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MODERN DIETARY TREATMENT

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BY

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SECOND 

EDITION

LONDON

BAILLIÈRE, TINDALL AND COX

7 & 8 Henrietta Street, Covent Garden

1940

PRINTED IN GREAT BRITAIN

FOREWORD TO THE FIRST EDITION

THE rapid advance of the science of nutrition shows clearly that the practical application of its principles is necessary in order to achieve full health in any community, and to treat the diseased members with success. The whole subject of nutrition has been revolutionised in the last fifteen years by the advances which have been made in our knowledge of vitamins and mineral metabolism, and by the great improvements that have been brought about in methods of food analysis.

Miss Widdowson and Miss Abrahams have set out to make this new knowledge available for practitioners, nurses and dietitians in a simple and practical way. The first part of the book is concerned with the general principles of dietetics, and is clear and easily understood. The second part deals with the different diseases in which dietary treatment is necessary, and explains the reasons for the type of food employed. The third section gives full details

and examples of diets suitable for patients suffering from these diseases, and is especially valuable because of the variety of dishes provided. For instance, many ulcer cases grow very tired of milk, but the description of the great variety of ways in which milk can be disguised should help to relieve monotony.

Perhaps the chief merit of the book lies in the excellent tables, which are so arranged that the planning of accurate yet varied diets is relatively simple. Information as to the composition of English foods, both raw and cooked, has been placed on an entirely new basis by the analyses which have recently been carried out and published under the auspices of the Medical Research Council, and these new values are incorporated both in the tables and the diets. The book should prove one of the most useful of its scope and size.

G. GRAHAM.
R. D. LAWRENCE.

LONDON,
March, 1937.

PREFACE TO THE SECOND EDITION

THE dietary treatment of disease is continually being changed and improved, and it has been our aim in preparing a revised edition of this book to take account of recent advances in the subject. Thus, diabetic diets for use with protamine zinc insulin have been added, and the dietary management of gastric ulcer and hyperchlorhydria has been brought up-to-date. A diet for jejunostomy is also included, with instructions for its administration. The section dealing with the treatment of Addison's disease by low potassium diets has been amplified, and a low phosphorus diet for hypoparathyroidism is described. Ketogenic diets, on the other hand, have been omitted, since they are now almost obsolete.

The tables of the composition of foods have been greatly extended, by kind permission of His Majesty's Stationery Office. More foods are included, and values are now given for sulphur and for acid base balance. Approximate

vitamin values are also given. The composition of a number of cooked dishes, prepared according to standard recipes, is shown, and suggestions are made as to their incorporation in diabetic diets.

MARGERY ABRAHAMS.
ELSIE M. WIDDOWSON.

CAMBRIDGE,
May, 1940.

ACKNOWLEDGMENTS

IT would be impossible adequately to express our thanks to all those who have assisted us, either directly or indirectly, in the preparation of this book. We owe most of our inspiration to the long tradition and high standards in the two great hospitals in which we have worked. To Dr. G. Graham of St. Bartholomew's Hospital and Dr. R. A. McCance of The Department of Medicine, Cambridge we owe our special thanks for the valuable advice and criticism which they have given us, enabling us to bring our work into line with modern medical knowledge.

Dr. R. D. Lawrence, Professor L. J. Witts and Dr. C. Newman have also rendered us much assistance, particularly in those fields in which they have specialised, and with their kind permission we are able to publish some of their diets.

The late Dr. W. M. Feldman kindly advised us on the section dealing with Jewish dietary laws. Miss Phyllis Newland has devoted much time

and care to the checking of diets and recipes, and Mrs. Marion Ettlinger has greatly eased our task by the able way in which she has typed our manuscript.

MARGERY ABRAHAMS.
ELSIE M. WIDDOWSON.

CAMBRIDGE,
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CHAPTER I

THE PRINCIPLES OF NUTRITION

I

The Constituents of the Normal Diet

Scientific research during recent years has emphasised the importance of correct nutrition in human welfare. Up till a few years ago it was generally assumed that if people had sufficient food to satisfy their appetites they could be considered adequately nourished. Whatever disease or ill-health existed was attributed to heredity or environment, or to some other factor in which nutrition played no part. We now realise that the mere satisfaction of appetite is not enough. Details are of the utmost significance. The absence of substances which add almost nothing to the bulk of the food may make the whole difference between health and disease and even between

life and death. A great deal of ill-health and inefficiency has in the past been due without doubt to faulty nutrition. Improvements in the health of the nation have come about in recent times as a consequence of our improved habits of feeding. As an example of this, reference may be made to rickets. About fifty years ago severe rickets was very prevalent in our large towns, and, as a result, many people suffered from bow-legs, knock-knees and crooked limbs, and were often crippled for life. To-day rickets is a comparatively rare disease. This is partly due to a more open-air life, but much more still to the revolutionary changes in the diet of infants. Rickets was so common fifty years ago because many artificially fed babies were brought up largely on floury substitutes for milk, and on skimmed evaporated milk. To-day such children are usually fed on fresh whole milk, supplemented with cod-liver oil and orange juice. Advances such as this in the health of the community are still too little appreciated by the general public, and scientific knowledge about nutrition needs to be much more widely disseminated.

The most obvious function of food is to supply the new material which is required for growth. A baby should double his birth weight in the

first six months of his life, and treble it in the first year. An adult's weight is about twenty times his birth weight, so that food has much to accomplish. A C3 diet builds a C3 child and a C3 adult. Besides obvious physical ill-health, a great deal of dental disease may be traced to defective diet during childhood. Even in adults who have ceased to grow, the tissues of the body continually undergo slight changes—old cells become worn out and broken down and new ones take their place.

Tissue repair, however, uses up only a very small proportion of what is eaten. The bulk of the food still remains to be accounted for. Most adults eat about 4 lb. of food every day, and yet they do not increase in weight. What happens to all this food? In the first place, about two-thirds of it is nothing more than water. Bread contains about 40 per cent. of water, meat 70 per cent., and most fruits and vegetables nearly 90 per cent. The intake of dry food is therefore about 20 oz. a day. Unless a person is putting on fat, or gaining flesh, the whole of this is burned in the body within twenty-four hours. The energy derived from the combustion of the food is used to keep all the cells of the body alive and active. Some of the energy appears as muscular move-

ment. Every muscular movement, whether voluntary like walking, or involuntary like the beating of the heart, uses up energy, and this energy is obtained by the combustion of the food.

Food also supplies energy for the various secretions of the body. A great deal of the energy derived from the food, however, appears as heat. This heat maintains the body at 98·4° F., a temperature considerably above that of the surrounding atmosphere, and heat is continually being lost from the body to the cooler air. The body temperature would rise much higher if it were not for the heat-regulating mechanisms which maintain it at or about that level. If a person were completely insulated against heat loss he would in fact reach boiling point in about two days!

The constituents of an ordinary diet may be divided into six classes:

1. Carbohydrates.
2. Fats.
3. Proteins.
4. Mineral salts.
5. Vitamins.
6. Water.

Of these, the first three, carbohydrates, fats, and proteins, are the fuel or energy-producing substances. The fuel value of a food is measured

in *Calories*. A Calorie is defined as "the amount of heat required to raise the temperature of 1 litre of water (about 1¾ pints) through 1° C. (1·8° F.)." A special apparatus called a calorimeter has been devised for the measurement of calorific values. A known weight of carbohydrate, fat, or protein is burned in the calorimeter and the heat that it gives out can be measured. It has been proved that the amount of heat given out by a fat or carbohydrate in the calorimeter is the same as the amount it gives out when burned in the body, while for a protein a correction has to be made, since combustion is more complete in the calorimeter than in the body. It has been determined that—

1 gram of carbohydrate gives 4·1 Calories, *or*
1 oz. carbohydrate gives 116 Calories.

1 gram of fat gives 9·3 Calories, *or*
1 oz. fat gives 264 Calories.

1 gram protein gives 4·1 Calories, *or*
1 oz. protein gives 116 Calories.

1 gram of alcohol gives 7·0 Calories, *or*
1 oz. alcohol gives 200 Calories.

The following list shows the comparative calorific values of some common foodstuffs. Each portion will give 100 Calories. The smaller

the weight, therefore, the higher the calorific value of that particular food.

Butter	½ oz.
Bacon, fried	⅔ oz.
Chocolate	⅔ oz.
Sugar	⅘ oz.
Bread	1½ oz.
Beef, roast	1½ oz.
Eggs	1½ eggs
Potatoes, boiled	4 oz.
Milk	5 oz.
Apples	9 oz.
Tomatoes	20 oz.
Cabbage	50 oz.

CARBOHYDRATES

Carbohydrates are composed of carbon, hydrogen, and oxygen, and their use is mainly as fuel, but in small quantities they play a vital part in cell structure and in the production of immunity. Carbohydrates may be divided into two main classes, simple soluble carbohydrates or sugars, and less soluble complex carbohydrates such as starch, cellulose, etc. The sugars may again be subdivided into the simpler monosaccharides and the disaccharides. The latter consist of two monosaccharide molecules linked together.

Simple Carbohydrates. Sugars

Monosaccharides.

Glucose or dextrose. This is the sugar which is present in the blood, and it is the substance to which all carbohydrate in the food is ultimately converted. Glucose occurs naturally in fruits and vegetables and in honey. Its use has increased rapidly during the last few years, partly because it requires no digestion and is rapidly absorbed, and partly because it is not quite so sweet as cane sugar and therefore can be added in larger amounts to fluid diets without spoiling their flavour.

Fructose or lævulose also occurs in fruits and in honey. It is absorbed as such, but appears to be converted to glucose soon afterwards.

Disaccharides.

Cane sugar or sucrose. This consists of a glucose molecule and a fructose molecule linked together. It occurs naturally in the sugar cane and sugar beet, from which it is prepared commercially. It is also present in many fruits and vegetables. Syrup and treacle contain about 70 per cent. of cane sugar.

Lactose is the sugar which is present in milk. It is a disaccharide, each molecule consisting of

one glucose and one galactose molecule. It is not very sweet, and it is therefore often used to increase the Calorie value of infants' and invalids' diets.

Maltose consists of two molecules of glucose. It is formed by the hydrolysis or fermentation of starch. Malt extracts and foods prepared from them contain varying amounts of maltose, and this sugar is also present in beer and stout.

Complex Carbohydrates

Starch. Starch is a polysaccharide consisting of a large number of glucose molecules combined together. Cereal foods, flour, rice, oatmeal, etc., contain 70 to 90 per cent. of starch. It is also found in many vegetables, especially potatoes, parsnips, peas and beans, and in chestnuts, and unripe bananas.

Sugars and starch, which may be termed " available " carbohydrates, are all of approximately equal nutritive value, and so long as the digestive system is in good order it matters little in which form the carbohydrate is taken. Infants are not usually given starchy foods until they are six months old.

Cellulose forms the cell walls of plants, and whole cereals and vegetables contain large amounts. It is of little direct nutritive value

to man, as the human alimentary tract contains no enzymes capable of digesting it. Its main function is to form part of the so-called " roughage " which is beneficial for the normal functioning of the digestive tract.

Other complex carbohydrates. Besides starch and cellulose, other complex carbohydrates occur in plant foodstuffs, *e.g.* inulin in artichokes and pectin in fruits. Nuts also contain considerable amounts of various polysaccharides. Very little is known as to the availability of these carbohydrates to the human body.

FATS

Fats are composed of carbon, hydrogen, and oxygen. Some of the complicated fat-like substances such as lecithin, which is present in brain and other nervous tissue, contain phosphorus and nitrogen as well.

Fats are foods with a high fuel value, since 1 gram of fat provides more than twice as many Calories as 1 gram of carbohydrate or of protein. It was formerly thought that the fat in food was only used as a source of energy, but it is now realised that fats enter into many vital processes, *e.g.* the construction of cell walls and nervous tissue. Some of the fat taken in the food may be used for such purposes. It

is known, however, that the body can convert carbohydrate to fat and that very low fat diets are compatible with health over long periods of time.

Each molecule of a simple fat consists of glycerol united to three "fatty acids." The basis of the fatty acid structure is a chain of four to sixteen, eighteen, or twenty carbon atoms—always an even number. When fats are burned in the body the carbon atoms are broken off two at a time, so that the last stage is the splitting of the four-carbon residue into two equal halves. It is this which fails when carbohydrates are not being metabolised, and it is the presence of these half-broken four-carbon residues in the blood which gives rise to ketosis.

Fat foods may be derived from animal or vegetable sources. Butter, lard, dripping, suet, and fat of meat are typical animal fats. Cheese, eggs, and some fish also contain fat. Vegetable fats include olive oil and some kinds of margarine, and most frying oil used commercially is derived from vegetable sources. Many nuts contain a high percentage of fat.

PROTEINS

Proteins contain carbon, hydrogen, oxygen, and nitrogen. They are essential for building

and repairing every tissue of the body, and are also a source of fuel or Calories. Animals cannot build up their own body proteins from simple inorganic materials as plants can, and hence they require an adequate supply of proteins in their food.

There are many different proteins in animals and plants, but they are similar to one another in that they are all built up by the combination of a number of simpler chemical units. The latter are termed amino-acids, and each contains one or more atoms of nitrogen. More than twenty different amino-acids have been isolated, and these are present in varying proportions in the different proteins. At least six of these acids have been proved to be absolutely essential for the maintenance of health, and a protein which contains each one of these in adequate amounts could be used as the sole source of nitrogen in the diet.

Proteins derived from animal sources—meat, fish, milk, cheese, and eggs—approximate more nearly to human flesh protein than the proteins derived from vegetable sources, and they contain all the essential amino-acids. They are often called "first-class proteins." Gelatin, however, is incomplete, for it contains no tryptophane, which is one of the essential

amino-acids. Proteins in plant foods are present in much smaller quantities than in animal foods. They often contain inadequate amounts of some of the essential amino-acids, and they are frequently called " second-class proteins."

In the ordinary mixed diet protein is derived from a variety of sources, and the shortage of an amino-acid from one particular food is made up by its presence in ample amount in another.

MINERALS

In our bodies there are at least fourteen different mineral elements, and each one is essential for life. About one-twentieth of the body weight consists of mineral matter, and an adult's bones alone contain approximately 6 lb. Mineral salts are lost from the body daily through the kidneys and skin and in the fæces, and these losses must be replaced from the food, but the mineral salts, like the vitamins, are not taken into consideration when calculating the fuel or energy value of a diet. Relatively small amounts only of these salts are required, but they are of such importance that death results if these small amounts are withheld. Thus, up to ½ oz. of common salt, or sodium chloride, is discharged daily from the

body, and there is a daily loss of sulphates and phosphates of about $\frac{1}{6}$ oz.

The mineral salts may be considered to perform certain functions in the body.

1. They build up the bones and the teeth.
2. They are an essential constituent of every cell in the body, and they must be present in the correct proportions.
3. They form an integral part of all the circulating fluids in the body, the blood and the lymph, the spinal fluids and the digestive juices. These fluids bathe all the cells and supply the necessary acidity and alkalinity of the digestive juices and blood.

In children the intake of mineral salts *must* exceed the excretion if normal growth is to continue.

The minerals in the body are sodium, potassium, calcium, magnesium, iron, copper, manganese, zinc, chlorine, bromine, iodine, phosphorus, sulphur, and one or two others which are also present in very minute quantities.

From the dietetic point of view, the most important minerals are those of which there is likely to be a shortage. These are calcium and iron and, in some districts, iodine. If the diet

provides for these in adequate amounts the other minerals can usually be left to look after themselves.

The amount of each mineral which is present in different foods varies a great deal. A food which is a good source of one mineral element is often a poor source of another. Milk, for instance, is rich in calcium and phosphorus, but contains only a small percentage of iron.

Calcium. The body contains about 6 lb. of calcium phosphate, and this is present mainly in the bones and teeth. An abundant supply of calcium and phosphorus are obviously needed whenever active bone growth is taking place. Calcium also is necessary for the clotting of the blood after injury, and for maintaining the rhythmic action of the heart. The metabolism of calcium is regulated by the parathyroid glands and also by vitamin D.

Foods rich in calcium are cheese, milk, eggs, green-leaf vegetables, and nuts. For detailed list see pp. 34–37 and Table I, p. 301.

Phosphorus. Although a large part of the phosphorus in the body is present in the bones, it exists there in a relatively inert form. It is present in every other tissue of the body, it plays a rôle in carbohydrate and fat metabolism, and forms an integral part of the nerve sheaths

and muscle cells. In short, wherever there is life there is phosphorus.

Flesh foods of all kinds, milk, eggs, and cheese all contain abundant supplies of phosphorus in a form which is available to the body. Some plant foods are rich in phosphorus, notably whole cereals, nuts, and pulses. About half the phosphorus in these foods, however, has recently been shown to be present in a form which is not metabolised by the body, but passes through the intestine without being absorbed. None the less, the supply of phosphorus in an ordinary mixed diet is usually ample. Some table salts contain small amounts of calcium and magnesium phosphates.

Iron. Most of the iron in the body is to be found in the blood as part of the red pigment, hæmoglobin. The remainder is scattered throughout the cells of the body and plays an important part in their respiration.

A deficiency of iron leads to a deficiency of hæmoglobin and this gives rise to anæmia. Anæmia is not always due to a deficiency of iron in the diet, but iron deficiency, if sufficiently prolonged and severe, invariably leads to anæmia. The daily requirement of iron for both men and women is about 10 to 15 mg. Women lose about 15 per cent. of the month's

intake of iron during menstruation, so that the consequences of an inadequate supply will show themselves more rapidly in women than in men.

A new-born baby has a store of iron in its liver, and in addition it has a higher concentration of hæmoglobin, and hence of iron, in its blood than an older child or an adult. The iron from this extra hæmoglobin is set free soon after birth, and it also acts as a reserve to tide the baby over while it is on a milk diet containing very little iron. In spite of this, however, babies are apt to become anæmic. The anæmia can be prevented or cured by giving very large doses of iron. This treatment cannot be considered to be in any sense physiological, though it does appear to have beneficial effects on the general health and resistance to infection.

The main sources of iron are meat, especially liver, eggs, brown bread and green vegetables. A detailed list is given on pp. 34–37 and in Table I, p. 301.

It has been known for a long time that both organic and inorganic compounds of iron were to be found in foodstuffs, and it was originally thought that it was the organic iron which was the more valuable fraction. Some of this organic

iron, however, has now been shown to be present in hæmoglobin-like compounds, which are not absorbed as such and which are not broken down by the digestive enzymes. The availability of this iron, therefore, becomes a matter of considerable doubt. Most inorganic compounds of iron, on the other hand, are usually considered to be readily available. A chemical method has been devised for the determination of inorganic, "available" iron. Table XIII, p. 348, shows the inorganic available iron in a number of foods, expressed as a percentage of the total iron. The whole question of availability, however, is still in the melting-pot, and it must be emphasised that these figures are not final, but only serve as a rough guide to the availability of iron in foodstuffs.

Copper may be considered with iron. It has recently been found that for the prevention and cure of anæmia, copper is essential as well as iron. The daily requirement of copper has not been definitely discovered, but the quantity is certainly very minute. There is no evidence of a likelihood of copper deficiency in diets that are otherwise adequate.

Sodium and chlorine may be considered together since the supplies of these elements are obtained mainly in the form of sodium

chloride or common salt, of which about 10 to 15 grams are usually taken daily.

Inside the body, however, some of the sodium and chlorine part company. About a quarter of the sodium in the blood is present there as the alkaline sodium bicarbonate and the chlorine previously combined with this sodium has been excreted in the urine. Chlorine is separated from sodium in the walls of the stomach, and is secreted as hydrochloric acid in the gastric juice. The sodium left behind is combined with bicarbonate and secreted in the pancreatic juice.

Milk contains enough sodium and chlorine for the growing baby, and on animal foods alone it would be quite possible to live in temperate climates without added salt. People who live in the tropics and workers in hot atmospheres lose a great deal of sodium chloride in their sweat. If they do not take sufficient salt to make good this loss they may suffer from cramps and other signs of salt deficiency. Plant foods contain much less sodium than animal foods and relatively more potassium. The amount of potassium in a fruit or vegetable may be a hundred times the amount of sodium, and only the merest traces of chlorine may be present.

Potassium is an essential constituent of all the cells in the body. It is, however, unnecessary to consider it in human diets because there is no fear of a deficiency, and an excess is easily removed through the kidneys.

Magnesium. Magnesium is one of the essential inorganic elements, and comparatively large amounts of it are required. The muscles, for example, and most of the soft tissues contain about three times as much magnesium as calcium, and the bones contain a little. It is used by the body in phosphate and carbohydrate metabolism.

When young animals are totally deprived of magnesium, lesions of the blood-vessels and nervous system soon appear. Chronic shortage leads to defective bones and teeth, but human deficiencies need not be anticipated, for all foods contain salts of this metal and they are readily absorbed.

Sulphur. Sulphur is derived mainly from two of the amino-acids in the food, cystine and methionene, and diets adequate in protein will be adequate in sulphur. The sulphur-containing amino-acids are needed for the formation of many of the body proteins, particularly the hair and the nails. Cystine, as the active fraction of the glutathione molecule, plays a part

in some of the oxidations which the cells of the body carry out, and it forms a part of one of the acids contained in the bile.

Most of the sulphur in the food is converted to sulphates and excreted as such by the kidney.

Iodine. Iodine is needed for the formation of thyroxin, the active principle of the thyroid gland, which governs the rate at which food is burned in the body, and which is a controlling factor in the growth and changes of the body from infancy to adult life.

A deficiency of iodine, which occurs chiefly in certain inland regions such as Switzerland and the central parts of the United States, may lead to simple goitre amongst girls at puberty, and this may recur during pregnancy. Iodine taken in minute quantities cures this condition in the mother if given in time, and prevents her children from being born cretins, with arrested mental and physical growth and development.

