality of all ordinary policyholders who could properly be compared with them.

Mr. Haley Fiske told me when discussing the work of preventative character of his Company that the money expended on examinations has returned over 100 per cent. In one year 17,000 policyholders were examined. The impairments found were astonishing in number, and many quite unsuspected by the policyholder. About 20 per cent. were found to have some form of heart trouble. Thirteen per cent. were found over-weight, and in this group more than half required medical or surgical treatment.

Surely, these figures alone would prove the need for medical guidance at the expense of the companies, as it is obvious that these lives must be prolonged by guidance; and this was proved by the New York Life Assurance, whose records show that on re-examination 60 per cent. of those examined showed definite improvement or correc-

tion of impairments. If Assurance Companies were to take advantage of the knowledge possessed by the medical profession in the simple laws of health, and of their ability to detect early signs of the common diseases which reduce the life span, they could count with certainty on such a lengthening of life for their policyholders as would allow them either to reduce the premium rate or increase the bonuses.

So much for the value of periodic examinations to the Assurance Companies: we turn to the value to the general public.

The Metropolitan Assurance Company of New York have about 41,000 employees. These are submitted to compulsory medical examination once a year and to dental examination twice a year. Their general health is cared for so far as educational and recreation developments can contribute, and the home office staff have luncheon provided.

The sickness and mortality experiences of these groups have demonstrated the value to the Company of the money expended in these ways. The effect of example has led other organizations to copy the Metropolitan Assurance Company, with great benefit to the shareholders as well as the employees. What must this form of work lead to, so far as the medical profession is concerned? I have heard men who would be counted prominent in their own branch of the profession express their view of the duties of the doctor in such a way as to make one wonder if they had wandered by mistake into the ranks of the

profession: they took the line that the duty of the doctor was to cure illness and not to interfere in the work of prevention or in instructing the public. Doctoring means teaching, and the highest form of medical work is to teach the people how to avoid illness.

Wherever large groups of men and women have been examined, evidence of unfitness has been found in practically every person. It may vary in degree, but the defect is there.

The National Service examinations brought this fact out very prominently indeed. A proper appreciation by the medical profession of these facts and application of the lessons learnt would mean teaching the public how to gain lost health. Today the profession think too much in terms of 'ill-health', and the public wait till their machines are working so badly that discomfort or pain compels them to seek advice.

There are not enough medical men in England to carry out a proper survey of health conditions, and this without counting the number of surgeons and specialists who would be fully occupied in dealing with known defects calling for treatment!

The advantages to the medical profession would be full employment in helping the people to maintain health, and not, as at present, in treating symptoms or in handing out medicines to cure diseases the diagnoses of which are too often made by the patient and his friends in advance.

How much more pleasant for the doctor to be

consulted on health maintenance, knowing the persons under his care are looking forward to their annual check up with interest, rather than being called in when illness has laid the head of the family low and the expenses of a long illness are being met out of a reduced income.

In short, the present situation is that the Assurance Company, having agreed to pay a lump sum on the death of an individual who pays a yearly premium, ceases to take interest in that person's health once the contract is signed, though it is obvious each year of life is to it double the value of the premium paid.

To pay a reasonable fee for that person being examined and warned of life-shortening habits, often contracted during early middle life, would seem a sensible procedure. The general public who pay an engineer to overhaul their motor engines neglect skilled examination of their own organs. This does not seem very rational.

It does not savour of high professional ideals, for any member of the medical profession to wait for the ignorance of the general public on health matters to bring about disaster, and then earn a livelihood attempting to remedy a condition of disease which could have been prevented by timely warning.



SIR W. ARBUTHNOT LANE, BART., C.B.

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