The chief sources of iodine are probably the sea, the soil, and the drinking water. Vegetables, especially those grown near the sea, and all fish and seaweeds, contain iodine. The sea contains considerable amounts, but in the manufacture of table salt the iodine is

refined away, and ordinary table salt contains none.

The actual amount of iodine required is very, very minute: $\frac{1}{20,000}$ gram a day or $\frac{1}{50}$ gram a year is quite sufficient for the adult. Children need rather more, especially at puberty and other periods of rapid growth, and should probably receive about $\frac{1}{6,000}$ gram a day.

So long as a mixed diet containing sea-fish is eaten, iodine will be taken in sufficient amounts.

VITAMINS

The most interesting feature in the advance of the science of nutrition made during the last twenty years has been the discovery of a number of previously unknown food constituents which exercise a powerful influence on health. It has been established that there are a number of disorders known as " deficiency diseases " which are caused, not by the presence of germs, but by the absence of some constituent from the food. Experiments have shown that these deficiency diseases can be produced or prevented at will in animals by withholding certain nutriments from them, or by including them in the diet. Serious deficiency diseases in

this country are rare to-day, but mild cases are more common than is usually supposed. In the Orient and in southern parts of Europe and North America, deficiency diseases are still a scourge.

Some people appear to regard vitamin deficiency diseases even in this country as a subject demanding serious attention. Cases of night-blindness have been reported in the depressed areas of Northumberland and Durham, and rare cases of pellagra have been discovered.

Every year 0·17 per cent. of our population suffers from diphtheria and 0·16 per cent. develop tuberculosis, yet these diseases appear to be too common to be worthy of mention except in the reports of the Medical Officers of Health.

Even if 100 cases of night blindness per annum do occur this is affecting only 0·00025 per cent. of the population, an almost insignificant proportion when compared with the figures quoted above for the incidence of two diseases which are just as serious. The danger of vitamin deficiency diseases in this country appears to have been rather over-emphasised. Malnutrition as a whole presents a far more serious problem.

In 1906 Sir F. G. Hopkins performed some

classical feeding experiments on rats. He fed them on purified preparations of protein, fat, carbohydrate and salt mixture in the right proportions, but the rats did not grow. If a small quantity of milk or *fresh* tissue was added to the diet the rats developed in the normal way. He suggested that there was a vital something which was present in fresh foods, and which was absent from his purified preparations of protein, fat, and carbohydrate. He did not know whether one or more substances were supplied in the fresh food, nor had he any idea of their chemical nature, so he spoke of them as "accessory food factors." Hopkins' work was really a continuation of that of a number of earlier investigators, but he was one of the first to bring conviction to his fellow-scientists.

These vital substances, which were found to be several in number, were given the name "vitamines" in 1912. So little was known about them that the problem of naming them was a difficult one. They had no popular names so they were merely given letters of the alphabet —A, B, and C—and were renamed "vitamins" soon afterwards. Later it was found that what was originally thought to be one substance, vitamin A, was really two entirely

different substances, and vitamin D was introduced. Similarly, vitamin B has proved to consist of a number of different substances, and the existence of another factor, vitamin E, has since been discovered.

Vitamin A. This is a " fat soluble " vitamin which is present in the fat of foods. Animal fats, except lard, are excellent sources of vitamin A, and include cod- and halibut -liver oils, butter, cream, milk, egg yolk, and fat fish such as the herring. Vegetable fats, on the other hand, contain little or no vitamin A.

There are two ways in which vitamin A is obtained. One is by eating animal fats that contain it. The second is by eating fruits and vegetables that contain a yellow colouring matter called carotene. This is present in all yellow fruits and vegetables, notably in carrots, from which it derives its name, but also in peaches, apricots, oranges and swedes, and in tomatoes and green-leaf vegetables. In tomatoes the yellow colour of the carotene is masked by a red pigment, and in leaves by the green chlorophyll. The amount of carotene in leaves depends upon the amount of sunlight they have received. The outer green leaves of a cabbage are a good source of carotene, while

the inner white leaves of the heart contain none.

Carotene taken in the food is changed in the body to vitamin A and is stored in the liver. Green grass is the origin of the vitamin A in milk, butter, and cream. Summer milk contains more vitamin A than winter milk because the cows are out at pasture during the summer months.

If the amount of vitamin A in the diet is small, or altogether lacking, the health suffers. Children living on diets poor in vitamin A are particularly liable to develop a disease of the eye called xerophthalmia, which, if unchecked, leads to blindness. It has recently been shown that this disease is probably caused by degeneration of the sensory nerve of the cornea. Local treatment of the eye has no effect, but the condition is relieved if cod-liver oil is given. During the Great War there were many epidemics of this particular eye disease, especially in Denmark, where, owing to the export of butter, large numbers of children were fed mainly on skimmed milk and cereals.

In adults a deficiency of vitamin A leads to night blindness, which has been found to be due to the disappearance of the colouring matter known as " visual purple " in the retina of the

eye. This pigment, which enables a person to see in a dim light, reappears again on the administration of vitamin A.

The most important function of vitamin A, however, appears to be connected with its action on the mucous membranes. If vitamin A is absent from the diet these tend to lose their normal structure and to become dried up or keratinised. Pathogenic organisms find these weakened mucous membranes an easy prey and in vitamin A deficiency local infections are apt to develop. Hence, vitamin A is sometimes called the "anti-infective" vitamin, but it must be emphasised that susceptibility to ordinary infectious diseases is not specially connected with vitamin A deficiency.

Carotene was isolated and shown to be a complex hydrocarbon many years before its connection with vitamin A was suspected. Vitamin A, which has an alcohol structure, is produced by the splitting in two of the carotene molecule with the addition of an OH group to each portion.

Vitamin B. In 1926 it was discovered that the original vitamin B really consisted of more than one substance. One of these was named vitamin B_1, the factor which prevents and cures beri-beri, and the remainder was called

vitamin B_2. Vitamin B_1, or aneurin, has been prepared in pure, crystalline form, and it has the chemical formula $C_{12}H_{16}N_4OS$. In America this vitamin is called B, or thiamin. It is fairly widely distributed in human foods. The best sources are whole cereals, yeast and yeast extracts, and pulses. The function of vitamin B_2 was not clearly understood, though it was thought to be connected in some way with the prevention of pellagra. Some years later, vitamin B_2 was itself proved to be a complex. First, riboflavine (or lactoflavine), $C_{17}H_{20}N_4O_6$, was isolated from it. Then another substance, vitamin B_6, sometimes called adermin, $C_8H_{12}O_3NCl$, or the rat-pellagra factor, was discovered. It is not known for certain whether either of these factors is essential for humans, though it has been suggested that various tropical skin lesions may be caused by their deficiency. Riboflavine is an essential constituent of the diet of dogs and rats, and vitamin B_6 is needed by rats.

The cause of pellagra has until recently been obscure. First, it was thought to be conveyed by infection. Then it was believed to be due to protein of inferior biological value in the diet. Later, it was traced to a deficiency of the vitamin B complex, particularly of the fraction

called B_2. In 1937, as a result of experiments on dogs, pigs, and monkeys, the pellagra-preventing factor was found to be identical with nicotinic acid. This is a well-known and relatively simple chemical compound, β-pyridine carboxylic acid, with the chemical formula $C_6H_5NO_2$. The acid amide, nicotinamide, has a similar activity. Most protein foods contain nicotinic acid. Yeast, salmon, and some liver extracts are particularly rich sources.

Vitamin C. Vitamin C is found in fresh fruits and vegetables, and if it is absent from the diet a painful and dangerous disease known as scurvy develops. This is characterised by a tendency for bleeding to occur in different parts of the body, but especially under the periosteum of the bones. Scurvy was very prevalent in the sixteenth century, especially among sailors at sea for long periods who lived on salt meat and a biscuit made of flour and water and known as "hard tack." Any kind of fresh fruit or vegetables was unheard of on board. First the crew became weaker, less able to make any efforts, easily out of breath, and readily depressed. Sunken eyes, constant pain in the muscles, mental and physical exhaustion, bleeding from the gums, eyes, and nose were symptoms which gradually became worse and

worse, and the men frequently died of the disease.

Infantile scurvy, or "Barlow's disease," was very common at the beginning of this century, when babies were fed largely on artificially treated or sterilised foods, with no fresh milk or fruit juice whatever. It has now become a common practice to give all artificially fed babies orange juice daily.

Long before the age of vitamins it was realised that scurvy was caused by the lack of something in the diet, something which was connected with the property of freshness, which disappeared from the food if it became stale or dry. We now know that vitamin C, which is present in minute traces in fresh fruits and vegetables and which is particularly plentiful in oranges and lemons, is absolutely essential for a normal and healthy life. If this is absent or deficient in the diet scurvy develops. A case of scurvy, if not too far advanced, can be almost miraculously cured by the administration of orange, lemon or tomato juice, or of raw green vegetables. Vitamin C is also essential for the development of sound and healthy teeth.

Vegetables and fruits vary very much in the amount of vitamin C that they contain. The best sources are black-currants, strawberries,

oranges, lemons, grapefruit, tomatoes, and most green vegetables. On the other hand, grapes contain almost no vitamin C, and some varieties of apple are very poor sources. Potatoes contain moderate amounts of the vitamin, and it is an interesting fact that a potato famine in Ireland has been more than once followed by an outbreak of scurvy. It is certain that a large proportion of our population depends almost entirely upon potatoes for their supply of vitamin C.

Vitamin C is gradually destroyed by cooking, but a far more serious cause of loss is the solubility of the vitamin in the cooking water. When vegetables are boiled, half to two-thirds of their vitamin C may dissolve out and be thrown away. In the case of stewed and canned fruit the juice is usually eaten, so this cause of loss need not be considered.

Human milk normally contains from four to five times as much vitamin C as cow's milk. Pasteurisation of milk results in a destruction of about half its vitamin C, whilst sterilisation destroys this vitamin completely.

The chemical constitution of vitamin C is now well known. Not only has it been isolated from plants, but it has been synthesised in the laboratory. It has the simplest chemical struc-

ture of any of the vitamins and is allied to the sugars. Its formula is $C_6H_8O_6$ and it has been named ascorbic acid. In America it is called cevitamic acid.

Vitamin D. The best-known disease due to a vitamin-deficient diet is rickets. This disease is rapidly being stamped out in this country, but there are still numbers of cases too slight to be detected except by expert examination. In severe rickets the growing bones do not become sufficiently hard during the first year of life, and as soon as the child begins to walk the soft bones of the legs bend under the weight of the body and become fixed in the deformed position.

Hard bones cannot be formed unless the minerals that make them, calcium and phosphorus, are contained in the food in sufficient quantity. Vitamin D controls the mechanism whereby calcium and phosphorus are absorbed from the intestine and deposited in the bones. The necessary salts may be contained in the food in sufficient quantity, but they cannot be utilised if there is a deficiency of vitamin D and rickets will result. Conversely, plenty of vitamin D in the diet, but insufficient calcium or phosphorus, also leads to this disease.

Vitamin D, the antirachitic vitamin, is fat-soluble and is found in halibut- and cod-liver

oils, egg yolk, summer butter, cream and milk, and fat fish such as the herring. Plant fats contain no vitamin D.

What is true of bones is true also of teeth. Teeth, like bones, are composed of calcium phosphate. Therefore an ample supply of calcium, phosphorus and vitamin D is necessary for the formation of hard and healthy teeth. Some authorities consider that adults have to pay a great many visits to the dentist to-day because their diet contained insufficient vitamin D during childhood.

Sunlight has always been suspected of playing an important part in the prevention and cure of rickets. Rickets is seldom seen in the tropics, but is prevalent in temperate countries, and there is a distinct seasonal variation in the number of cases—many more cases appear after the winter than after the summer, and most cases improve in the summer sunshine. In India and other tropical eastern countries, however, rickets and osteomalacia are common as a result of the purdah system, whereby women and children are confined indoors. It was proved in 1921 that rickets could be cured by exposure to sunlight and that the curative effect was due to the ultra-violet rays. Various forms of artificial sunlight lamps which supply these rays

in a concentrated form are used in hospitals for this purpose.

The action of light corrects the effects of a diet inadequate in vitamin D, but only if the defects are not too severe nor too long-continued. The ultra-violet rays act upon a substance called *ergosterol*, which is present in the fat just beneath the skin, and convert it to vitamin D. Light and diet should be regarded as factors which supplement one another in the supply of vitamin D.

In 1932 a pure substance, calciferol, having great vitamin D activity, was synthesised by the irradiation of ergosterol. Its structure resembles that of ergosterol ($C_{28}H_{44}O$) except for a slightly different arrangement of atoms within the molecule, and this substance was thought to be identical with the natural vitamin D. It was found, however, that the vitamin D occurring in cod-liver oil was far more active than calciferol in curing rickets in chickens. Calciferol, on the other hand, was far more effective for rats. Hence there were at least two different forms of vitamin D, and actually several others have since been isolated. The substance in cod-liver oil is called D_2 and calciferol is named D_3. Vitamin D_2 can be prepared by irradiating a substance closely

	Protein	Fat	Carbohydrate	Calcium	Phosphorus
MEAT					
	Liver *	Liver	—	—	Liver *
	Kidney *	—	—	—	Kidney
	Lean meat *	—	—	—	Lean meat
	—	Fat of meat *	—	—	—
	Heart *	Heart	—	—	Heart
	Bacon	Bacon	—	—	Bacon
	Chicken *	—	—	—	Chicken
	Rabbit *	—	—	—	Rabbit
	Sweetbread *	—	—	—	Sweetbread*
FISH					
	All fish *	Fat fish, *e.g.* herring	—	—	All fish *
	Fish roe *	Fish roe	—	—	Fish roe *
	Sprats	Sprats	—	Sprats	Sprats
	Sardines	Sardines	—	Sardines	Sardines
	—	Fish liver oils *	—	—	—
DAIRY FOODS					
	Milk	Milk	Milk	Milk	Milk
	Eggs	Eggs	—	Eggs	Eggs
	Cheese *	Cheese	—	Cheese *	Cheese
	—	Butter *	—	—	—
	—	Cream *	—	—	—
CEREALS					
	—	—	All cereals *	—	Whole cereals
	—	—	Bread and flour	—	Wholemeal or "brown" bread and flour
	—	—	Oatmeal *	—	Oatmeal
	—	—	Rice, tapioca, etc.*	—	—
	—	Cakes and biscuits	Cakes and biscuits	—	—
NUTS					
	Almonds and peanuts	All nuts except chestnuts	Chestnuts *	Almonds, Barcelona nuts, and Brazil nuts	All nuts except chestnuts and coconuts

* *Indicates a very rich source.*

VARIOUS FOOD ESSENTIALS

IRON	VITAMIN A	VITAMIN B COMPLEX	VITAMIN C	VITAMIN D
Liver *	Liver *	Liver *	Liver (raw)	Liver *
Kidney	Kidney	Kidney *	—	—
Lean meat	—	Lean meat *	—	—
—	Fat of meat (not pork)	Pork *	—	—
Heart	Heart	—	—	—
Bacon	—	—	—	—
Chicken	—	Chicken	—	—
Rabbit	—	Rabbit	—	—
—	Sweetbread	Sweetbread	—	—
—	Fat fish, * *e.g.* herring	All fish	—	Fat fish, * *e.g.* herring
—	Fish roe *	" Hard roe " *	—	Fish roe *
Sprats	Sprats	Sprats	—	Sprats
Sardines	Sardines	Sardines	—	Sardines
—	Fish liver oils *	—	—	Fish liver oils *
—	Milk	Milk	Milk (raw)	Milk
Eggs	Eggs *	Eggs	—	Eggs
—	Cheese	—	—	Cheese
—	Butter	—	—	Butter
—	Cream	—	—	Cream
—	—	Whole cereals	—	—
Wholemeal or " brown " bread and flour	—	Wholemeal * or " brown " bread and flour	—	—
Oatmeal	—	Oatmeal *	—	—
—	—	—	—	—
—	—	—	—	—
—	—	Nuts *	—	—
				—
				—
				—
				—

PROTEIN	FAT	CARBO-HYDRATE	CALCIUM	PHOSPHORUS
FRUIT				
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	Bananas	—	—
—	—	Sweet fruits, *e.g.* grapes, pineapple, plums	—	—
—	—	Dried fruit *	—	—
—	Olives	—	—	—
VEGETABLES				
	—	—	Green leaves, *e.g.* spinach, watercress, outer leaves of cabbage and lettuce	—
Peas and beans	—	Peas and beans	—	Peas and beans
—	—	Root vegetables	—	—
—	—	Potatoes	—	—
OTHER FOODS				
—	Chocolate	Chocolate	—	Chocolate
—	—	—	—	Cocoa
—	—	Black treacle *	—	—
—	—	Golden syrup *	—	—
—	—	Sugar *	—	—
—	—	Jam *	—	—
—	—	Marmalade *	—	—
—	—	Honey *	—	—
—	Margarine *	—	—	—
—	Lard *	—	—	—
	Dripping *	—	—	—
	—	—	—	—
* *Indicates*	—	—	—	—
	—	—	—	—
	—	—	—	—

rich source.

VARIOUS FOOD ESSENTIALS—*cont.*

IRON	VITAMIN A	VITAMIN B COMPLEX	VITAMIN C	VITAMIN D
—	Tomatoes *	Tomatoes	Black-currants *	—
—	Oranges	Oranges	Oranges *	—
—	—	—	Lemons * and grape-fruit *	—
—	—	—	Straw-berries *	—
—	—	—	Raspberries and black-berries	—
Dried apricots and peaches	Dried apricots and peaches	Apricots and peaches	Apricots and peaches	—
—	—	—	—	—
Green leaves, *e.g.* spinach, watercress, outer leaves of cabbage and lettuce	Green leaves,* *e.g.* spinach, watercress, outer leaves of cabbage and lettuce	Green leaves	Green leaves (raw),* *e.g.* watercress Green leaves (cooked)	—
Peas and beans	Peas	Peas and beans *	Fresh peas	—
—	Carrots *	Root vege-tables	Root vege-tables	—
—	—	Potatoes	Potatoes	—
Chocolate	—	—	—	—
Cocoa	—	—	—	—
Black treacle	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	Yeast *	—	—
—	—	Autolysed yeast ex-tracts *	—	—
—	—		—	—

allied to ergosterol, 7-dehydrocholesterol. As far as is known the two vitamins are equally active for human beings.

Vitamin E. Vitamin E is an essential constituent of the diet of rats. If it is deficient, resorption of the fœtus occurs during pregnancy in the female, and in the male degeneration of the germ cells takes place. Whether or not vitamin E deficiency in humans has any connection with habitual abortion has not been satisfactorily proved, though there is some evidence that treatment with vitamin E concentrates may be beneficial in certain cases.

The best sources of vitamin E are wheat germ and green leaf vegetables, particularly lettuce. In 1936 the vitamin was isolated in crystalline form and was given the name α-tocopherol. It has the chemical formula $C_{29}H_{50}O_2$.

WATER

About three-quarters of the body consists of water, and the proportion varies in different parts. Bones only contain 22 per cent., while the kidneys contain 80–90 per cent. All the processes of the body proceed in a fluid medium. Water acts as the carrier of food to the tissues; it forms the larger part of the digestive juices and the blood; it is necessary to dissolve

digested food and to remove waste matter through the kidneys. Approximately 2,500 c.c. of water are given off daily from the body. In temperate climates the kidneys excrete about 1,500 c.c., 600 c.c. are lost in perspiration through the skin, 300 c.c. are given off through the lungs, and the remaining 100 c.c. are contained in the fæces.

An average adult requires 4 to 5 pints of water daily (about 2,500 c.c.). About one-third of this comes from the food (see p. 3) and the remaining 2 or 3 pints must be drunk, either as water or as part of other beverages. Thirst is the demand of the whole body, but chiefly of the blood, for more water. It is, however, not a guide to the amount required, as habit largely controls the desire for fluids. Next to air, water is the cheapest and most essential of foods. Without air we cannot live for more than a few minutes. If air is supplied, but food and water are withheld, we cannot live for more than an eight or ten days. But if we have no food other than air and water life can be maintained for a considerable time. Some years ago the Lord Mayor of Cork performed a hunger strike, and is stated to have lived for 70 days on nothing but water. He finally died as a result of starvation.

ROUGHAGE

Roughage cannot be considered as a dietary essential in the same way that proteins, fats, carbohydrates, mineral salts, vitamins, and water are essential, and it is an interesting point that milk, which is the natural food for infants and young animals, contains practically no roughage at all. Roughage is derived largely from the cellulose forming the cell walls of plants, and animal foods as a whole leave much less undigested residue than plant foods. A certain amount of roughage in the diet is probably an advantage, and constipation tends to arise if the diet is almost completely absorbed. Diets which contain large amounts of vegetable foods and which leave a considerable amount of unabsorbed residue are wasteful for normal people since they tend to displace more concentrated and nourishing foods.

ALCOHOL

Alcohol in an impure form has been known since the earliest times, and as far back as the history of medicine extends it has been used as a drug. Its value depends upon four chief points:

1. Its irritant local action.
2. Its action on the central nervous system.
3. Its action on the circulation.
4. Its value as a food.

1. **Local irritant action.** When alcohol is taken in moderate amounts it increases the secretion of gastric juice in the stomach. It does not, however, increase the secretion of pepsin, nor does it affect the muscular movements of the stomach. To some people it is an aid to digestion, while to others it is not. Generally speaking, it may be said that, if it is enjoyed, alcohol in moderate quantities may be considered to be harmless to the digestion of those in normal health. Excessive quantities, however, give rise to profuse secretion of mucous in the stomach, gastric catarrh, and digestive disorders.

2. **Action on the central nervous system.** This is by far the most important action. In spite of the feelings of well-being, good fellowship and self-confidence to which it gives rise, alcohol has never been shown to stimulate any part of the central nervous system. The observed effects are due to a depression or retardation of the highest centres, which normally exert a restraining influence on the rest of the brain. The well-known effects of alcohol, therefore, may be ascribed to a lack of restraint. Large doses retard the higher centres still more, and lead to obvious blunting of the finer senses and clumsy performance of movements demanding speed and skill.

Large amounts of alcohol result in complete inco-ordination, deep, torpid sleep and finally unconsciousness. The effects of alcohol vary greatly in different individuals and in the same individual at different times. Chronic alcoholism has been thought by many to lead to cirrhosis of the liver. Alcohol addicts are also liable to peripheral neuritis, which can be cured by giving vitamin B_1.

3. **Action on the circulation.** If administered in small doses to people not in the habit of taking it, alcohol gives rise to slight acceleration of the pulse rate. It is believed by some to have a stimulating action upon the heart, but the change is small and inconstant. Large quantities make it beat more slowly.

The familiar flushing of the skin and feeling of warmth indicate dilation of the superficial blood-vessels, but the main blood-vessels are scarcely affected.

4. **Alcohol as a food.** Alcohol in moderate doses is oxidised almost completely in the body, and each gram yields seven calories. From this point of view, therefore, it must be classed as a food. If taken with carbohydrates and fats alcohol is preferentially oxidised, and the carbohydrates and fats are stored.

All authorities are agreed that for healthy

persons alcohol is a luxury. It may coax a jaded palate, and as a flavouring agent it adds variety to the menu. It is, however, entirely unnecessary for the growth and maintenance of the body.

The use of alcohol in fever is discussed on p. 67.

CHAPTER II

THE PRINCIPLES OF NUTRITION
(*continued*)

II

FOOD REQUIREMENTS

BASAL METABOLISM

Basal metabolism is the metabolism of the body at complete physical rest in a room of ordinary comfortable temperature, twelve to eighteen hours after the last intake of food. This is usually measured in terms of energy, and the units employed (Calories) are units of heat. Other forms of energy may be measured in the same terms. Many determinations have been made of the number of Calories required for the basal metabolism of men, women, and children of different ages. The Calorie requirement for basal metabolism will vary with the size and surface area of the body, a large body needing more fuel to maintain it than a small one. It has been found that the energy metabolism of the body increases in proportion to the surface rather than the weight. Values for energy requirements for basal metabolism are therefore more accurately expressed in terms of Calories per square metre of body surface than in terms

of height or weight. Tables for predicting the basal metabolism of normal adults and children of various ages have been drawn up by several workers. One is given on p. 357. In terms of surface area, both men and women require about 40 Calories per square metre per hour. In terms of body weight, a normal healthy man weighing 70 kg. (11 stone) requires 77 Calories per hour for basal metabolism, while a woman weighing 57 kg. (9 stone) needs 60 Calories. In twenty-four hours, therefore, the man needs 1,850 Calories and the woman 1,440 Calories for basal metabolism. Thus, more than half the Calories obtained from the ingested food are used for basal metabolism.

The true basal metabolism of infants is difficult to determine since a hungry baby will not be at "complete physical rest." The so-called basal metabolism of babies is their metabolism at physical rest, but it includes the influence of food. During infancy the basal metabolism is 30 to 50 Calories per square metre per hour (2·0 to 2·5 Calories per kg. per hour), but it rises rapidly to a value of 60 Calories per square metre per hour at the age of one to two years, then falls till it reaches the adult figure of 40 at the age of twenty.

Prolonged under-nutrition lowers basal meta-

bolism and the thyroid gland exerts a profound influence upon it. Where this gland is over-active basal metabolism may be raised as much as 75 per cent., while in myxœdema and cretinism it is considerably reduced. During fever the basal metabolism is raised 7·2 per cent. for each degree Fahrenheit rise in temperature (13 per cent. for each degree Centigrade). A list of observations on the relation of basal metabolism to various diseases is given on p. 358.

It must be pointed out, however, that a basal metabolism 10 per cent. below to 15 per cent. above the average figures is usually considered within the normal range.

TOTAL ENERGY REQUIREMENTS

In addition to the Calories required for basal metabolism, food is needed to supply energy for muscular movement and for various other functions. These are discussed in Chapter I.

The total Calorie requirement of human beings is a question which has received a considerable amount of attention. The problem has been investigated by four different methods. The first is by means of the human calorimeter. With the aid of this instrument it is possible to determine the energy output of persons at rest or carrying out various occupations inside it.

The second method consists in the measurement, with a portable apparatus, of the amount of oxygen required to oxidise the ingested food while the subject is performing various kinds of work. The third involves the determination of the balance of intake and output of carbon, nitrogen, and hydrogen, while the fourth consists in studying the number of Calories which adults are instinctively taking in their food to maintain themselves in normal health, when there are no restrictions due to economy or any other cause.

There is general agreement that the average man, weighing about 70 kg. (11 stone) and leading a moderately active life, needs an amount of food which will yield 3,000 Calories a day. Since diets can be measured in terms of energy, and the bodily activities can also be assessed on this basis, the two can be directly compared, and it has been shown that the more active the life the more energy will be required from the food. For a purely sedentary life a man requires about 2,400 Calories a day. For really hard physical work, such as coal mining, stone cutting, and dock labouring, about 4,000 Calories a day are needed. During special athletic efforts a tremendous amount of energy is expended. Mental work, on the other hand,

seems to demand no extra intake of food. On p. 359 is given a table showing the approximate Calorie requirements of individuals performing various occupations.

Women need less food than men, for they are as a rule smaller and less muscular. It is usually stated that a woman requires five-sixths as many Calories as the average man, or about 2,500 Calories per day. Her "man-value" is said to be 0·83. It must be remembered, however, that her body weight is only about five-sixths that of a man, and the Calories per kilogram of body weight are approximately the same for men as for women. Recent studies on the individual diets of women have shown that the average Calorie intake of 63 London women was about 2,100 a day, or 0·7 of 3,000 Calories.

The general build of the body is important in relation to the amount of food needed, for a short stout man loses heat at a slower rate than a tall thin one of the same weight, and therefore will require relatively less heat-producing food to maintain his body temperature.

Climate and season have a certain amount of effect on the kind and quantity of food required. In cold parts of the world, and even in winter in this country, more food, and especially more

fat, is often eaten than during hot weather. The seasonal variation in the food eaten in this country is probably a variation in kind rather than in quantity. In tropical regions, however, the basal Calorie requirement appears to be lower than in the cold countries.

After about sixty years of age the bodily activities are restricted, and overfeeding should definitely be avoided. Over the age of seventy about 1,800 Calories a day are usually sufficient.

CALORIE REQUIREMENTS FOR CHILDREN

The greatest contributions to the knowledge of the energy requirements of children have been made by dietary studies in which the intake of food has been measured. Calorimetry, or respiration studies on children are difficult and have not been carried out on a sufficiently large scale. Balance experiments have been made, but in most cases, although the foods were completely analysed, only the excretion of nitrogen has been determined.

Dietary studies have been carried out by two different methods—on groups of children in institutions, and on individual children living either in institutions or in homes. The group method cannot profess to do more than supply a rough average of the food intake. The

measurement of the individual food intake of healthy children of varying ages is obviously the most satisfactory method of approach to the problem. This has been done in a certain number of cases in different parts of the world, and at the present time an extensive investigation on the food intake of individual children in this country is being carried out. Various attempts have been made to set up standards of food requirements for children of different ages. A table based on the suggestions of the Technical Commission of the League of Nations is given on p. 358.

PROTEIN REQUIREMENTS

There is no agreed standard of protein intake. It is generally accepted, however, that for the average man 100 grams per day is an ample allowance, of which 37 to 50 grams should be of animal origin. (British Medical Association and Ministry of Health.)

Sherman proposes 1 gram of protein per kilogram of body weight per day (roughly ½ gram per lb.), or 70 grams for the average man, as a suitable standard of protein needs. This figure was also adopted by the Health Organisation of the League of Nations, 1936. No published data as to the protein requirements of women appear

to be available, but investigations on the individual food intake of London women showed that their average protein intake was about 67 grams a day.

Children need relatively more protein than adults. A baby fed on human milk usually receives 2 to 2·5 grams of protein per kilogram of body weight per day (approximately 1 gram per lb.), and it must be remembered that this is entirely in the form of milk proteins, which are of high biological value. In general, it may be said that about 10 to 15 per cent. of the total calories should be given in the form of protein. The approximate protein requirements of children of different ages are shown on p. 358.

REQUIREMENTS OF MINERAL SALTS

Very little is known about the human requirements for mineral salts. Sherman considers that an adult is adequately supplied by 0·68 gram of calcium, 1·32 grams of phosphorus, and 0·012 to 0·015 gram of iron per day. Children need relatively more of each of these elements for normal growth and development, and about 1 gram of calcium and 1 gram of phosphorus per child per day is desirable. This should be derived partly from milk (1 pint of milk gives 0·68 gram of

calcium and 0·53 gram of phosphorus) and also from eggs, meat, fish, cheese, fruit, and vegetables. Too much stress cannot be laid upon the beneficial effects of milk in the diet of children, who should be encouraged to drink 1 to 1½ pints daily. Children who dislike milk as such will often take it disguised in a beverage or pudding. There is less evidence available as to the iron requirements of young children, but it is probable that about 8 mg. per day are sufficient.

Approximate mineral requirements at different ages are shown on p. 358.

DIETARY REQUIREMENTS IN PREGNANCY AND LACTATION

Special attention must be paid to the quality and quantity of the diets of expectant and nursing mothers. During the first four months or so there is no need to increase the Calorie value of the diet. The chief requirement at this time is a diet which will prevent the nausea and vomiting of "morning sickness." Expectant mothers who suffer from this should take a liberal supply of easily digested carbohydrate at bedtime in the form of barley sugar, lemonade with plenty of sugar or glucose, or rusks, biscuits, or bread and jam, but no butter. Excess of fat in the

diet should be avoided, but adequate amounts of vitamins A and D should be secured. During the latter half of pregnancy the mother's diet *must* contain an ample supply of calcium and phosphorus to provide building material for the bones of the growing fœtus, and it must also contain plenty of vitamins A and D. The iron requirement is also increased during pregnancy, for a baby, besides having a relatively large amount of iron in its blood, is born with a supply of iron stored in its liver to last it during the suckling period. All of this iron must come from the mother. Most authorities are agreed that greatly increased amounts of protein or of total food are unnecessary during pregnancy, although the League of Nations Committee (1936) proposes that the protein intake should be increased to 1·5 grams per kilogram per day during the last five months. The woman's own appetite will usually supply the small additional need.

During lactation the food demands of the mother are greatly increased, for the entire nutrition of the child depends upon her. Her diet must be adequate in Calories. In some cases lactating women tend to put on weight, and the calorific value of the diet must be regulated to prevent obesity. In others a high Calorie diet is required if the mother is to

maintain her body weight. Each case must be considered individually. It is absolutely essential that the nursing mother should obtain ample supplies of calcium, phosphorus, first-class protein, vitamin D, and water. To secure these, the following foods are of special value during pregnancy and lactation—milk, cheese, eggs, liver, fruit, and vegetables. At least a pint of milk should be taken daily in some form. Many physicians advise the use of halibut or cod-liver oil, or some other rich source of vitamin D.

"CONDITIONED" DEFICIENCIES

Before food can be utilised by the body it must be eaten, digested, absorbed and metabolised. Deficiency diseases may arise if there is a failure in any one of these processes. In the ordinary sense of the term, a deficiency disease implies that there is an inadequate intake of some particular essential dietary constituent. The term "conditioned" deficiency is used to describe a deficiency which is caused, not by inadequate intake, but by failure of the digestive, absorptive or metabolic processes.

Disorders of the gastro-intestinal tract are the most common cause of "conditioned" deficiencies. If there is mechanical obstruction,

due to pyloric stenosis, or intractable vomiting for some other reason, *e.g.* vomiting of pregnancy, there may be a state of general malnutrition. Chronic diarrhœa may have the same effect. Sometimes the absorptive failure is more limited, and may even be confined to a single dietary constituent. Thus, the absorption of fats is particularly interfered with in cœliac disease and tubercular peritonitis. Vitamin deficiencies may arise in a similar way. Further, a vicious circle may be set up, for minor deficiencies may cause mild disorders of the gastro-intestinal tract, and these in turn may intensify the defective assimilation.

Finally, the untreated diabetic may be regarded as carbohydrate-deficient due to a metabolic failure. Diabetes, however, is not usually included among " conditioned " deficiencies.

CHAPTER III

HIGH AND LOW CALORIE DIETS

HIGH CALORIE DIETS

Loss in weight is usually the result of disease, especially tuberculosis, carcinoma, diabetes, and Addison's disease or, less frequently, of persistent under-eating. In Graves' disease it is the result of the over-activity of the thyroid gland.

The object of a high Calorie diet is usually to supply as much extra nourishment as possible in a form easy to consume and digest. If the patient has a good appetite this is easy to accomplish, but often it is necessary to have faith in the saying *l'appétit vient en mangeant*, and to increase the food a little each day. An unpleasant feeling of fullness must be avoided. Extra Calories are best supplied in the form of carbohydrate, and glucose, lactose, or increased amounts of ordinary sugar can be added to all sweetened foods and drinks. Jam, honey, or syrup, in addition to butter thickly spread on bread, should be taken whenever possible. Drinks of fresh lemonade containing at least 1 oz. of glucose per glass, or a milky drink with biscuits can be taken between meals and at

bedtime. Sweets or chocolate after meals are a pleasant and easy way for most people to increase their Calorie intake. Additional fat in the more easily digested forms, such as butter and cream, will also increase the Calorie value of a diet. Butter or margarine may be added to vegetables, and thick soups and sauces can be made with the addition of cream or butter. Cream may also be taken with many beverages and puddings, and if this is not whipped larger amounts can be consumed.

Those who wish to gain in weight should never hurry over their meals. The day's food should be divided into three or four meals of approximately equal Calorie value, and patients must not expect to be able to take one meal so large that it will make up for the deficiencies of two or three which are inadequate. Besides the regular meals, high Calorie drinks or extras should be taken if possible. Examples of high Calorie diets are given on p. 147, together with a list of suitable puddings, savouries, and beverages.

TREATMENT OF OBESITY BY LOW-CALORIE DIETS

Insurance companies have found, both from experience and through statistical investigation, that the men and women who live longest are

those whose weight remains at all ages close to the average of adults at thirty (see height and weight tables, p. 364). Under that age people tend to be too thin for optimum health, and as they grow older the majority tend to become too fat. As people advance in years they usually restrict their physical activities, and they should therefore limit the amount of fattening food which they consume, so as to avoid the " middle aged spread." This is particularly important for those whose hearts are no longer functioning normally, or whose chest walls and lungs have lost their elasticity, for obesity means that an additional weight has to be carried, which inevitably places an extra strain upon the heart and lungs.

On the other hand, too much emphasis cannot be laid upon the harm done through the slimming craze. Slimming, except under medical supervision, should be strongly discouraged. Tables for weight and height, such as those given on p. 364, may be taken as a guide, and provided the health is normal small divergences should not be considered.

Nevertheless, there are many people for whom reducing diets are essential. Obesity, which involves the deposition of abnormal amounts of fat beneath the skin and around the internal

organs, may be due to one of several causes. It may be simply and solely due to over-eating combined with too little exercise. This type of obesity will respond at once to dietary treatment, and requires no other. Secondly, it may be due to some obvious deficiency of the endocrine glands leading to a lowered basal metabolism, as in myxœdema. In the latter case a reducing diet alone will rarely achieve the desired effect, unless almost complete starvation is adopted. A strictly low Calorie diet, therefore, must be combined with treatment by thyroid extract which has the effect of raising the basal metabolic rate.

Patients who require to lose weight must not be expected to have superhuman powers of self-denial. Only those who have tried to reduce can realise how hard it is to keep away from the temptation of forbidden foods. It is only by continually reminding themselves of the benefits to health and appearance which will result from their abstemiousness that patients will develop the strength of mind required to keep to their diet. This must be planned so as to change the routine of the normal meals as little as possible, to give a certain amount of variety, and also a feeling of satiety. A patient who is accustomed to large

meals should feel satisfied without any risk of increasing his weight if he takes plenty of bulky, low Calorie foods, such as leafy vegetables, fruit, and food-valueless beverages like tea or coffee, with skimmed milk but no sugar, unsugared lemon water, or clear meat or vegetable soups or meat extracts. Great care must be taken to supply a sufficiency of protein, vitamins, and mineral salts. Periods of starvation, with their unpleasant consequences to health and looks, must be strictly forbidden.

A loss of about 2 lb. a week may be expected on the reducing diets on p. 152 if the obesity is due to over-eating, but it may be rather slower if the cause is constitutional. The patient must understand that if he eats even small amounts of food above the allowance the desired loss will not take place. Should the loss be too rapid at any stage an extra slice or two of bread, or one or two potatoes, may be added to the diet. If it is too slow, and the doctor is satisfied that the patient is really keeping to the diet, a slice of bread may be omitted and butter or jam given up altogether for the time being. If this fails to produce a reduction in weight a patient may, on doctor's orders, take on one or even two days a week a carbohydrate diet providing approximately 400 Calories only.

A convenient arrangement on these days is to take four meals, each consisting of two fruits and ½ oz. (two average-sized) unsweetened biscuits. Tea with milk but no sugar, unsweetened lemonade, soda water, and meat extracts are allowed as desired.

Reducing diets, owing to their low fat content, are always low in vitamin D, and they may be low in vitamin A as well. A concentrate containing these vitamins should therefore be prescribed. Because the total amount of food in reducing diets is small the amount of vitamin B complex is likely to be deficient. It should be added in some concentrated form such as Marmite or Yeastrel, which can be spread on bread or used in soups or gravies. Wholemeal bread is preferable to white bread since it contains more of the B vitamins.

A reducing diet for patients with heart disease is given on p. 154.

REDUCING DIETS FOR CHILDREN

In some cases of glandular disturbance, hypothyroidism, or hypopituitarism, children metabolise their foods too slowly, and they should therefore take less carbohydrate and fat than is normal for their age. The carbohydrate intake should not be less than 100 grams a day if

the child is leading a normal life, but fat can be reduced to any extent that may be necessary. Sufficient body-building materials, vitamins, and mineral salts must be secured, and therefore 1½ pints of skimmed milk and some concentrate containing vitamins A and D should be included in a reducing diet intended for a child. (See Diet, p. 153.) Skimmed milk may be obtained from a dairy (permission from the Milk Marketing Board may be necessary) or it can be prepared at home from bottled milk by pouring off the top cream, placing the partially skimmed milk in a bowl, covering it with butter muslin, and allowing it to stand until the rest of the cream has risen. When this has been carefully removed the skimmed milk is ready for use.

It is generally exceedingly difficult for children to keep to a reducing diet, as they usually have normal, healthy appetites, and crave for their ordinary amounts of bread and butter, potatoes, and sweets. They should be weighed weekly and told the results. They will need constant encouragement to persuade them not to exceed their rations, but once they have appreciated the improvement they have made and have accustomed themselves to their new menu they will find it far easier to keep to their diet.

CHAPTER IV

INVALID DIETS

THE essentials of human nutrition have been discussed in Chapter I. When people are ill they require these food essentials just as much, and sometimes more, than when their health is normal. Patients who have suffered from long illnesses frequently lose weight, and this is sometimes due to a loss of body protein as well as of fat. If this cannot be prevented it should be repaired as quickly as possible during convalescence. It is therefore most important to supply patients with enough protein, mineral salts and vitamins, and sufficient Calories to meet their needs.

DIETS FOR INVALIDS

Milk, eggs, fresh fruits or fruit juices (for instance oranges, grapes, or lemons), and some form of sugar or proprietary carbohydrate food, form the basis of most invalid diets.

It should be noted that milk is a poor source of iron, and if a patient is kept for a long time on a diet consisting almost entirely of milk reinforced with carbohydrate he will tend to become anæmic unless some form of iron is

administered. Patients suffering from diseases requiring a high calcium intake, *e.g.* hyperthyroidism, should be given a plentiful supply of this element in their food.

How to choose a menu for invalids. Some patients treat their food more seriously than those who are able to go about their affairs normally. Others take no interest in food whatever. It is essential, therefore, to devote special attention to the flavour and appearance of the food, as well as to its digestibility.

There should be as much variety from meal to meal and from day to day as possible. Some patients enjoy the meat and savoury type of food better than sweet dishes, while others prefer the latter. Foods suitable for invalids may be flavoured to suit either taste; for instance, a savoury custard made of egg and milk and flavoured with meat extract may be substituted for a sweet custard, and cream of potato soup is similar in nutritive value to milk pudding.

An adult is not likely to enjoy rice pudding when he is ill if it is the one food above all others that he has loathed since childhood, and it will do little good to force him to eat it. Dislikes, however, are sometimes due to prejudice, and wholesome food may be persistently

refused for no other reason. If it is an important vehicle of nourishment, *e.g.* milk, the food should be disguised in flavour and appearance so that the patient is tempted to take it.

Dainty service is important for patients whose appetite is poor. Small portions tempt them gradually to second helpings, whereas a larger serving might spoil the appetite. For those with good appetites, on the other hand, it will only be annoying to be given tiny portions, and it must be the business of nurse, dietitian, or cook to serve whatever portion is suitable for the individual patient.

The colour of the food may be important in stimulating the flow of digestive juices, and therefore of improving digestion. If there are several courses, each should be of a different colour to avoid monotony. For instance, if a patient is only allowed white fish, milk dishes, and fruit juices, a menu could be made up of strained tomato soup, fish with white sauce, with a sprig of parsley for decoration, followed by chocolate blancmange.

The digestion of starchy foods is begun when they are mixed with saliva in the mouth; hence the importance of good mastication. Provided a patient has teeth that are in good condition, hard foods such as rusks, biscuits, and cold

buttered toast will be better digested than soft fresh bread, cake, or hot buttered toast.

DIET IN FEVER

Fluid diets. Patients with fever cannot usually take more than 6 to 8 oz. of food at a time, especially if they are fed two-hourly, and it is generally a mistake to press them to have more. During the night they should not be awakened to be given food, but should be fed when they wake. This prevents unnecessary restlessness, which saps their energy, and serves no useful purpose.

Feverish patients should take at least 3,000 c.c. (5 pints) of fluid during the twenty-four hours. Each drink should, as far as possible, be made a vehicle for Calories, protein, vitamins, and mineral salts. For this reason meat juice and extracts, beef tea, and clear soup should be avoided as they have no appreciable food value and are only useful owing to the pleasant flavour which they can impart to food or as a stimulant of appetite for foods containing nourishment. For fluid diets suitable for feverish patients, see p. 165.

If a patient has an ulcerated sore throat, as in scarlet fever, lemon and other acid fruit juices must be avoided.

The use of alcohol in fever. Alcohol is nowadays seldom used in fever, though most physicians still recognise it to be of great benefit in certain cases. Its real value is as a narcotic and not as a stimulant. It allays anxiety and distress and promotes rest and sleep.

It is generally recognised that those who habitually take alcohol in moderate or large amounts should be allowed to continue to have it, provided its use is not definitely contra-indicated. Heavy drinkers generally fare better if their diet allows moderate amounts of alcohol.

Care of the mouth. During fever, distaste for food is often increased by the condition of the mouth, the furred tongue making all food unpalatable. If this is the case, the patient's mouth should be carefully swabbed out with a solution of sodium bicarbonate before and after feeds, or this may be used as a mouth wash.

DIET IN TYPHOID FEVER

Owing to the long duration of the fever and the raised metabolic rate, a high calorie diet with plenty of fluids is of the utmost importance in maintaining the patient's strength during the course of the disease, and in shortening the period of convalescence. Two-hourly feeds are usually most satisfactory, and the fluid feeds

providing 2,500 Calories a day (p. 165) are suggested for the initial stages. As soon as the patient is willing to take more solid food he may be encouraged to do so. The diet on p. 181 is suitable. In the final stages the diet on p. 179 may be used.

SEMI-SOLID DIETS

As the patient progresses and becomes able to take solid food, toast or bread and butter, rusks or plain biscuits, may be added to the fluid diet. Stewed or fresh fruit, from which the skins and pips have been removed, may be taken, as well as boiled, poached, or scrambled eggs, milk puddings and custards, cereals and gruels. A choice of these will suffice for dinner until the patient is well enough to take fish, chicken, rabbit, etc.

At this stage some of the glucose or cream given in the fluid diet may be omitted if there is no need to increase the Calories.

DIET IN CONVALESCENCE

A convalescent patient should take food which is rich in protein and vitamins and which is readily digested, avoiding such foods as tough meats, suet puddings, rich pastries and cakes, The diet shown on p. 158 would be suitable.

If there has been loss of weight a high Calorie diet (p. 147) will be necessary. The low residue diets (p. 179) can be adapted for such cases by adding extra feeds.

DIET IN CASES OF FRACTURE

In cases of fracture of the lower limbs, where otherwise healthy persons are confined to bed, sometimes for many months, it is necessary to consider the type of diet most suitable.

It has recently been shown that marked loss of body protein occurs in these cases, beginning within a day or two following injury, reaching a maximum within ten days and then slowly declining. It has been shown that a diet rich in animal protein and of high calorific value considerably modifies this loss.

On the other hand, if such patients continue to eat high or even normal Calorie diets they will tend to put on weight, since their physical activities must of necessity be restricted to a minimum.

Dietary treatment of cases of fracture, therefore, consists in a high Calorie, high animal protein diet for the first few weeks after injury, followed by a diet providing about 1,400 to 1,600 Calories a day until the patient is able to resume his usual activities. The nature of the

diet should be similar to that appropriate to a healthy person of the same age, and liberal amounts of calcium, phosphorus, and vitamin D should be given.

In cases of fracture where the patient is not confined to bed a normal diet should be given, special attention being paid to a liberal supply of calcium, phosphorus and vitamin D.

DIET IN DISEASE OF THE HEART

For dietetic purposes, heart diseases may be divided into two main types :

(*a*) Acute heart failure.

(*b*) Gradual heart failure.

(*a*) **Acute heart failure.** This may attack adults of any age. In the acute stages small feeds should be given five times in the day and once during the night. Each feed should consist of about 5 oz. of milk with cream, junket, jelly, and other light dishes. A sufficient amount of carbohydrate in a form easily assimilated is necessary, and for this purpose glucose is extremely useful. If œdema is present a low salt diet (see p. 242) may be advisable.

As the patient improves, white fish may be given, and fluid should be taken between meals in the form of water or orange juice. Later, meat

and vegetables may be added. Even after the patient has recovered it is best to drink half an hour before meals, not with them, and bulky meals and all excess of food should be avoided. The Karrell diet (p. 155) is also sometimes used.

(*b*) **Gradual heart failure.** This usually occurs in old people and may be accompanied by raised blood pressure and anginal pains. The diet here follows no hard-and-fast rules, but should supply sufficient nourishment while placing the least possible amount of work upon the heart.

Patients with heart disease must avoid bulky and indigestible meals. The food should be plain, and taken in small amounts at fairly frequent intervals. Excessive amounts of fat and protein at the same meal should be avoided. Trouble is often caused when a large meal is taken just before bedtime. The diet should contain plenty of easily assimilable carbohydrate, and small amounts of sugared drinks or sweets may be taken between meals if the patient is normal in weight.

If the patient is overweight a cautious reduction of the excess is one of the objects to be achieved, since the task of nourishing the superfluous flesh is merely giving unnecessary work to the heart. A reducing diet (see p. 152) should

be given, but large portions of cabbage or other coarse vegetables should be avoided. For patients in bed the Karrell diet (p. 155) may be used.

Some physicians prescribe diets with low protein content (p. 238). If œdema is present a low salt diet (p. 242) may be given. There is no need to restrict fluids if the diet really contains very little sodium chloride.

CHAPTER V

DIET IN DISEASES OF THE ALIMENTARY SYSTEM

DIETETIC measures are, generally speaking, most important in the treatment of disorders of the digestive tract, and some diseases are improved, or even cured, by careful attention to diet alone. For purposes of discussion, diseases of the alimentary system may be classified according to their site.

DISORDERS OF THE PHARYNX

(*a*) **Sore throat, post-tonsillectomy, tubercular laryngitis, quinsy.** These disorders are treated by a soft non-irritating diet which may be easily swallowed. The diet should consist mainly of milk and other fluids, which should not be taken hot, eggs, porridge, gruel, junket, custard, jelly, and ice cream. Minced meat or fish, and stewed or very soft raw fruits may be given as soon as they can be swallowed. After tonsillectomy great care must be taken that no hard pieces of food reach the throat. Barley sugar and hard sweets must be avoided, and

care must be taken that the pips of grapes, etc., are not swallowed. Salt foods and acid drinks should not be given.

(*b*) **Bulbar palsy.** In bulbar palsy the muscles of deglutition become paralysed so that swallowing is very difficult. Fluids regurgitate, and dry solids cannot be swallowed, so that only a semi-solid diet such as that shown on p. 164 will pass satisfactorily down the œsophagus.

DISORDERS OF THE ŒSOPHAGUS

(*a*) **Carcinoma.** The whole object of dietary treatment of carcinoma of the œsophagus is to supply the maximum possible amount of nourishment through a gradually stenosing ring of malignant growth. At first an ordinary soft diet can be given but later, as the passage becomes smaller, a high calorie fluid diet must be supplied (see p. 165). Its basis is milk, reinforced with glucose or other sugar, cream, and raw eggs. Fruit juices to supply vitamin C, some source of vitamin B, and salt should be given. Tube feeding may be resorted to, and high calorie feeds suitable for the purpose, or for gastrostomy cases, are given on p. 167.

(*b*) **Achalasia.** Here a semi-solid diet, similar to that used for bulbar palsy (p. 164), should be employed.

DISORDERS OF THE STOMACH

Patients suffering from disorders of the stomach have often become progressively malnourished before their disorder is treated. Special attention should therefore be paid to the supply of vitamins and minerals, as well as of calories. Small, regular amounts of sodium chloride should be given (about 5 grams a day). The improved results which are obtained with more nutritious diets in the early stages of gastric and duodenal ulcer have been clearly demonstrated. The slightly larger soft bulk eaten does not hurt the ulcer, and the improved nutritional condition of the patient enables him to recover more surely and rapidly.

(*a*) **Simple hyperchlorhydric dyspepsia.** Diets for simple hyperchlorhydria, without any organic lesion, are based on the same lines as those for gastric or duodenal ulcers, but being less drastic they resemble those given for convalescent ulcer patients.

The principle of treatment is to give small meals at frequent and regular intervals. The food should be plain and unexciting, and, since the object of the treatment is to reduce the flow of hydrochloric acid into the stomach, all stimulants to gastric secretion such as season-

ings, meat extracts, alcohol, and acids like vinegar and lemon juice, should be avoided. Mechanical irritants, stalks, husks, and pips, must be forbidden. Diets suitable for this condition are given on p. 176.

(*b*) **Simple hypochlorhydric dyspepsia.** Abdominal discomfort after taking meals may be due to an insufficient secretion of hydrochloric acid into the stomach, though hypochlorhydria does not necessarily lead to dyspepsia. It has recently been shown in an investigation on normal, healthy students that 4 per cent. of them had achlorhydria, yet they had no symptoms of indigestion.

If the discomfort can be traced to hypochlorhydria, small meals should be given, and fluid should be taken *between* meals and not with them. The food should be sufficiently tasty to stimulate the flow of gastric juice, and doughy foods should be avoided. Examples of suitable diets are given on p. 169.

(*c*) **Gastric or duodenal ulcer.** The object of medical treatment of gastric or duodenal ulcer is to maintain the stomach as far as possible in a state of comparative rest and in an almost alkaline condition for a sufficient length of time to allow the ulcer to heal. To these ends, belladonna may be given to reduce the muscular

movement of the stomach and to depress secretion, and alkalis are often administered to neutralise the hydrochloric acid which is secreted. Smoking should in all cases be forbidden as it tends to stimulate gastric secretion.

The object of the dietary treatment is to irritate and stimulate the stomach as little as possible, and at the same time to supply sufficient protein to "buffer" the acid that may be secreted. The diet consists of non-irritating food, at first in fluid or soft form such as egg and milk or milk puddings, and purées of apple and other fruits, given at frequent intervals.

It is important that during the first stages of treatment the patient should be in bed. It must be emphasised that there is no routine treatment for gastric ulcer, either dietetically or medically, though the principles outlined above always form the basis of treatment. The more each individual case is treated on its own merits the better.

There are several types of gastric ulcer diets in common use. One is based on Lenhartz's treatment (see p. 171), and depends upon the feeding of eggs, milk, and sugar or glucose at two-hourly intervals by day and four-hourly by night.

The Sippy type of diet gives a larger amount of fat with a view to depressing the

secretion of hydrochloric acid. It provides less carbohydrate than the Lenhartz diet, but it includes a good supply of digestible protein. It consists essentially in the hourly administration of equal parts of milk and cream.

A diet for the first three weeks of gastric ulcer treatment, which may also be used as an interim diet during investigation, or for use in a diagnostic test, consists in small two- or three-hourly feeds composed of one or more of the following foods: Milk, cream, sugar, stale white bread or dry biscuits, butter, eggs, junket, jelly, custard, milk pudding, ice cream, or proprietary infant or invalid food, with fruit and vegetable purées if desired. Examples of the arrangement are given on p. 174.

This newer form of diet, which patients often find more palatable, even when they are very ill, is based on the discovery of Meulengracht that patients suffering from gastric or duodenal ulcer could be given soft solids, including such foods as milk puddings, mashed potatoes and pounded fish immediately after hæmatemesis without ill effect. A diet based on these principles was introduced at St. Bartholomew's Hospital by Professor L. J. Witts and is given on p. 174. Its advantages over previous types of diet are that it supplies more Calories, increases

the fluid intake of patients who are often dehydrated by hæmatemesis and vomiting, and gives a wider variety of flavour and texture.

For patients at home arrangements for frequent feeding are facilitated by the use of a thermos flask. If the family is not in a position to give the patient constant attention, feeds can be kept in the flask, and the patient himself can take a portion from it every two hours and during the night. At night time a thermos is invaluable, as the patient can take a drink of warm milk and water on waking without being unnecessarily disturbed.

(*d*) **Convalescence from gastric or duodenal ulcer.** The diets on p. 176 are intended for patients resuming normal activities. Food should be taken at regular and frequent intervals, two-hourly at first, and later every three hours. Between the four main meals there should be snacks consisting, for example, of biscuits and a milky drink. At first the meals and "snacks" should be of approximately equal size. All irritating foods should be avoided, such as pips and skins of fruit, apple core, brown bread, husks of oatmeal, etc. Patients should sit still during their meals and should not rush about immediately afterwards. A housewife, for example, may

have to take some biscuits and milk before getting up, and postpone her breakfast until the rest of the family have had theirs. She should not wash up immediately after a meal. For those who work away from home it is usually possible to secure five minutes or so between meals for the necessary "snack," which may consist of one or two biscuits. Those who travel a great deal, and those who have social engagements to keep, must plan for themselves schemes whereby the hours for feeds are always observed, and some suitable food taken at similar hours every day. For these a packet of biscuits in the pocket or handbag, to be eaten in the car or train, are the best insurance against a recurrence of the discomforts of hyperchlorhydria. The feeds must not be very warm nor very cold. Alkaline medication is often used with each type of diet unless hypochlorhydria is present, and olive oil is sometimes given before the main meals and last thing at night. As a gastric ulcer diet usually contains very little vitamin C, 2 to 6 ozs. of fresh, strained orange juice, or ascorbic acid tablets must be given daily between feeds. If a patient has been for some time on a milk or other diet deficient in vitamin C, he should receive large doses of ascorbic acid until tests show that he

is saturated with this vitamin. Regular, small drinks of water (3 to 5 ozs.) should be given between meals when fruit juice is not taken.

Patients who have suffered from disorders of the stomach must realise that these will probably tend to recur. They must therefore take certain precautions very seriously if they are to avoid the breakdowns so often seen in patients who have had gastric or duodenal ulcers. For the rest of their lives they must take meals at frequent, regular intervals of three, or at most four, hours, regardless of inconvenience, and they must avoid long waits for meals, even if these occur only occasionally. A piece of chocolate or a biscuit should be taken if it is impossible to have a meal at the usual time. They must never overload their stomachs with bulky foods such as large helpings of cabbage or salads, nor with quantities of mixtures slow to leave the stomach, such as protein and fat, *e.g.* fat meat, suet pudding after a large meat or fat fish course.

(*e*) **Carcinoma of the stomach, chronic gastritis of pernicious anæmia, arsenic, or other poisoning.** Here the diet must contain the maximum possible amount of nourishment in a concentrated, light, non-irritating form. All kinds of roughage must be avoided and small

meals should be given at frequent intervals. The diet should consist mainly of milk reinforced with carbohydrate such as Benger's or other invalid food,. eggs, custards, jellies, junket, etc. Details are given on p. 158.

DISORDERS OF THE SMALL INTESTINE

(*a*) **Idiopathic steatorrhœa. Sprue and cœliac disease.** Adults suffering from sprue, or children suffering from cœliac disease, are able to digest fats in the normal way, but they are unable to absorb the products of digestion. Their motions are, therefore, full of fatty acids. These disorders are frequently accompanied by a type of anæmia very similar to pernicious anæmia, and tetany may occur as a result of poor calcium absorption.

Dietary treatment in all cases of idiopathic steatorrhœa consists in the gradual building up of a diet, starting with one which is nearly fat free, and which consists largely of skimmed milk and glucose, and working up to an ordinary diet in about a year. Marmite or Yeastrel, or liver extract should be given for the anæmia, and a vitamin A and D concentrate. It may be advisable to omit starch from the diet as this tends to ferment in the digestive tract. In

some cases of sprue a high protein low fat diet has proved to be most successful; see p. 198.

The general diet for idiopathic steatorrhœa may have to be modified for children suffering from cœliac disease, as the response to dietary treatment varies widely. Some patients can tolerate nothing but protein foods such as lean meat and fish and skimmed milk; others can also take carbohydrate in the form of bananas or glucose.

(*b*) **Lienteric Diarrhœa.** Small, dry meals should be given, and no drink should be taken with food. The food should never be very hot, and should contain as little roughage as possible. For suitable diets see p. 179.

(*c*) **Typhoid Fever.** See p. 67.

(*d*) **Jejunostomy.** Suitable feeds are given on p. 167.

DISORDERS OF THE PANCREAS

Chronic pancreatitis, obstructions to pancreatic duct. Here the secretion of enzymes by the pancreas is apt to be deficient, and therefore the parts of the digestive processes for which they are responsible may be ineffectively carried out. The digestion of fat is most likely to suffer, but also the digestion of protein and starch. Even when the digestion of fats is incompletely carried out, however, protein and

starch may be relatively well tolerated and, of the three, starch is least likely to be affected.

Dietary treatment is difficult, since fat must be avoided, and it may be necessary to omit starch and meat as well. The diet should consist mainly of skimmed milk, sugar, and fruit. Peptonised protein foods may be found to be of value in some cases. A suggested diet is given on p. 194.

BILIARY DISEASES

(*a*) Acute cholecystitis

Here the utmost dietetic rest is necessary. The diet should be exceedingly light, including plenty of fluids reinforced with glucose (see p. 164).

(*b*) Chronic cholecystitis, or other gall-bladder diseases with or without gallstones

The essentials of diet for chronic cholecystitis are small, equal, and regular meals. Mixtures of fats and starches should be avoided, and coarse, irritating bulky foods should not be given. The cookery should be as plain as possible, and the patient should refrain altogether from such foods as buttered toast, potatoes mashed with butter, white sauce, and fried foods and pastries. Bread and butter is sometimes quite well tolerated. The diets suggested on p. 158 may be used.

Cholesterol-free diets are frequently prescribed for patients suffering from gall-stones. They are difficult to construct, and of doubtful value, since cholesterol is synthesised in the body far more easily than it is absorbed from the food.

LIVER DISEASES

The liver plays an extremely important part in the digestion and metabolism of foods, and its functions are many and various. It is concerned with the metabolism of carbohydrates, proteins, and fat. Hence there may be different disorders of the liver which interfere with one or more of the important digestive functions, and dietary treatment must be arranged according to the type of disease.

(*a*) **Liver degeneration.** Here there is actual cell damage, and the patient should be given a diet high in carbohydrate. Fat need not be restricted, but it has been found by experience that meat should be avoided, and the total protein should not exceed 50 grams a day. It has also been shown that patients with liver degeneration are greatly benefited by a high calcium intake. This may be supplied partly from the food, but medicinal calcium is often prescribed as well. Suitable diets are shown on pp. 196–197.

(*b*) **Obstructive and catarrhal jaundice.** These should be treated by low fat diets. As fat supplies more than twice as many Calories per gram as carbohydrates or protein, a low fat diet will become a very low Calorie diet and the patient will lose weight unless extra carbohydrate foods are added. The low fat diets on p. 185 are practically fat-free. It is often more convenient to prescribe a basic diet containing no fat, and to add small amounts of fat in the form of butter, eggs, or cream as required, than to arrange diets containing various amounts of fat.

(*c*) **Liver degeneration with obstructive jaundice.** If obstructive jaundice is prolonged the liver becomes damaged, and here a combination of the two types of diet already described is required, *i.e.* high carbohydrate, low fat, reduced protein, and no meat. Satisfactory diets fulfilling these requirements are difficult to arrange, but a suggested one is given on p. 185. Glucose lemonade is extremely useful in such cases.

(*d*) **Cirrhosis of the liver.** A light, easily digested diet should be given. See p. 158.

DISORDERS OF THE COLON

(*a*) Constipation

The dietary treatment of constipation depends entirely upon its cause.

1. **Cæcal stasis.** This type of constipation is treated by increasing the bulk of the fæces, and therefore by increasing the roughage in the diet. Roughage is derived mainly from whole cereals, brown bread, oatmeal, vegetables, and some fruits (see Table, p. 343). Typical high residue diets are given on p. 182.

Plenty of fluids should be given, and some authorities consider that an increased supply of vitamin B may be beneficial. There is a popular belief that certain foods are "constipating." No satisfactory evidence exists on this point, and patients who have given up milk puddings, cheese, and eggs under the impression that they were "binding" seldom seem to have become less constipated. They are, however, often less well-nourished as a result of their deprivation.

2. **Spastic constipation.** This is frequently treated by giving a low residue diet in order to rest the colon as much as possible. A lubricant such as liquid paraffin is often prescribed. (See p. 179.)

3. **Rectal stasis.** This condition is not benefited by dietetic treatment.

(*b*) Diarrhœa

1. **Acute diarrhœa with or without vomiting.** Sudden acute upset of the digestive system with

diarrhœa and vomiting is treated dietetically by giving no food at all for the first twenty-four hours. Plenty of water should be administered, and saline should always be given subcutaneously or intravenously in severe cases, to make good the loss of water and sodium chloride in the vomit and the fæces. Then glucose water or albumen water may be given by mouth and diluted milk, eggs, and jelly as the patient improves. Later biscuits, butter, proprietary invalid foods and puddings such as custard, blancmange, and junket should be added. Finally, a low residue diet (see p. 179) should be taken until health is fully re-established.

2. **Chronic diarrhœa.** Patients suffering from chronic diarrhœa must avoid all foods containing cellulose (roughage). Food should not be too hot nor too cold, and the meals should be small. If the patient is troubled with flatulence starchy foods should be restricted, and if the stools are offensive it may be advisable to give no meat. The diet should be based on eggs, milk, jelly, junket, custard, fruit juice, steamed fish, clear soup, etc. A vitamin B concentrate may prove useful. For the convalescent stages a low residue diet (see p. 179)should be given. It should be increased in quantity and nature until a full diet is tolerated.

(*c*) Colitis

1. **Ulcerative colitis.** A diet without roughage is essential in colitis, but plenty of food should be given since patients suffering from colitis usually lose weight. A suitable diet is given on p. 179. It consists mainly of milk, milk puddings, eggs, toast, stale white bread, biscuits, butter, steamed fish, mashed potatoes, etc. Plenty of water should be given, and well-strained raw fruit juice, such as lemon, orange, or tomato, should be served daily to supply the vitamin C.

2. **Mucous colitis.** Opinion as to the dietary treatment of mucous colitis varies. Some physicians prescribe a low residue diet (see p. 179), and others give roughage in moderate amounts (p. 158).

CHAPTER VI

DIET IN DIABETES

DIET in diabetes is nowadays planned to suit a lowered tolerance for carbohydrate, whilst giving adequate nutrition from every point of view. With insulin at hand, diabetics can be fed according to the ordinary rules of physiology. A diabetic to-day is not an invalid; he is usually up and about, doing his normal work, and he needs food which will maintain him in full health and vigour. In the case of children it is especially important that the diet should be adequate from the start, and the general principle to be followed is to give diabetics diets as nearly as possible like those appropriate to healthy people of a similar age and occupation.

Insulin. Three kinds of insulin are now in general use, and a summary of the different strengths in which they are sold is given on p. 106.

1. *Ordinary insulin,* discovered by Banting and Best in 1922, revolutionised the treatment of diabetes. It is made from the pancreas of animals. Its maximum action in reducing the

blood sugar is reached about four hours after injection, and it is therefore often given both morning and evening in order to secure control during a great part of the day.

2. *Retard or protamine insulin*, introduced by Hagedorn in 1936, has a much more prolonged action than ordinary insulin, the maximum effect taking place six to twelve hours after injection. It is a compound of insulin with a protamine prepared from fish roe.

3. *Protamine zinc insulin* is a combination of protamine insulin with a small proportion of zinc. Its action is still more prolonged than that of retard insulin, and it suits certain patients better.

Owing to the delayed action of the two kinds of protamine insulin it is sometimes necessary to give a dose of ordinary insulin at the same time as the slow-acting insulin in the morning. This can be done in one injection from an insulin syringe.

In pre-insulin days the usual dietary treatment for diabetics was preliminary starvation for a few days, followed by the administration of a low carbohydrate, high fat diet until the carbohydrate tolerance was reached. Such treatment generally led to under-nutrition. With the introduction of insulin under-nutrition

was no longer necessary, but the tendency to give low carbohydrate high fat diets remained for some time. Examples of these are readily available in the older books and are not given here. With such low carbohydrate diets it was absolutely essential to weigh all the food.

As time went on most physicians recognised the advantage of higher carbohydrate diets, and in the case of children they proved to be a necessity. With these diets the proportion of fat could be reduced, and many doctors now prescribe diets in which only the carbohydrate is accurately measured or weighed, and the protein and fat are left to the patient's own choice. This may seem an unwarranted relaxation, but experienced physicians are satisfied that it makes insulin control no more difficult, and there are great advantages in the diminished restriction to which the patient has to submit.

Other physicians, however, still consider that the importance of securing a definite relationship between fat, carbohydrate and protein, make it preferable to weigh the whole diet.

THE PLANNING AND CALCULATION OF DIABETIC DIETS.

The arrangement of carbohydrate in a diabetic diet depends on whether the patient needs

insulin or not, and if he does require it which of the three types, ordinary, protamine, or protamine zinc, are used. If no insulin is required, as is often the case with elderly or obese patients, the carbohydrate should be divided evenly between the day's meals. With ordinary insulin, since the maximum effect of reducing the blood sugar occurs about four hours after injection, more carbohydrate should be given in the meals after the injections than between them. If there are two injections, morning and evening, lunch should contain less carbohydrate than breakfast, and tea less still, since the effect of the last injection will have disappeared by then. If a morning injection only is given, most carbohydrate (about a third of the day's allowance) should be taken at breakfast, and less and less carbohydrate eaten at the subsequent meals. Diets for use without insulin and with ordinary insulin will be found on pp. 210–218. If protamine (retard) or protamine zinc insulin is being used, the arrangement of carbohydrate is usually made by the physician, and patients must be treated individually. Overdoses may be expected ten to twenty hours after the insulin has been given, and some doctors prescribe carbohydrate late in the day, or even at bedtime, to prevent nocturnal hypoglycæmia.

Diets for use with protamine and protamine zinc insulin are given on pp. 215–218.

Diets with weighed carbohydrate, protein, and fat. These diets are built up, as far as possible, on food portions giving 5 or 10 grams of carbohydrate, 7 grams of protein and 7 grams of fat or multiples of these. The tables of food values on pp. 334, 338, and also the general tables, p. 301, will enable those looking after diabetics to vary the calculated diet by substituting one 5-gram carbohydrate portion for another. Protein and fat portions may be similarly varied.

In calculating a diabetic diet, the carbohydrate should be dealt with first. The amounts of foods required to make up the prescribed carbohydrate should be written down, and the protein and fat in each food added. The quantities of food needed to obtain the total amount of protein should then be filled in, and, lastly, butter and cream should be used to make up the fat.

Sometimes rearrangement may be necessary before the totals will come right. It may, for instance, be found that enough butter cannot be allowed for the amount of bread. It will then be necessary to omit some fat food, such as bacon or fat fish, and substitute those containing less fat, such as egg or steamed white

fish. In some hospitals it is customary to make the total figures correct to within 0·5 gram above or below those prescribed if the diet is calculated and weighed in grams, and to within 2 grams if the amounts are reckoned and weighed in ounces. The variation allowable would be decided by the physician. In all cases the composition of foods is, of course, given in grams.

If the patient is receiving insulin, whether once, twice, or three times a day, it is most important that he should weigh all his food until he has learned to judge the weights correctly. In any case the food should be weighed for a few meals once a fortnight or so to prevent any errors creeping in. The diet should also be weighed for some days every time it is altered. It is probably wisest always to weigh the concentrated carbohydrate foods, bread, toast, etc., and to guess only the protein and fat foods, and the bulky carbohydrates.

Patients should understand that they *must* take the correct amounts of carbohydrate foods at the prescribed meals, but that protein and fat foods may be divided among the meals as desired, provided the daily totals are correct. The times of meals may be varied within reason, provided that insulin, if used, is taken at what-

ever times before meals it has been ordered by the doctor.

The Line Ration Scheme. The *Line Ration* diet scheme devised by Dr. R. D. Lawrence, and reprinted by the courtesy of Messrs. H. K. Lewis, greatly simplifies the calculation of the diabetic diet. Each black line contains 10 grams of carbohydrate and each red line $7\frac{1}{2}$ grams of protein and 9 grams of fat. The physician prescribes the desired number of black and red portions, the red lines usually being less in number than the black lines, and the patient has only to choose his foods and to weigh them accurately. Further details and examples are given on p. 204.

Diets with weighed carbohydrate. Some physicians find it satisfactory to prescribe only the amount of carbohydrate, and leave the protein and fat foods to the patient's own choice and appetite. The Line Ration scheme may be employed but the number of black lines only are prescribed, and foods printed in red are allowed in average helpings. If this is done, care must be taken that sufficient only is eaten to reach or maintain the weight desired for the patient. An example is given on p. 207.

Diets with measured carbohydrate. In mild cases of diabetes, where the patients are elderly

or stupid, but have regular dietary habits, qualitative restriction of carbohydrate to an approximate figure may be all that the patient requires or can carry out, and better clinical results may be obtained, even with insulin, than by false reliance on more accurate methods. Lists of foods which are allowed in unlimited quantities are given on pp. 208, 337. Carbohydrate foods are prescribed in tablespoons, teaspoons, or in the case of bread, by measure. Further details of this method of diet prescription are given on p. 208. This method, though it works well in cases selected by the skilled specialist, should not be allowed to take the place of accurate dietary treatment unless it is impossible to explain more exact and varied diets to the patient.

Diet for diabetics during illness or after operation. In cases of illness, or in an emergency, the correct amount of carbohydrate must be given at all costs, but it is usually unnecessary, if the patient is on a weighed protein and fat diet, to attempt to adhere strictly to measured amounts of these. The fat intake should be reduced as there is a risk of ketosis when diabetics are ill.

Fluids must be given where patients cannot take solid food, and ordinary sugar, glucose, or

lactose may be used to supply carbohydrate in concentrated form. Milk, sugars, and fresh fruit drinks, Ovaltine and Bournvita, eggs where possible, and flavourings of tea, coffee, Marmite, Yeastrel, and meat extract form the basis of fluid diets for diabetics. Horlick's Malted Milk is often tolerated particularly well. For fluid diets see pp. 228–232.

Since diabetic patients have usually lost the taste for sweet foods, glucose or lactose may be more acceptable than ordinary sugar. Even the sweetness of glucose may need to be disguised by lemon juice. The amounts of carbohydrate must be similar, meal by meal, to those taken in health. This is particularly important for patients taking insulin. If the patient is very ill his feeds must be given at two-hourly or even hourly intervals. If insulin is being given at the usual times, care must be taken that the amounts of carbohydrate during the day are divided in the same way as in the ordinary diet.

Emergency diets. In cases of emergency, where a known amount of carbohydrate must be given without delay or where scales are not available, the list of food measures on p. 337 will be found to be of assistance.

Emergency treatment where patient cannot take food. If the patient is unable to take

any food whatever owing, for instance, to vomiting, and the previous insulin and food have been taken as usual, half the usual dose of insulin should be given and the physician consulted immediately. As the patient improves, bread or biscuits may be given in place of sugar, 1 oz. bread or ¾ oz. unsweetened biscuits being equal in carbohydrate value to ½ oz. sugar or glucose (15 grams carbohydrate). (See pp. 228–232.)

Details of diets suitable for diabetics suffering from indigestion or diarrhœa are given on pp. 226, 227.

Diet for diabetics with tuberculosis. Diabetics, like other patients suffering from tuberculosis, need a diet providing more than the normal number of Calories, and should have an ample supply of foods rich in mineral salts and vitamins, especially milk. Suggested diets for tuberculous diabetics are given on p. 224, containing 250 grams of carbohydrate, and providing about 2,500 Calories. Should a patient receiving such a diet be too ill at any time to take it, a fluid diet (carbohydrate 250 grams) similar to those on p. 232 could be substituted.

Diets for diabetic children. The principles underlying the treatment of diabetic children are exactly the same as those for adults, but in

the case of children ample food must be supplied for growth as well as for maintenance. Estimated Calorie, protein, and mineral requirements of normal children of various ages are shown on p. 358. A diet supplying the full requirements should always be prescribed as soon as possible, and it should include at least 1 pint of milk per day. Cheese is an excellent source of calcium and phosphorus for children as well as adults, and may be given as cream or milk cheese to children who are too young to take the ordinary varieties. Typical diets for diabetic children are given on p. 221.

Diabetic children should learn to feel that their dietary restrictions are different from, but little more irksome than, those of other children. Nowadays diabetics have a very good choice of the foods which other children eat, with the exception of sweets, and they may be compensated for this deprivation by being given extra pocket money to spend on other coveted luxuries. In order to counterbalance any feeling of inferiority, diabetic children should be made to realise that they are a little cleverer than most people in knowing about the foods that suit them, and that they can exercise grown-up self-control in resisting the temptation to eat

or drink those which would not be good for them. The less they feel that their family and friends are sorry for them the happier the children will be.

"Buffer" meals. All diabetics having ordinary insulin, particularly children, should have extra carbohydrate before taking extra exercise in the morning in order to prevent too great a lowering of the blood sugar. Three-quarters of an ounce of unsweetened biscuits (*e.g.* three average water biscuits), ½ oz. of sugar or barley sugar, or 1 oz. of chocolate, to supply 15 grams of carbohydrate, are often given about ten minutes before exercise such as riding or swimming. There is no danger from eating small amounts of biscuits or other carbohydrate foods before swimming, as they are very rapidly digested and absorbed. After afternoon exercise the additional carbohydrate should be taken with the tea or evening meal. The principle of "buffer" meals applies equally well to patients taking protamine insulin, but the physician should be consulted as to the times of day at which it is advisable to take extra carbohydrate.

Foods suitable for diabetics. It is no longer reasonable to lay down rules as to suitable and unsuitable foods for all diabetics. Nutritional

essentials such as animal protein, mineral salts and vitamins must always be secured in a suitable form. Nowadays, diabetic diets fall into two distinct groups, those low in carbohydrate (under, say, 150 grams), and often also low in Calories, and those containing 150 grams carbohydrate or more. People with hearty appetites on the restricted diets should not be given concentrated carbohydrate foods such as sugar, jam, cakes, fruit tinned in syrup, and bottled coffee, since they will not feel satisfied if they are given their ration of carbohydrate in this form. For them the food extras on pp. 208, 337 will add variety and bulk to the diet and should be considered in planning the menus. Simple home-made scones and cakes (recipes pp. 250–252) may be substituted for the bread allowed in the diet according to their carbohydrate content (see p. 336). Recipes for soups, savouries, and puddings are also given; for further recipes see Lawrence, *Diabetic A B C*.

Patients on higher carbohydrate diets, with normal appetites, as well as those with small appetites on lower carbohydrate diets may well feel satisfied, even though part of their food is in the form of more concentrated carbohydrates. The doctor, nurse, or dietitian should be most careful not to introduce them if the patient

lacks self-control over his diet or often feels hungry. School children, for instance, like to eat till they feel full, and would be made miserable if they were allowed sweet foods, which would necessarily be in comparatively small amounts only. If concentrated carbohydrate foods are used they must be weighed with the utmost care, as small errors in the amounts eaten, whether too much or too little, may have serious consequences.

The chemical composition of a number of everyday dishes is given in Table I, p. 301, and the amounts containing 5 grams of carbohydrate are shown on p. 336. In calculating diets in which these cooked dishes are included care must be taken that protein as well as carbohydrate is adequate. The dishes must be made carefully from the recipes (p. 250), from weighed amounts of ingredients.

The portions eaten should also be weighed frequently, otherwise serious dietary errors may creep in.

Food extras. Apart from foods containing known amounts of carbohydrate, protein, or fat, which are calculated into the diet, certain extras with practically no food value are allowed in reasonable quantities. A list of these is given on pp. 208, 337.

Special diabetic foods. Now that most diabetic diets are comparatively liberal, and provide bread at any rate in moderate amounts, bread substitutes are no longer necessary. They should be forbidden as extras since most of them contain appreciable amounts of carbohydrate, or of protein and fat. Should patients insist on eating them, their food value must be ascertained and reckoned into the calculated diets.

Diabetic cakes and sweets, with the exception of some jujubes, all contain carbohydrate or fat, and if taken must be allowed for in calculating the diet.

Sweetening. Saccharine may be used to sweeten beverages, puddings, and fruit. Half a tablet is sufficient for most people in a cup of tea, and there will be a bitter taste if more than one tablet is used. A pinch of bicarbonate of soda added before the saccharine to very tart fruits will counteract their acidity.

Proprietary jams, marmalades and jujubes for diabetics usually contain glycerine which forms sugar in the body. Provided these are taken in small quantities no harm will be done. They must, however, on no account be " made a meal of." Diabetics will find sugarless

marmalade on the whole more palatable than jams. There are several good makes on the market.

A recipe for home-made marmalade for diabetics is given on p. 288. As it is made with gelatine it will only keep a few days.

Overdoses of insulin. Patients should be taught to recognise overdoses of insulin, characterised by a feeling of giddiness, difficulty in speaking, shaking and trembling, and cold sweats. Children, and even adults, may become unreasonable, and often suddenly lose consciousness. Provided the patient is keeping carefully to his diet, and to the prescribed interval between insulin and meals, an overdose of insulin should be regarded as a good sign, showing that less insulin or more carbohydrate is required. The physician should always be consulted, and he will decide whether to reduce the insulin dosage or to increase the food.

Every patient receiving insulin must always carry sugar with him for use in case of an overdose of insulin. A safe rule is to put sugar in a pocket of every suit or in every handbag the patient possesses and never to take it out except for use or replacement. If he feels the symptoms of an overdose of insulin he should take a lump immediately.

NOTE ON THE SALE OF INSULIN IN GREAT BRITAIN

All insulin in this country is sold under licence granted by the licensing authority set up by the Therapeutic Substances Act, 1925, and all insulin supplied for use in Great Britain and Northern Ireland must conform to the standards of strength, quality and purity laid down in the Regulations made under the Act. Ordinary insulin, including the solutions prepared from the pure crystalline material, is issued in three strengths, viz., 20 units per c.c., 40 units per c.c. and 80 units per c.c. These are sometimes referred to as " single, double and quadruple strengths " respectively. Retard insulin and protamine insulin with zinc are issued in two strengths, viz., 40 units per c.c. and 80 units per c.c.

As insulin is labelled in units per c.c., and the strength is not otherwise indicated on the packet, it is most important to see that the kind used agrees with the doctor's prescription. A patient requiring an injection of 20 units of insulin, for instance, would take 1 c.c. of the 20 units per c.c. solution in his syringe, but only 0·5 c.c. of the 40 units per c.c. solution, or 0·25 c.c. of the 80 units per c.c. solution.

CHAPTER VII

DIET IN DISEASES OF THE KIDNEYS, GOUT AND RHEUMATISM

THE value of diet in diseases of the kidneys varies greatly. In some cases treatment by diet may be of temporary or permanent benefit to the patient, but the nature of the disease almost precludes anything in the nature of a cure by diet alone.

For dietetic purposes cases of nephritis may be divided into four classes, and the treatment of each involves some regulation of the amount or kind of protein taken.

ACUTE NEPHRITIS

This condition lasts only for a short time, and dietary treatment can therefore be concentrated on supplying fluids and reducing the protein metabolism in order to relieve the kidneys as far as possible. Fruit juices with plenty of glucose or lactose and cane sugar to taste, and barley sugar, supply sufficient nourishment during the first stages of the disease. Stewed and raw fruit and milk drinks may be

added later, and the patient can gradually proceed to a semi-solid and then to a solid diet (see pp. 165, 164, 158), avoiding meat and fish until convalescence is established.

CHRONIC NEPHRITIS WITH ŒDEMA BUT WITHOUT NITROGEN RETENTION

In this type of nephritis, where a great deal of protein is being lost through the kidneys and where the blood urea is normal, the logical treatment is a high protein diet. In addition to this, a low salt diet is often prescribed to relieve the œdema (see p. 242). Examples of high protein diets are given on p. 233. The Epstein type of high protein diet is low in fat as well as high in protein (see p. 235). If fat is not restricted this can easily be modified by adding butter, fat meats and fish, whole eggs and cheese to the menu. Salt is restricted as far as possible, just sufficient being allowed to make the food palatable. Fluid is also restricted to 1½ to 2 pints per day.

If the patient is very œdematous a more strictly low salt diet may be desirable. In such cases protein may be administered in the form of " casein bread " and synthetic low-salt milk (see p. 293).

CHRONIC NEPHRITIS WITHOUT ŒDEMA BUT WITH NITROGEN RETENTION

In these cases the excretion of nitrogenous end products by the kidneys is very much impaired and part of the nitrogen is retained as urea within the patient's body. The treatment of this type of nephritis is, therefore, a diet low in protein and high in carbohydrate and fat. Typical low protein diets are given on p. 238.

As this disease is of long, usually of life-long duration, the general health and enjoyment of the patient must be considered, as well as the effect of the food on the kidneys. If a diet very low in protein is taken for any length of time the patient's own reserves of body protein may be depleted, and he will be less able to withstand the disease than ever. Not less than 40 grams of protein a day should be prescribed if the diet is to be used for a long time.

The question as to whether " red " meat is in itself more damaging to the kidneys than " white " has not yet been solved by the medical profession. The amount of purine, and extractives in red meat (with the exception of glandular tissues) is no higher than in white, and some physicians make no difference between them, provided digestion is good.

For less severe cases a diet with the total amount of protein not exceeding 60 grams a day may be satisfactory. Some physicians order alkaline ash diets. The body is usually sodium-deficient, and the advantages of an alkaline ash are presumably to reduce the sodium shortage. It is therefore most important to give sodium salts rather than calcium salts to make the ash alkaline. Alkaline diets can be constructed from the tables on p. 301. It may be noted that milk is the only alkaline food containing an appreciable amount of protein.

The clear-cut cases of nephritis already discussed lend themselves to dietary treatment, and benefit accordingly. Unfortunately a common clinical type of nephritis, especially in children, is a combination of the two types of chronic nephritis discussed above, each demanding exactly the opposite dietary treatment to that of the other. If nitrogen retention and œdema occur together then a diet low in protein and sodium chloride may be required. Such cases must, however, be treated individually.

ALBUMINURIA OF PREGNANCY

Patients suffering from albuminuria of pregnancy are often ordered a low protein diet

in order to allow the kidneys to rest as much as possible from excreting the products of protein metabolism. In the acute stages only fruit juices with plenty of glucose or lactose are usually given, followed later by a diet supplying about 30 grams of protein. This may be gradually increased by adding milk, eggs, and fish, according to the doctor's orders. Diets especially devised for this purpose are given on p. 239.

It is most important in these cases to ensure that the patient is receiving an ample supply of calcium, phosphorus, and iron to meet the demands of the growing fœtus. It may be necessary to prescribe these medicinally.

GOUT

Dietary treatment of gout consists in reducing the purine intake as far as possible. Foods specially forbidden are meat extracts and cellular organs (see p. 342). The diet should be of a lacto-vegetarian type. Tea, coffee, and cocoa contain substituted purines and are forbidden by some physicians. Beverages made from cereals, such as Instant Postum, may be used. Alcohol is not allowed as it is thought to be a predisposing factor. Suggested diets are given on p. 199.

RHEUMATISM

Whilst diet may be of considerable importance in the treatment of rheumatic diseases, its sphere of usefulness is limited, and is usually directed towards the improvement of general health rather than towards the relief of the rheumatism itself. A sufficient intake of food essentials should be secured, with due regard to the maintenance or attainment of normal weight. If the patient is overweight, a reducing diet such as that shown on p. 152 should be given, and if underweight, a high calorie diet (p. 147) may be advisable. Constipation, hypochlorhydria, or anæmia should be treated with the appropriate diets (pp. 182, 169).

CHAPTER VIII

DIET IN DISTURBANCES OF MINERAL METABOLISM

LOW SALT DIETS

DIETS low in sodium chloride, commonly known as low salt diets, are frequently of great value in cases of kidney and heart disease where much œdema is present.

Recent research has indicated that it is the absence of sodium from the diet which is important, and not necessarily the absence of chlorine. If this is the case, then low salt diets of the future will be low sodium diets, and chlorides may be employed as salt substitutes. There are various preparations of salt substitutes now on the market, but since these usually contain sodium they should not be used.

The average daily intake of sodium chloride by a normal healthy person is about 10 to 15 grams. It is impossible to construct a diet containing no sodium chloride at all, but by careful selection of foods, diets may be devised

which contain not more than 0·1 gram of sodium chloride a day. If only a moderately low salt diet is required the choice of foods is far less restricted. A very low salt diet is not merely a diet in which foods are cooked without added salt, and the obviously salty foods, such as kippers and bacon, are excluded. A large number of foods, especially those of animal origin, meat, fish, cheese, milk, and eggs, which contain appreciable amounts of sodium chloride, should be entirely forbidden or strictly limited in the diet.

A low salt diet must consist to a large extent of fruit, and of vegetables cooked without added salt or soda. Salt-free bread must be used instead of ordinary bread, and salt-free butter should, of course, be given. Lists of foods allowed and forbidden are given on p. 244. An adequate diet is difficult to arrange, since the protein-containing foods must be excluded as they also contain sodium chloride. The greatest problem arises in the case of babies and young children whose food consists almost entirely of milk, and whose protein intake should be adequate for growth as well as for maintenance. For these cases a synthetic low-salt milk has recently been devised which has proved extremely useful in treating

infants with œdema, and has also been used with success for older children and adults. The preparation of this milk is described on p. 293. The casein in the milk has a slight flavour, but this is completely disguised in coffee and puddings such as rice pudding, blancmange, milk jelly, and custard-powder custard. In order to add protein to the diet without additional sodium chloride, salt-free bread containing 19 per cent. of protein can be made with the addition of casein to the flour (for recipe, see p. 293).

Cakes made with ordinary baking powder must not be given, since the baking powder contains sodium. Tartaric acid or yeast may, however, be used for scones, buns, etc. Shortbread biscuits made from flour, salt-free butter, and sugar are allowed.

It has been found by experience that the foods appreciated by patients on low-salt diets are foods which are not normally eaten with salt. Sweet foods, fruit (raw or stewed), jam, marmalade, honey, are usually preferred to saltless savouries. Raw tomatoes with pepper are sometimes appreciated, also mushrooms and onions fried in olive oil. Vegetables may be mashed with salt-free butter. No gravy of any kind should be given, but various

kinds of pepper add flavour to tasteless dishes.

Boiled sweets, barley sugar, and toffee prepared from salt-free butter, golden syrup, and sugar provide a little variety.

Typical examples of a strictly low salt diet, and one which is less restricted, are given on pp. 242, 243. The sodium chloride contents of these diets are 0·1 gram and 0·5 gram respectively.

DIETS IN ANÆMIA

Nutritional anæmias are due to a deficiency of one or other of the factors essential for blood formation. These anæmias may be divided into two main groups, pernicious anæmia, which is due to the failure of the stomach to secrete an essential enzyme, and anæmia due to iron deficiency.

Pernicious anæmia (Addisonian). Liver or minced hog's stomach are the most potent of all foods as a cure for pernicious anæmia. The necessity for taking large amounts of liver as a cure for this type of anæmia has fortunately become unnecessary, since concentrates of liver and of hog's stomach are now prepared commercially, and these have proved to be as

efficient as the fresh material in securing blood regeneration.

Anæmia due to iron deficiency. A deficiency of iron may result from at least three causes:

1. The consumption of a diet poor in iron-containing foods.
2. Defective absorption and utilisation of iron from the digestive tract.
3. Increased demands of the body for iron, due to blood loss, pregnancy, lactation, or infection.

Dietary treatment of this type of anæmia, whatever its cause, is always the same, and consists in increasing the iron intake. If the anæmia is severe, dietetic measures alone may be insufficient, and medicinal iron should be given as well. Foods rich in iron should be given in any case, so as to re-establish the habit of taking sufficient iron for the patient's normal requirements and thus help to prevent a recurrence. These consist mainly of liver, eggs, brown bread, and green-leaf vegetables. Black treacle and oatmeal are also good and cheap sources of iron. Copper is essential for hæmoglobin regeneration, but this also occurs in those foods which contain a plentiful supply of iron.

It has been found that in more than 80 per cent. of the cases of nutritional anæmia in women hypochlorhydria is also present. If hydrochloric acid is not present in the gastric juice the iron tends to be precipitated in the stomach, and in any case does not remain in solution long enough to be absorbed in the intestine. These patients should receive dietary treatment for hypochlorhydria, as well as for anæmia (see p. 169).

DIETARY TREATMENT OF LEAD POISONING

Lead once taken into the body is excreted only slowly and with difficulty, and it is the presence of lead in the blood which causes the symptoms of lead poisoning. Dietary treatment consists in giving a high calcium diet with adequate amounts of vitamin D. This encourages bone calcification and the lead in the blood stream is transferred to the bones along with the calcium. So long as the high calcium diet is continued the lead remains in the bones in an inert and harmless form and the symptoms of lead poisoning disappear. The diet should contain plenty of cheese, milk and green vegetables.

Some physicians still prefer to use the older treatment, consisting of alternate periods of

low and high calcium intakes. The low intake was combined with parathyroid therapy. The object of this was to produce a negative calcium balance. Some of the lead was removed from the bones, together with the calcium and some of this was excreted. This part of the treatment often gave the patient further symptoms of lead poisoning since lead was set free into the blood again. It was then necessary to give a high calcium diet for a time to transfer the lead from the blood into the bones again, and to re-establish calcium equilibrium. The procedure was then repeated. A low calcium diet suitable for this type of treatment is shown on p. 245.

DIETS FOR CALCIUM BALANCE EXPERIMENTS

These experiments are not a method of treatment but are used as a means of diagnosis. They are of great assistance in distinguishing between various types of bone disease, particularly if a parathyroid tumour is suspected. They are also used in other disorders of calcium metabolism, where information is required as to the absorption and excretion of calcium.

In normal health, on a low calcium diet (about 100 mg. a day), and when the urine is kept neutral or just alkaline, three-quarters of the

calcium taken in the food is excreted in the fæces and the remaining quarter in the urine. In cases of parathyroid tumour the amount excreted in the fæces may be unchanged, but the amount excreted in the urine is greatly increased, and may be four times the amount excreted in the fæces.

For the study of these balances the amount of calcium in the diet is carefully regulated, the excreta are analysed, and the results compared with those of normal excretion. Diagnosis depends upon the ratio of urine calcium to fæcal calcium under standard conditions. Usually diets are prescribed containing 100–300 mg. of calcium daily (normal intake of calcium 600 to 700 mg.). In some cases it is so arranged that the foods together yield a neutral ash. In others the acid base balance is not regulated, but sodium bicarbonate is given by mouth so that the urine has an alkaline reaction.

If an accurate balance of intake and output of calcium is required the diet must be prepared, weighed, and consumed with a degree of accuracy unnecessary in therapeutic treatment. The same scales must always be used for weighing the food, and the patient should eat out of the dish in which the food has been

weighed and cooked. A small casserole or pyrex dish is useful for this purpose.

It is always best to set aside a duplicate portion of all food for chemical analysis. Where this is not possible calculation of the calcium content of the diet must be made from reliable food tables, and those given at the end of this book may be used for this purpose. Actually, this method of calculating the calcium content of the diet may be extraordinarily accurate. In one case, for example, a diet was given which was calculated from these food tables to contain 127 mg. of calcium a day. Direct analysis of a duplicate portion of the day's food showed that it contained 125 mg.

Pure sodium chloride should be used instead of ordinary table salt. Where there is an appreciable amount of calcium in the tap-water, as in London, distilled water must always be used for drinking purposes, for tea, and even for tooth cleaning. The use of tooth-paste or powder must be avoided during a calcium balance experiment. Care should be taken to dry the crockery thoroughly after washing.

It is important for the patient to understand from the outset that the test will fail if he cannot get through his prescribed rations. There

should be a trial period of two or three days, during which it will be possible to discover what the patient will eat readily every day, and to make whatever changes are necessary in the dietary prescription. It is usually safer to give quantities which are too small rather than those which are too large.

Similar food must be prepared in the same way every day and given at the same meals, and every effort must be made to suit the patient's taste, as it is no easy matter for a sick person to eat similar food for two weeks or so. Any food refused must be weighed and its calcium content calculated. If this happens often, or if vomiting occurs, the attempt at balance must be regarded as a failure.

A diet containing 100 mg. of calcium is given on p. 245. A fondant (see recipe, p. 295) may be used *ad lib.*, but not barley sugar, since tap-water is used in its preparation.

TREATMENT OF CHRONIC HYPOPARATHYROIDISM WITH LOW PHOSPHORUS DIETS

During operations on the thyroid gland the parathyroid glands are occasionally inadvertently removed. This gives rise to parathyroid deficiency, a condition which may also appear spontaneously. In either case the serum

calcium falls far below its normal level. The acute symptoms of tetany which result are readily relieved by intravenous injection of calcium with or without simultaneous injections of parathormone. Once the parathyroids have been removed, however, they cannot be replaced, and some form of permanent treatment is necessary to maintain the calcium in the blood at a normal level. It has recently been found that a low phosphorus diet in conjunction with large doses of calcium lactate are extremely beneficial in such cases. The suggested optimal level of phosphorus intake is from 0·5 to 0·65 gram a day. The calcium intake should be 2 grams. A small proportion of this will come from the food, but this should be supplemented with 14 grams calcium lactate daily. A suitable low-phosphorus diet in shown on p. 246.

TREATMENT OF ADDISON'S DISEASE WITH LOW POTASSIUM DIETS

Addison's Disease, a disorder of the suprarenal glands, is characterised by a lowered renal threshold for sodium chloride and a raised blood potassium. Patients suffering from this disease are usually treated with cortin, the suprarenal hormone, together with about 15 grams of sodium chloride a day. This is usually taken in capsule

form. It has recently been shown, however, that such patients derive great benefit from a low potassium diet, and that the amount of the hormone may then be considerably reduced or become unnecessary.

A low potassium diet is given on p. 247, and a table showing amounts of food containing 0·05 gram potassium is given on p. 345. From this alternative diets may readily be calculated.

It will be seen that lean meat and vegetables in general have the highest content, whilst fats, sugars, and starches such as cornflour and tapioca have the lowest. By cutting meat or vegetables rather finely, and cooking them in a large volume of water, the amount of potassium can be reduced, and larger portions can therefore be taken by patients on low potassium diets. This treatment, however, tends to spoil the flavour, especially of meat, unless it is cooked in special parchment paper. See p. 296.

Meat or vegetables cut in small dice should be placed in the centre of a square of the paper, then tied up with clean, fine string, placed in a large saucepan or casserole of water, and cooked until tender. Salt and pepper can be used for seasoning. Ordinary gravy should not be used as it contains a good deal of potassium from the meat, but a special recipe is given on p. 296.

In calculating the diet, great care should be taken that it is adequate in all respects. It is very easy in a zeal for reducing potassium to make it deficient in protein, Calories, or vitamin B. The patient's condition and appetite must be the first consideration, and the amounts of food taken may have to be small at first, but with improvement in health a satisfactory and varied diet should be easy to devise; fats, sugars, and low potassium starchy foods must be used to make up Calories, and it is desirable to give a vitamin B concentrate regularly.

CHAPTER IX

DIETS FOR JEWISH PATIENTS

DIFFICULTIES sometimes arise because doctors or dietitians do not know what foods are allowed for Jewish patients who keep to their traditional and religious rites. These are comparatively simple, and almost any diet can be arranged to conform to them. All raw or cooked foods are allowed so long as they conform with the following regulations.

1. Meat and fowl must be killed by experts approved by the ecclesiastical authorities and prepared according to Jewish law. It is then called *kosher* (meaning "ritually fit").

2. Orthodox Jews will not take milk less than six hours after eating meat, but as no definite interval has been fixed by the Rabbis, many Jews would regard three hours as sufficient. Milk pudding, therefore, may not be taken after meat, but should be served after fish, while stewed fruit, pastry made with vegetable margarine, suet pudding, etc., are eaten after meat. Milk foods may be taken before meat, provided the hands are washed and the mouth rinsed after the milk food. Separate cooking

utensils, crockery, and cutlery must be used for meat and for milk. Glass may be used for either if it is first rinsed with hot water.

According to Jewish law, doctor's orders must be obeyed, even if they are contrary to Jewish ordinances normally observed. If the physician considers any forbidden food, or arrangement of foods, to be necessary for a patient's health he will have the full support of Jewish religious opinion in overriding any prejudices the patient may have. Difficulty may arise because patients, when ill, become superstitious about eating "unclean" foods. There is the added difficulty of persuading people to take, when ill, food that they have neither tasted nor wanted whilst they were well.

Only animals which "cleave the hoof and chew the cud," and are killed in a special way, and fish with scales and fins are allowed according to the Mosaic law. All kinds of fowl except birds of prey are permitted, but only if killed in accordance with Jewish ritual. Game that is shot is, therefore, not permitted, and it is called *trefah* (meaning "ritually unfit"). Rabbit also is considered unclean for the same reason.

A short list of *kosher* and *trefah* foods are given below.

ALLOWED (*Kosher*)

Beef
Veal
Mutton
Lamb
Chicken
Duck
Goose
Turkey
All salt and fresh-water fish apart from shell fish and eels

FORBIDDEN (*Trefah*)

Pork
Bacon
Ham
Rabbit
Hare
All shell fish such as—
Oysters
Crab
Lobster
Shrimps
Eels
Eggs with blood spots
Gelatine, unless specially prepared

Jewish Holidays: Special Food Customs

Special foods and dishes are eaten at most Jewish holidays in the same way that Christmas pudding is eaten at Christmas. The festivals are made an occasion for special delicacies, and there is the risk that those who are too stout or suffer from a delicate digestion may eat too much.

Passover. Food at Passover, which falls

about Easter time, is modified by the biblical ordinance which forbids the eating of leaven for a week, in remembrance of the exodus of the Children of Israel from Egypt. Ordinary bread can therefore not be eaten, and large unleavened water biscuits known as *matzos* or Passover cakes are used instead. Their food value is similar to that of other unsweetened biscuits, and they can be used on weighed diets for diabetics, *e.g.* by substituting $\frac{3}{4}$ oz. of matzo for every ounce of bread.

Day of Atonement. This day, which falls in the autumn, is observed as a fast by most Jews. If a doctor considers fasting undesirable for considerations of health it would be contrary to the tenets of the Jewish religion for a patient to fast. Thus, doctors prescribing diets for Jewish patients should be particularly careful that those suffering or recovering from gastric or duodenal ulcers do not fast, and that diabetics receiving insulin continue this treatment and take at any rate their usual quantities of carbohydrate on the Day of Atonement.

The Jewish Cookbook (Greenbaum) will be found useful by those requiring details of recipes commonly used by orthodox Jews.

CHAPTER X

FOOD TABLES: THEIR PREPARATION AND USE

THE HISTORY OF FOOD ANALYSIS

THE composition of foods and their division into various classes is a subject which has interested many workers, even from the time of Hippocrates. It was necessary, however, for the science of chemistry to be fairly far advanced before any great progress could be made in the chemical analysis of foodstuffs. Liebig, who worked at the beginning of the last century, was one of the founders of organic chemistry, and he was one of the first to apply chemical methods to the investigation of plant and animal foods. He expressed his results in terms of nitrogen and carbon, and not as protein, fat, and carbohydrate, as we do to-day, though he was aware that these are the three prime necessities in animal nutrition, and he knew that the proteins are the carriers of nitrogen.

At about this time a *Treatise of Diet* was written by Paris, and this was really the first

book which shows any attempt to classify foodstuffs in a scientific manner. Here foods are divided into fibrinous, *e.g.* flesh; albuminous, *e.g.* eggs; farinaceous, *e.g.* flour, and so on. In 1813 a book called *Treatise on Food and Diet* was brought out by Jonathan Pereira which classifies the alimentary principles as the aqueous, the mucilaginous, the saccharine, etc. An analysis of many foods is also given, sometimes in terms of carbon and nitrogen, and sometimes in terms of these alimentary principles. His figures for the composition of milk —casein, 4·2 per cent.; butter, 3 per cent.; sugar, 5·3 per cent.; and salt, 0·75 per cent.— are not so very different from the figures which we accept and use to-day.

There are several standard sets of tables now in use, originating from England, America, and Germany, showing the composition of various foods. A selection of these is given below for reference.

The Chemical Composition of American Food Materials. Atwater and Bryant, 1906.

Analyses and Energy Values of Foods. Plimmer, 1921.

Nahrungsmitteltabelle. Hermann Schall, 1932.

Chemistry of Flesh Foods and their Losses on Cooking. McCance and Shipp, 1933.

Chemistry of Food and Nutrition. Sherman, 1933.
The Nutritive Value of Fruits, Vegetables and Nuts. McCance, Widdowson, and Shackleton, 1936.
The Chemical Composition of Foods. McCance and Widdowson, 1940.

THE PREPARATION OF FOOD TABLES

The analysis of foods is laborious work, and the value of the results depends almost entirely upon the reliability of the chemical methods employed, and the number of samples analysed. This is where some of the older work is seriously at fault. A comparison of the figures for the carbohydrate content of fruits as given by Atwater and Bryant with those given by McCance and Lawrence for instance, show the most alarming differences owing to flaws in technique. The method employed by Atwater and Bryant for the determination of carbohydrate was one which included a great deal of the unavailable cell-wall material in the so-called "carbohydrate" content, and the figures given by these workers are usually far too high, while the values given by McCance and Lawrence for fruits are in some cases too low, since the method used resulted in a destruction of part of the fructose.

Carbohydrate was formerly obtained " by difference." The protein, fat, and water were estimated, and the remainder was assumed to be carbohydrate. To-day there are chemical methods which will not only determine the total carbohydrate in a food which is available to the human body, but which will estimate separately the various kinds of carbohydrate, the starch, the cane sugar, the glucose, the fructose, and so on. The sum of these constitutes the available carbohydrate in the food.

Figures given in this book for the carbohydrate content of foods have been derived by this last method.

The *protein* content of a food is usually obtained by estimating its total nitrogen and multiplying this figure by a factor—6·25.

It is known that a pure protein usually contains about 16 per cent. of nitrogen. Therefore 1 gram of nitrogen corresponds to $\frac{100}{16}$ gram of protein, *i.e.* 6·25. We now know, however, that the nitrogen of many foods is not all present as protein nitrogen—one-half or even more may be present in other forms, and these other forms may or may not be available to the body for energy or for tissue repair. It would be far better if diets could be constructed in

terms of nitrogen, and not in terms of protein as they are at present. This may not matter so much in the treatment of patients, but in research work the advantages of expressing nitrogen as such are obvious.

The *fat* content of foods is comparatively easy to estimate, and the results obtained by various workers are fairly consistent.

From the percentage of carbohydrate, protein, and fat in a food the Calorie value of that food can obviously be readily calculated (see p. 5). Various other organic constituents of foods are occasionally determined for special reasons. Purines, for instance, are of interest in cases of gout. It is sometimes desirable to know the acidity of fruits, and the amount of alcohol in beverages may be of great importance.

Analyses of foods for their individual mineral salt content has only been carried out to any great extent during the last twenty years. The accurate chemical estimation in foods of such elements as sodium, calcium, magnesium, iron, and copper is a difficult process, requiring experience, and unless only the most reliable methods are used the results are valueless. Numbers of workers have analysed a variety of foods for one special element, *e.g.* iron, and others have analysed one special food

for a number of elements. These results are scattered in scientific periodicals published in almost every country in the world. Sherman's tables, published in *The Chemistry of Food and Nutrition*, have been regarded as the most complete information we have on the subject. His figures, however, are in most cases derived from an analysis of raw foodstuff. It is obvious that for such foods as meat and vegetables the composition of the cooked food is usually of far greater importance than its composition in the raw state. Losses occur during cooking and changes in weight take place. Meat, for instance, may lose nearly half its weight when cooked. This loss is largely due to the fact that when meat is heated it invariably shrinks, and as the tissues contract they squeeze out the meat juices which consist of a watery solution of extractives and mineral salts. In dry methods of cookery, such as roasting, shrinkage goes on as before, but the loss of weight is nearly all due to loss of water through evaporation. The loss of salts is small because as the water evaporates from the expressed juices the salts are left on the surface of the meat. In wet methods of cooking, such as stewing, there is a second source of loss—the salts soak out into the surrounding water and

increase the loss due to shrinkage. In practice the losses do not matter since meat gravies are usually eaten. Similar losses occur, however, when fish is cooked, and fish gravies are usually discarded. McCance and Shipp have carried out an extensive study of the chemical composition of flesh foods cooked in various ways, and their tables give values for the mineral salts as well as for the protein and fat of fish and varieties of meat.

Vegetables and fruits are unlike meat and fish in that they do not shrink when cooked and very little loss in weight takes place. Loss of mineral salts and other soluble constituents such as sugars does occur, however, when vegetables are boiled in water, and the composition of the cooked food is of more importance than the composition of the raw.

The proportion of a foodstuff which is discarded as waste is another important factor in food analysis. In America the expressions AP (as purchased) and EP (edible portion) have been adopted to signify whether the figures given for the composition of the food refer to the raw purchased weight or to the weight of the food as eaten.

In using any food tables it must be remembered that foodstuffs are not like pure chemical

substances. They have no constant chemical composition. The composition of an apple, for instance, depends on the variety, on the degree of maturity, on the soil upon which it was grown, on the dryness of the season, on the time it has been stored, and so on. The composition of a piece of beef depends upon the condition of the animal when it was killed, and upon the way in which the meat has been cooked. Any figures given for the composition of a foodstuff are only *average* figures, and their reliability depends largely upon two factors:

(*a*) The number of samples of that particular foodstuff used in the analysis. The larger the number the more likely is the result to be an average result, and therefore the more reliable the figure.

(*b*) The accuracy of the chemical methods used in the analysis.

The following example will make clear the general processes involved in the preparation of foods for analysis.

Twelve 1-lb. batches of potatoes which were grown in various parts of the country were bought, washed, and weighed. They were then peeled by hand in the ordinary way, and the peelings weighed in order to obtain the percentage waste. The weighed, peeled potatoes

were boiled in distilled water in the usual manner (no salt was added), and when cooked they were strained and weighed immediately. They were allowed to cool and weighed again. After being mashed, the different batches were well mixed, and portions were weighed out for the estimation of the various constituents. Sugars, starch, and cellulose ("roughage") were estimated on one sample of the mixture, total solids, nitrogen, and phosphorus on another, chlorine on a third, while a fourth was ashed by heating it strongly in a furnace prior to the determination of sodium, potassium, calcium, magnesium, iron, and copper.

The fat content of fruit and vegetables is negligible, but for foods which contain fat another sample was set aside for this estimation.

All samples were weighed out in duplicate, and the final results were calculated back to the composition of the hot potato as served.

THE USE OF FOOD TABLES

Food tables, that is tables showing the chemical composition of foodstuffs, are used for many purposes. In hospital diet kitchens abridged food tables giving the protein, fat, and carbohydrate content of foodstuffs commonly in use in that particular institution are

usually employed, but more complete tables are continually required for reference. Some form of ready reckoner is of extreme value for the more common foodstuffs, and this is given in Table III. In some cases only one or two dietary constituents are of interest, *e.g.* protein in high or low protein diets, fat in low fat and ketogenic diets, sodium chloride in low salt diets, and calcium in calcium balance experiments. Sometimes it is the Calorie value which is of primary importance, as in cases of obesity. On other occasions a complete analysis of the food is needed.

In most hospital work, however, it is the composition of the *edible, cooked* portion of the food that is of interest. The composition of a raw cod does not matter, but the composition of the cooked fish as served to the patient is required. Hospitals, therefore, need tables of analyses of foods as served as well as of foods as purchased.

Again, in the care of patients, the physician, nurse, or dietitian is dealing with *individual* diets, where the weights of the portions of food are relatively small—the composition of an ounce of bread is of far more use to them than that of a pound. The tables given in Chapter XIII, which are intended primarily for calculating individual diets, show the composition of

1 oz. of the edible portion of a number of foodstuffs, both raw and cooked.

In many large boarding schools, colleges, children's homes, and poor-law institutions, the diet supplied is not just a haphazard one, but is calculated to meet the nutritional requirements of the individuals receiving it, and food tables are obviously necessary for this purpose.

They are also essential for dietary surveys. A dietary survey is an investigation carried out on a large number of people, either in an institution or living in families, in order to determine the chemical composition of their food. Here the most frequent method is to examine and weigh all the food coming into the house or institution over a given period of time. For this method it is not the analysis of the cooked, edible portion of the food that is required, but the amounts of the various constituents that would be obtained from the weight of the food as purchased.

Among other uses of food analyses may be mentioned the arrangement of suitable rations for the army, navy and air force, and for explorers, climbers, and others who are forced to carry with them sufficient food in concentrated form to last them, often for many months. The whole success of an expedition

may depend upon the choice of the food. It must supply the calorific, mineral salt, and vitamin requirements of the individuals for a considerable period of time in as concentrated a form as possible. It is tragic to read of the unnecessary sufferings of the members of Scott's last expedition, who developed scurvy simply because no foods containing adequate amounts of vitamin C had been included in their rations.

CHAPTER XI

DIETS

In this chapter sample diets suitable for the various disorders discussed in Chapters III to X are given, together with lists of foods allowed and forbidden, and dishes suggested. In practice many changes and additions may be made and the diets varied to suit the taste of the patient and the time and capacity of the cook. Wherever possible diets are arranged for two levels of cost: low (A) and moderate (B). In no case, however, has economy been allowed to interfere with dietary treatment, and the A as well as the B diet lists contain all the dietary constituents recognised at the present time to be essential for proper nutrition.

It is most important that food essentials in adequate amounts should be supplied to patients requiring special diets. The quantities actually used for these diets in a large London hospital are shown on p. 144. These are given merely as a guide for buying and should not be regarded as ideal.

Special recipes are given in Chapter XII for some of the dishes suggested when ordinary

recipes are unsuitable. In this case the page on which the recipe may be found is indicated. Otherwise, ordinary recipes should be used.

Where butter is mentioned in menus and recipes it should be understood that vitaminised margarine may be substituted without affecting the food value.

In the menus, meatless alternatives are given on Fridays for the convenience of those who do not wish to take meat on that day. The diets and menus may also be readily adapted for orthodox Jewish patients in accordance with the note on p. 126.

SPECIAL DIETS

Approximate daily quantities per head used in a London voluntary hospital (cooked weight unless otherwise stated)

Food	Weight or measure	Diabetic	Low fat	Low protein	Low residue	Gastric ulcer
I. Bread, Biscuits, etc.						
Bread	oz.	5–7	8	Ordinary 8. Maternity 3–7.	8	4–6 for convalescents only.
Oatmeal, Force, Puffed rice (*raw weight*).	oz.	½ in some cases.	½–1	½–1	½ fine oatmeal.	½ fine oatmeal.
Rice, tapioca, semolina, cornflour, flour, etc. (*raw weight*).	oz.	½ in some cases.	¾ in pudding, sauce and soup.	¾ in pudding and sauce.	¾ in pudding, soup, sauce, etc.	¾ in pudding and sauce.
Biscuits	oz.	½ in some cases.	4–5 water, *weekly*.	0	4–5 sweet, *weekly*.	¾–4 cream crackers.
II. Dairy Products.						
Milk (including cooking) ..	pts.	12 oz. to 1 pt.	Adult ¼. Child 1–1½ skimmed.	Ordinary, 5–8 oz. Maternity and children ½ pt.	1½	½–2½
Butter	oz.	1–1½	0	1½	1	¾–1½
Cream	oz.	0	0	0	1 if specially ordered.	2 in some cases.
Cheese or sardines	oz.	¾–1, four times a week.	0	0	1 cream cheese *weekly*.	0
Eggs	No.	1–2	0	0–1	2	1–4

III. Meat and Fish.						
Meat	oz.	2–3	0	0	0	0
Fish or rabbit	oz.	2–4	3–4	1–3½	3–4	2 pounded or filleted.
Chicken, brains, sweetbreads	oz.	If specially ordered.	Chicken if specially ordered.	Chicken if specially ordered.	If specially ordered.	If specially ordered.
Liver	oz.	Occasionally.	3 oz. *weekly*.	0	3 oz. *weekly*.	0
IV. Fruit.						
Fruit, stewed	oz.	Containing 10–15 g.C. (see list, p. 338).	7 (two kinds).	7 (two kinds).	3 purée in some cases.	3 purée in some cases.
Fruit, raw		As above.	Brought in by patients' friends		0	0
Lemons	No.	2	2	2	0	0
Orange juice (or tomato juice)	oz.	0	0	0	1–2	1–2
V. Vegetables.						
Potatoes	oz	2–5	4–6	4–6	4 mashed with milk and margarine.	2 mashed with milk and margarine.
Cabbage, onions, root vegetables.	oz.	2–5 green vegetables.	3	3	0	0
Pulses (dry weight) ..	oz.	0	½–1 *weekly*.	0	0	0
Lettuce, cress	oz.	½	½	½	0	0
Tomatoes	oz.	3	3	3	0	0

Food	Weight or measure	Diabetic	Low fat	Low protein	Low residue	Gastric ulcer
VI. SUGAR, JAM, ETC.						
Sugar (including cooking) ..	lb. per week.	0	1	1	¾	½–¾
Barley sugar	oz.	0	¾	¾	¾	¾ in some cases.
Jelly, syrup, honey ..	lb. per week.	0	0	0	1	0
Jam or marmalade ..	do.	0	1	1	0	0
Gelatine	oz.	½	½	0	½	½
Ovaltine, Horlick's, Benger's, or similar beverage.	oz.	½ Ovaltine in some cases.	0	Cocoa for maternity and children.	Occasionally.	½–1½ or as ordered.
Tea	oz. per week.	2	2	2	2	2 for convalescents only.
Coffee	do.	4	0	0	0	0
Marmite	do.	Varies.	1–2	0	1–2	½ *per day* in some cases.
Meat extract	oz. per week.	Varies, some have 4 oz.	Occasionally.	0	0	0
Salt, pepper, rennet, cocoa, vanilla, and other essences according to diet.						

Margarine used for cooking: quantity varies according to menu.
Glucose or lactose used according to prescription or taste.

Note.—Where orange juice is used as the sole source of vitamin C as in gastric ulcer and low residue diets, it would probably be wise to increase the quantities given above.

HIGH CALORIE DIETS

Suitable for :— PAGE

HIGH CALORIE DIET A

Breakfast.
Porridge or shredded wheat with milk and sugar to taste.
Scrambled eggs or fried eggs and bacon, or fried kipper, or sausages.
Bread or toast with plenty of butter *and* marmalade or jam or syrup.
Tea or coffee with milk and sugar to taste.

Mid-morning.
Lemonade, or cocoa made with milk. Sugar to taste.

Dinner.
Meat or fish.
Potatoes and other vegetables, with margarine.
Pudding, syrup or jam if possible.

Tea.
Bread with plenty of butter and jam, syrup, etc., meat or fish paste or Marmite or Yeastrel.
Cake or sweet biscuits or shortbread if desired.
Tea with milk and sugar to taste.

Supper.
Cheese, eggs, or fish.
Bread, toast, or biscuits and butter.
Weak tea, cocoa, or lemonade with sugar to taste.

Bedtime.
Milk drink, lemonade or orangeade with sugar.
Biscuits, cake, or bread and butter if desired.

HIGH CALORIE DIET B

Breakfast.	Porridge or Force or other breakfast food with cream and sugar to taste. Omelette, or scrambled eggs, or fried fish. Bread or toast with butter and marmalade. Tea or coffee with cream or milk and sugar to taste.
Mid-morning.	Lemonade, orangeade, or milk drink.
Lunch.	Thick soup or sugared grapefruit. Meat or fish. Potatoes, fried, or with butter. Vegetables with butter, or salad with mayonnaise. Pudding or stewed fruit with glucose and cream. Lemonade to drink if desired.
Tea.	Bread with butter and jam, or cress and mayonnaise. Cake, pastry, shortbread, or biscuits. Tea with milk or cream and sugar to taste.
Dinner.	As lunch.

Note on High Calorie Diets.

Glucose, lactose, or ordinary sugar should be added to beverages, fruits, puddings, porridge, etc., whenever possible. Some raw fruit or fresh fruit drink should be taken daily.

SUITABLE DISHES FOR HIGH CALORIE DIETS

Note.—The following suggestions for high calorie dishes are given for convenience. Patients who dislike foods cooked with fat should take as much glucose as possible with their puddings and beverages, and take extra butter and cream wherever they can.

Soups.	Thick soups of any kind, including meat, ox-tail or mulligatawny soup. Cream soups, such as chicken (p. 265), potato, celery, tomato, artichoke. Tomato soup with lactose (p. 265). Margarine, butter, or cream and fried croutons should be used wherever possible.
Eggs.	Fried eggs and bacon, omelettes with or without ham, scrambled eggs.
Fish.	Fried fish or fish cakes, grilled fish, fish baked in fat. All fat fish. Fish with mayonnaise or Hollandaise sauce. Creamed fish. Fish au gratin. Fish soufflé with cream.

Meat or Fowl. Fried cutlets, fried croquettes.
Ham with salad and mayonnaise.
Boiled ham, sauce Madère.
Ham mousse.
Meat pies and puddings.
Meat stews with dumplings.
Roast pork or other fat meat.
Mixed grill.
Liver and bacon.

Puddings. Pudding or stewed fruit with at least 1 oz. of glucose, lactose or cream.
Suet puddings.
Steamed puddings with syrup, jam, etc.
Pastry.
Compôte of fruit (p. 268).
Pain Perdu (p. 268).

Savouries. Angels on horseback.
Cheese straws.
Grilled tomatoes on toast.
Fried bacon and tomatoes or potatoes.
Roes on toast.

Beverages. High Calorie diets depend to a great extent on beverages which can be consumed with or between meals without giving the patient a feeling of satiety. The following are examples of suitable beverages:
Lemonade (p. 264).
Orangeade (p. 264).
Coffee (p. 264).
Cocoa (p. 264).
Treacle egg nog (p. 264).
Vanilla egg nog (p. 264).
Milk and cream (p. 264).

HIGH VITAMIN HIGH CALORIE DIET A

Breakfast. Orange or grapefruit.
Egg with bacon or tomato, or fresh herring, kipper, or bloater.
Wholemeal bread and butter or vitaminised margarine.
Marmalade or jam.
Tea or coffee with milk.

Mid-morning. Digestive biscuits or brown bread and butter, Marmite or Yeastrel.
Milk flavoured with coffee or cocoa.

Dinner.
Liver, ham, meat, steak and kidney, or fat fish.
Green-leaf or yellow-root vegetables or tomatoes and salad.
Potatoes with vitaminised margarine.
Pudding containing eggs or milk.
Stewed fruit.
Fresh lemonade.

Tea.
Wholemeal bread and butter or vitaminised margarine.
Tomatoes, cress, Marmite, Yeastrel, or raw fruit.
Jam, honey, jelly, or black treacle.
Cakes or biscuits.
Tea with milk.

Supper.
Wholemeal bread and butter or vitaminised margarine.
Cheese or fat fish, including tinned salmon, or roes.
Salad or fresh fruit.
Cocoa made with milk.

Bedtime.
Fresh orange juice or lemonade.
Biscuits.

See notes, p. 151.

HIGH VITAMIN HIGH CALORIE DIET B

Breakfast.
Orange or grapefruit.
Shredded wheat, porridge, or other wholemeal cereal with cream.
Eggs with bacon and tomato, or liver and bacon, or fresh herring, kipper, or bloater.
Wholemeal bread and butter.
Marmalade, jam, or honey.
Coffee or tea with cream or milk.

Mid-morning.
Fresh lemonade, or orange juice, or Marmite, or Yeastrel.
Digestive or other wholemeal biscuits.

Lunch.
Cream of tomato soup (p. 265).
Cold ham or boiled salmon.
Tomato, lettuce, and cress salad.
Potatoes in their jackets with butter.
Fresh fruit salad.
Boiled custard or junket and cream.
Fresh lemonade.

Tea.
Wholemeal bread or biscuits and butter.
Tomatoes, cress, Marmite, or Yeastrel.
Jam, honey, jelly, or black treacle.
Cakes or biscuits.

Dinner.	Soup made from Marmite or Yeastrel and milk. Meat, liver, poultry, or fat fish. Green-leaf or yellow-root vegetables, or tomatoes. Mashed potatoes with butter and milk. Caramel custard, or honeycomb mould, or chocolate soufflé. Compôte of fruit (p. 268). Fresh lemon or orangeade.
Bedtime.	Milk drink flavoured with Ovaltine, or Bournvita, or Instant Postum.

Notes on High Vitamin High Calorie Diets.

Calories.—As much sugar, glucose, or lactose as possible should be added to all beverages, fruits, and puddings. Fat, butter, cream, etc., should be used generously as long as they do not spoil the appetite.

Vitamins.—The main sources of these are given in the tables on pp. 34, 354, which should be consulted when varying the diet. Whenever possible bread containing the germ as well as the husk should be used. An economical way of increasing the vitamin B is to mix yeast with butter, margarine or cream cheese in the proportion 1 : 2, and to use this as a sandwich spread.

LOW CALORIE DIETS

Suitable for :— PAGE

Enforced lack of exercise owing to :—

Obesity due to :—

(Approximate composition : Carbohydrate, 100 g. ; Protein, 50 g. ; Fat, 50 g. ; Calories, 1,070.)

LOW CALORIE DIET A

Breakfast. One egg, boiled or poached.
Bread, white or brown, two thin slices.
Butter or marmalade or jam, very thinly spread.
Tea or coffee (ground) with milk to taste. No sugar or sweetened condensed milk.

Dinner. Meat (lean), rabbit, chicken, or steamed fish, medium portion.
Gravy without fat or thickening.
Green-leaf vegetables as much as desired. (For other vegetables, see Food List, p. 337.)
Raw fruit.

Tea. Bread, two thin slices.
Butter or jam very thinly spread, Marmite or Yeastrel, or meat extract to spread if desired.
Salad and vinegar, as desired.
Tea with milk to taste. No sugar or sweetened milk.

Supper. Cheese, sardines, salmon, herring, or kipper, small portion, or
Two eggs, boiled or poached, or
White fish or smoked haddock, medium portion.
Bread, one thin slice, or two unsweetened biscuits.
Raw fruit or salad if desired.
Tea or coffee (ground), with milk to taste.

Butter must not exceed ½ oz. in the day.

LOW CALORIE DIET B

Breakfast. Raw fruit. No sugar.
Two eggs (boiled or poached), or grilled kidney, or smoked haddock, or steamed white fish.
Bread, brown or white, two thin slices, toasted if desired.
Butter, jam, or marmalade, very thinly spread.
Tea or coffee with milk to taste. No sugar.

Lunch. Clear soup, grapefruit, or melon. No sugar.
Lean meat, chicken, rabbit, boiled white fish, lobster, crab, as much as desired, or
Two eggs poached or baked with tomato.
Green-leaf vegetables or salad as much as desired. (For other vegetables, see Food List, p. 337.)
Fruit, raw, or cooked without sugar, as much as desired.

Tea. Bread, brown or white, two thin slices (as sandwiches if desired). Tomato, cucumber, cress, or egg and cress, meat extract, or Marmite or Yeastrel may be used; or
Two small plain scones very thinly buttered, or
Four plain biscuits.
Tea with milk to taste. No sugar.

Dinner. As lunch.

Lunch, dinner, or bedtime. 3½ oz. milk may be used in soup, unsugared beverage (not cocoa) or unsugared custard, junket, or jelly or other dish containing 5 g. C. (see recipes, p. 283).

Butter must not exceed ¾ oz. in the day.

Note on Low Calorie Diets.

The amounts of food allowed in the above menus must not be exceeded but they may be arranged to taste.

If calories are to be further reduced, butter may be omitted entirely and very small amounts of jam or marmalade taken once a day only. A concentrate of vitamins A and D should be prescribed.

For 400 Calorie diet, see p. 61.

LOW CALORIE DIET FOR CHILDREN

(Approximately 1,200 Calories)

Breakfast. Skimmed milk, dash of tea if desired, but no sugar.
Bread, two thin slices, scrape of butter.
One egg, boiled or poached, or kidney, or smoked haddock.

Mid-morning. Milk, skimmed if possible, or raw fruit.

Dinner. Very lean meat, white fish, or smoked haddock.
Two vegetables or salad (see Food List, p. 337).
Fruit, raw, or cooked without sugar.
If desired, unsugared lemon or peppermint jelly or fruit whip (p. 270).

Tea. Bread, two thin slices. Marmite or Yeastrel, or scrape of butter or jam, or two plain scones.
Salad or raw fruit.
Skimmed milk, dash of tea if desired, but no sugar.

Supper. Bread, one thin slice.
Fruit, raw, or cooked without sugar.
Skimmed milk, with a little Ovaltine or Bournvita if desired.

At least 1 pint of skimmed milk should be given daily.
Butter must not exceed ¾ oz. in the day.
Concentrates containing vitamins A, B and D should be given with this diet. Wholemeal bread should be used where possible.

LOW CALORIE DIET FOR PATIENTS WITH DISEASE OF THE HEART

Breakfast.	One egg, boiled or poached. Bread, white or brown, two thin slices. Tea or coffee (ground), one small breakfast cup. Milk to taste (no sugar or sweetened condensed milk).
Mid-morning.	Fruit, such as grapes, oranges, plums, or pears, or One unsweetened biscuit. One teacupful of tea or coffee with a little milk if desired. No sugar.
Dinner (may be taken in the evening if preferred).	Meat (lean and tender), chicken, rabbit, or steamed or boiled fish, medium portion. Cauliflower or green-leaf vegetables such as cabbage and Brussels sprouts in small amounts only. (See Food List, p. 337). Raw fruit as mid-morning, or baked apple or fresh fruit stewed without sugar or custard or other pudding containing 5 g. C. (pp. 284, 335). Half a glass of water or unsugared lemon water, if desired.
Tea.	One slice of bread or one plain scone or two unsweetened biscuits. Tea, one or two teacups. Milk to taste. No sugar.
Supper or Lunch.	Two eggs, boiled or poached, or white fish or smoked haddock, moderate helping, or Fish or cheese (fresh milk), small helping. One slice of bread. Fruit as for lunch. Half a glass of water or unsweetened lemonade if desired.
Bedtime.	Teacupful of skimmed milk with a little Ovaltine or Bournvita if desired, or unsweetened orange juice or lemon water and one unsweetened biscuit.

Butter must not exceed ¾ oz. in the day.
Patients suffering from heart disease must take small, easily digested meals. They should therefore limit the quantity of all food which they take at one time, including those listed below as allowed without special restriction. Low Calorie beverages may be taken between meals.

KARRELL DIET

Suitable for :— PAGE

Acute heart failure 70

Overweight patients suffering from heart disease 71

The diet consists of four feeds of 200 c.c. (7 oz.) of milk given every four hours, making a daily total of 800 c.c. (28 oz.). This provides :

C. 36·4 g. P. 25·2 g. F. 30·8 g. Calories 532

After two to four days the diet may be increased to 1,000 c.c. (35 oz.) of milk daily, and toast, porridge, cereals and gruels, milk pudding and soft-boiled or poached eggs may be added. The strained juice of one or two oranges should be taken every day. This diet may be followed by a light diet (p. 158) or a fluid diet (p. 165) providing 1,000 Calories.

Patients must remain in bed whilst taking this diet.

FOOD LIST FOR LOW CALORIE DIETS

	Allowed without special restriction	Forbidden
Bread, biscuits, cereal foods, etc.	—	Pastry, cakes, and biscuits. Puddings of all kinds, including Yorkshire pudding. Suet dumplings, crust, and pudding. Barley, rice, tapioca, macaroni, spaghetti, vermicelli and similar cereals. *N.B.*—Bread or unsweetened biscuits may only be taken as allowed in the diet. A small amount of porridge or cooked cereal may be substituted for bread at breakfast or supper if desired. These are not allowed as extras in the diets.

	Allowed without special restriction	Forbidden
Dairy products.	Skimmed milk.	Cream.
	Skimmed milk cheese.	Butter and margarine, except small amount allowed in diet.
		Whole milk, fresh or condensed, beyond amount allowed in diet.
	Unsweetened custard (p. 284).	Sweetened condensed milk.
		Ice creams and ices.
Meat and fish.	Lean meat. Steamed or boiled white fish, and smoked haddock.	Fat meats, such as ham, bacon, pork and sausages, and the fat of any meat, lard, and dripping unless used in place of butter allowance.
		All fried meat and fish dishes.
Fruit and nuts.	Raw fruits, except bananas which should be taken in small quantities only.	Dried fruits, stewed or preserved, fruits tinned or stewed with sugar.
		All nuts.
Vegetables.	Green-leaf vegetables and marrow.	Potatoes (except as allowed in the diet), dried peas, beans, and lentils.
	Salads of all kinds.	All fried vegetables.
	Tomatoes, raw, stewed, or baked without fat (p. 277).	
	Small portions of root vegetables (not potatoes).	
Beverages and soups.	Tea and coffee (ground).	Mineral waters (except soda water), ginger ale, ginger beer, bottled fruit juices (sweetened), such as grape fruit and lemon juice.
	Lemon juice with water or soda water. (No sugar.)	
	Soda water.	
	Cocoa made with skimmed milk or water and two tablespoonfuls of milk. No sugar.	Alcoholic beverages, especially beer, stout, sweet wines, cocktails, and sherry.
	Clear meat and chicken soups and broths.	Thickened soups, gravies, and stews.

	Allowed without special restriction	Forbidden
	Vegetable as flavouring if desired. Marmite, meat extracts. (See recipes of soups with negligible food value, p. 269.)	
Condiments, flavourings, and sweets.	Salt, pepper, mustard, vinegar, saccharine. Essences such as vanilla, almond, peppermint, raspberry.	Oil and salad dressings made with oil, such as mayonnaise, salad cream, etc. Sugar and sweets.

SUITABLE DISHES FOR LOW CALORIE DIETS

Soups.
Clear soups made in the usual way.
Consommé, meat extract, chicken broth carefully freed from fat, Marmite, Yeastrel.
Asparagus soup (p. 269).
Cauliflower or spinach soup (p. 269).
Mixed vegetable soup (p. 269).
Meat extract, Marmite or Yeastrel skimmed-milk soup (p. 275).
Potage à la bonne femme (p. 270).
Tomato soup (p. 274).
Celery or mushroom skimmed milk soup (p. 269).

Puddings.
Lemon or orange jelly (p. 270).
Agar-agar jelly (p. 271).
Coffee jelly (p. 270).
Fruit whip (p. 286).
Skimmed-milk jelly (p. 281).
Skimmed-milk junket (p. 281).

Bulky salads and savoury dishes providing about 80 Calories. See recipes, p. 271.

LIGHT, EASILY DIGESTED DIETS

Suitable for :— PAGE

Acute nephritis. Second stage 107, 108
(Meat and fish must be entirely omitted.)

Arsenic poisoning 81

Carcinoma of the stomach 81

Chronic cholecystitis 84
(Appreciable amounts of fat and starch must not be taken together. Therefore golden syrup, honey, or jam should be spread on bread instead of butter, and cream is not allowed at a meal at which potatoes, bread, or other starchy food is being served. Pastry, Yorkshire and suet puddings are forbidden. Fish and meat must not be cooked with fat.)

Chronic gastritis of pernicious anæmia 81

Cirrhosis of the liver 86

Convalescence from fever, operations, or from any disease not requiring a special diet 68

Convalescence from mucous colitis 89

Old age 49
(A milk soup or beverage may be taken in the evening and a light dinner at mid-day.)

Pregnancy with indigestion or vomiting 52
(Well sugared lemonade, barley sugar, or milk and biscuits should be taken last thing at night by those suffering from morning sickness.)

LIGHT, EASILY DIGESTED DIET A

Breakfast.
Boiled, poached, or scrambled eggs, or cornflakes, or flour of oatmeal, or patent barley with milk and sugar to taste.
White bread or cold toast and butter.
Golden syrup, black treacle, or honey.
Weak tea or coffee. Milk and sugar to taste.

Mid-morning (if desired).
Milk, lemonade, or orangeade.
Biscuit if desired.

Dinner.
Fish, steamed or boiled, rabbit, tripe, or minced mutton.
Potatoes (old), mashed or boiled.
Flower of cauliflower or sieved or young carrots.
Milk pudding, custard, or blancmange.
Baked or stewed apples.

Tea.
White bread or cold toast and butter.
Golden syrup, black treacle, honey or Marmite or Yeastrel, or boiled or poached egg, or cream or milk cheese if desired.
Madeira or sponge cake or plain biscuits.
Weak tea. Milk and sugar to taste.

Supper.
Grapes or orange or mashed banana.
White bread, cold toast, biscuits, or rusks and butter.
Cocoa, or any milk food.

LIGHT, EASILY DIGESTED DIET B

Breakfast.
Boiled, poached, or scrambled eggs, or fresh white fish or smoked haddock or soft roes, or puffed rice or cornflakes or groats or flour of oatmeal or patent barley with milk and sugar to taste.
White bread or cold toast and butter.
Strained jelly marmalade, apple, bramble or other jelly, honey, golden syrup, or black treacle.
Weak tea or coffee. Milk and sugar to taste.

Lunch.
Strained white soup, small portion (no onion), or tomato juice cocktail.
Fish, chicken, or sweetbreads.
Potatoes (old), mashed or boiled, or baked in their jackets.
Sieved spinach or flower of cauliflower.
Milk pudding, custard, blancmange, jelly, soufflé, or meringue.
Stewed peaches or apricots, or baked apple.

Tea.
White bread or cold toast and butter.
Jelly, honey, Marmite or Yeastrel, or strained tomato purée or cream cheese.
Sponge or Madeira cake, or plain biscuits.
Weak tea. Milk and sugar to taste.

Dinner.
As lunch.

Note on Light Easily Digested Diets.

Some raw fruit juice should be taken daily. If the patient has a tendency to flatulence, fluids should be taken between meals and not with them.

FOOD LISTS FOR LIGHT DIETS

	Allowed without special restriction	Forbidden
Bread, biscuits, cereal foods, etc.	Stale white bread and toast. Plain biscuits, sweetened or unsweetened. Cornflakes, puffed rice, patent barley, groats, flour of oatmeal. Rice, tapioca, barley kernels, macaroni, spaghetti, vermicelli, cornflour, arrow-root, semolina, sago.	New bread or rolls, wholemeal bread, hot buttered toast. Digestive, coconut, whole wheat, and rye biscuits. Shredded wheat and other wholemeal cereals and porridge. Pastry, suet dumplings, crust, and puddings.
Dairy products	Fresh milk in any form, preferably boiled. Dried milk or proprietary infant or invalid milk foods. Milk or cream cheese. Butter and cream in moderate amounts. Plain ice cream with meals only.	Ice cream between meals. Cheddar and all hard cheeses.
Eggs	Eggs, boiled, poached, or scrambled.	Fried eggs.
Fish	Boiled, steamed, or baked haddock, cod, sole, plaice, skate, turbot, halibut, trout, fresh boiled cod's or herring's roe; raw oysters.	Herrings, bloaters, kippers, salmon, sardines, eels. Lobster, crab, shrimps, etc. Fried fish.
Meat and fowl ..	Tender portions of the following:— Chicken, game if not high, rabbit, lamb or mutton, or steak. Liver, sweetbreads, brains, tripe.	Coarse or fat meats, such as beef, pork, duck, goose, and the sinewy parts of any meat or poultry. Fried meat or made up dishes. Heart.
Fruit	*Raw fruit* (when allowed by the physician).—Mashed banana, peeled and stoned grapes, orange without any of the white septum, ripe peaches and apricots. *Fruit juices*.—Orange juice and any other sweet fruit juice well strained; tomato juice.	*Raw fruit*.—Apples, pineapple, gooseberries, currants, strawberries, raspberries, and all fruits containing pips or coarse fibres.

	Cooked fruits.—Apples, baked or stewed, avoiding skin and core, stewed peaches and apricots, fresh or tinned; pears, stewed or tinned, avoiding stringy parts. *Purées.*—Any stone fruit, dried or fresh, may be taken provided it is sieved; *e.g.* stewed prunes, stewed dried apricots, stewed plums.	*Cooked fruits.*—Stewed fruits containing pips, such as gooseberries, loganberries, etc. Dried fruits, unless sieved.
Nuts	None.	All nuts.
Vegetables ..	Old potatoes, boiled, mashed, or baked in their jackets. (Skin must not be eaten.) Flower of cauliflower. Young carrots or sieved old carrots. Sieved fresh peas, spinach, marrow, beetroot or tomatoes.	New potatoes. Baked (roast) or fried potatoes. Cabbage, turnips, swedes, dried or broad beans, dried peas or lentils, onions, leeks. Celery and rhubarb. Lettuce, cress, and all raw salads. Parsley.
Beverages ..	Weak tea and coffee, cocoa, Ovaltine and Bournvita, Instant Postum.	Strong tea and coffee. Aerated mineral waters for patients with flatulence.
Soups	Marmite, Yeastrel, chicken or rabbit broth, strained tomato, potato, and milk soups. Meat soups and meat extracts in small amounts.	
Condiments and preserves	Salt in moderation. Honey, golden syrup, black treacle, jelly.	Pepper, mustard. Vinegar, mayonnaise, and other salad dressings, pickles, chutney, horseradish. Jam containing pips, peel marmalade, ginger.

SUITABLE DISHES MADE FROM FOODS LISTED AS ALLOWED

Soups.
Cream of potato; cream of tomato; potato, tomato. (Onion must be avoided.)
Chicken or rabbit broth with rice, tapioca, macaroni, or vermicelli.
Cream of chicken soup (p. 265).
Marmite or Yeastrel made with milk.

Eggs and cheese.
Creamed eggs (p. 292).
Cream cheese and tomato savoury (p. 290).

Fish.
Steamed, boiled, grilled, or baked fish with plain white or egg sauce.
Creamed fish (no parsley allowed), steamed fish cream (p. 266), fish custard (p. 266).
Fish soufflé (use minimum of cream).

Meat and fowl.
Tender meat, roast, grilled, boiled, or steamed. Plain gravy or sauce.
Creamed chicken or rabbit.
Chicken or rabbit custard (p. 266).
Chicken jelly (p. 266) or chicken or sweetbread in aspic.
Sweetbreads or brains, steamed, or stewed in milk, served with white sauce.
Tripe stewed with tomato sauce or in milk (no onion) (p. 277).

Puddings.
Milk puddings, rice, tapioca, ground rice, semolina, vermicelli, macaroni (avoid any burnt skin).
Creamed rice, tapioca, or barley kernels.
Blancmange, vanilla or chocolate.
Junket, vanilla or chocolate.
Jellies, fruit flavouring or milk, including chocolate milk jelly.
Soufflés, vanilla, chocolate, etc., hot or cold.
Meringues with a little cream. Apple meringue (p. 267).
Bavarian cream.
Charlotte russe.
Mousses.
Strained fruit whips, *e.g.* apple, apricot, prune (p. 279).
Queen of puddings (p. 267).
Plain steamed pudding with custard or golden syrup.

Egg custard, baked or boiled, or custard made with custard powder.
Bread-and-butter pudding (p. 267).
Orange mould (p. 267) or fruit sago (p. 280).
Trifle (p. 268).
Butterscotch sago (p. 291).

Note.—Cream for cooking or as an addition to the pudding should be used in small amounts only unless specially prescribed.

Cakes. Sponge and Madeira cake. Angel cake (p. 280).

Sweets. Small amounts of plain or milk chocolate or barley sugar may be taken after meals.

SEMI-SOLID DIET

Suitable for :— PAGE

Breakfast.	Porridge, groats, or patent barley. Milk and sugar. Lightly boiled or poached egg if desired. Tea or coffee with milk and sugar to taste.
Mid-morning.	Mashed banana with milk or cream and sugar.
Dinner.	Minced fish, chicken, or rabbit mixed with white sauce. Potatoes mashed with butter and milk or white sauce. Milk pudding, custard, jelly, junket, or ice cream. Stewed or baked apple, or other soft fruit.
Tea.	Bread and milk. Tea with milk and sugar if desired.
Supper.	Scrambled or creamed eggs or French toast (p. 268). Pudding, or cereal as at breakfast.
Bedtime (if desired).	Warm cornflour, arrowroot, boiled custard, or bread and milk.

Fresh tomato juice or orange juice with sugar to taste should be taken daily.

All food must be brought to a semi-solid consistency before serving.

The Calorie value of the diet may be increased by adding glucose or other sugar and cream to foods and beverages.

Tonsillectomy.—Ice cream is usually appreciated at least once a day after tonsillectomy, quinsy or any other conditions where the throat is sore. Acid beverages and fruit, such as fresh lemonade and grapefruit, should not be given.

Bulbar palsy.—Fluids are swallowed with great difficulty and should therefore be omitted.

FLUID DIETS

Suitable for :— PAGE

Acute diarrhœa—intermediate stages 87
(1,000 or 1,500 Calorie fluid diet. Fruit juices must be carefully strained through butter muslin.)

Acute nephritis—early stages 107
(Barley sugar should also be given.)

Albuminuria of pregnancy—early stages 111
(Barley sugar should also be given.)

Carcinoma of the œsophagus 74

Fever 66
(If the patient's throat is sore, acid beverages must be avoided.)

Tube feeding for gastric ulcer 77
(Orange juice should be given instead of lemon juice once or twice a day.)

Typhoid fever—acute stages 67
(Fruit juices must be carefully strained through butter muslin.)

FLUID FEEDS PROVIDING 1,000 TO 2,500 CALORIES ARRANGED FOR TWO-HOURLY FEEDING

(Quantities in ounces)

Calories		1,000	1,500	2,000	2,500
Feeds by day.					
1.	Egg (No.)	1	1	1	1
	Milk	5	5	5	5
	Glucose	—	—	½	½
2.	Marmite or Yeastrel Milk	5	5	5	7
3.	Junket or milk jelly ..	4	4	5	5
	Glucose	—	½	½	½
	Cream	—	½	1	1
4.	Orange or lemon juice	1	1	1	1
	Sugar or glucose ..	—	½	1½	2
5.	Milk	6	6	6	6
	Cream	—	½	1	1
	Glucose	—	½	½	½
	Tea or coffee if desired				

Calories	1,000	1,500	2,000	2,500
Feeds by day.—cont.				
6. Boiled custard or ice cream: Egg (No.)	1	1	1	1
Milk	4	4	4	5
Cream	—	½	½	1
Glucose	—	¼	¼	¼
7. Orange or lemon juice	1	1	1	1
Glucose	—	1	1½	2
8. Milk	5	5	6	7
Glucose	—	¼	¼	½
Cocoa, Ovaltine, or Bournvita	¼	¼	¼	¼
Feeds by night.				
1. Milk	6	6	6	6
Cream	—	—	½	1
Glucose	—	—	½	½
2. Egg (No.)	1	1	1	1
Milk	5	5	5	5
Glucose	—	—	—	½
Total daily quantities.				
Milk	40	40	42	46
Eggs (No.)	3	3	3	3
Glucose or other sugar	—	2½	4¾	7¼
Cream	—	1½	3	3½
Cocoa, Ovaltine, or Bournvita	¼	¼	¼	¼
Orange or lemon juice	2	2	2	2
Tea or coffee to taste				
Carbohydrate (grams)	62	134	201	278
Protein (grams)	55	56	59	62
Fat (grams)	63	81	103	117

Note on Fluid Diets.

To increase Calories beyond 2,500, extra feeds similar to those above should be given.

Ordinary sugar may be substituted for glucose if a sweeter beverage is preferred, or lactose if the glucose is too sweet. Where glucose is not well tolerated an equal weight of cream may be substituted.

Unless very sweet beverages are desired, orange juice should be used in those containing little or no sugar, and lemon juice where sugar or glucose is given.

Water may be taken with fruit drinks as desired.

5 oz. (fluid)=a small breakfast-cupful. ¼ oz. glucose=a level dessertspoonful. ¼ oz. cocoa, Ovaltine, or Bournvita=1 teaspoonful.

DIET SUITABLE FOR PATIENTS WITH GASTROSTOMY

Calories	1,000	1,500	2,000	2,500
Food	g. oz.	g. oz.	g. oz.	g. oz.
Milk	840 28	840 28	660 22	540 18
Cream	— —	60 2	120 4	240 8
Glucose	45 1½	120 4	180 6	210 7
Eggs (No.) ..	4	4	4	4
Carbohydrate (g.)	84·2	160·6	213·6	240·8
Protein (g.) ..	53·6	54·6	56·0	54·0
Fat (g.)	46·8	74·0	98·6	148·6
Calories	997	1,566	2,017	2,584

INSTRUCTIONS.—Five four-hourly feeds each consisting of 8 oz. of the above mixture should be given during the day. 3 oz. well strained orange juice should be given once or twice a day between feeds, and 1 teaspoonful of Marmite or Yeastrel or other vitamin B concentrate should be added to one of the milk feeds. 5 g. common salt should be given each day, dissolved in the feeds.

FEEDS SUITABLE FOR PATIENTS WITH JEJUNOSTOMY

(Based on Scott and Ivy's formula)

Ingredients.

Flour 8 oz. Sugar (sucrose) 5 dessertspoons. Cream 16 oz.
Milk 32 ,, Peptone 6 ,, Common salt ¼ oz.
Water 48 ,, 1 Egg yolk

1. Make a white sauce with the flour and milk as follows: Mix the flour to a smooth paste with some of the milk. Bring the remainder of the milk to the boil in a double saucepan. Pour gradually over the paste and stir well. Return to the saucepan, stir constantly until the sauce is thickened, then occasionally until it tastes cooked, which takes 30–40 minutes.

2. Whilst the sauce is cooking, dissolve the sugar and peptone in a saucepan containing the water. Bring to the boil.

3. Add the sugar and peptone solution and the salt to the white sauce, and cook for a few minutes. Pour into jugs, cover, and place in a refrigerator.

4. Add the well-beaten yolk of an egg to the mixture just before using, and strain the whole through several layers of butter muslin.

Mineral and Vitamin Content.—The above feedings contain insufficient amounts of iron and vitamins. An iron medication and concentrates of vitamins A, B, C, and D should therefore be dissolved or emulsified in the feeds.

Method of Feeding.—The drip system is usually considered the most satisfactory as it diminished diarrhæa and jejunal regurgitation. It should be used at the rate of two drops a second, i.e. 6 c.c. per minute. The above ingredients give about 3,200 c.c., which should be divided into four amounts of 800 c.c., each taking about 2½ hours to give. The following times for the drip feeds are suggested :

(1) 6 a.m.–8.15 a.m.
(2) 10 a.m.–12.15 p.m.
(3) 2 p.m.–4.15 p.m.
(4) 6 p.m.–8.15 p.m.

DIETS FOR HYPOCHLORHYDRIA

Suitable for :— PAGE

(Marmite or Yeastrel should be used as a sandwich spread or as a beverage between meals in these last two conditions. Liver may be included regularly in the diet if the patient enjoys it.)

DIET FOR HYPOCHLORHYDRIA A

On waking. Orange or tomato juice.

Breakfast. Boiled or poached egg.
Bread or toast and butter.
Small cup of tea if allowed, with milk and sugar to taste (see note, p. 170).

Mid-morning. Small slice of bread and butter, or biscuit if allowed (see note, p. 170).
Tea or coffee with milk and sugar to taste.

Dinner. Orange juice or small cup of Marmite or Yeastrel.
Roast or stewed lamb or rabbit (tender portion).
Mashed potatoes.
Flower of cauliflower, or new carrots.
Milk pudding, custard, or blancmange.

Tea. Small slice bread and butter, or biscuit if allowed (see note, p. 170).
Tea with milk. Sugar to taste.

Supper. Boiled or poached egg, or fresh milk or cream cheese.
Bread and butter or biscuits.

Bedtime. Small slice of bread and butter, or biscuit if allowed (see note, p. 170).
Boiled milk or milk drink.

DIET FOR HYPOCHLORHYDRIA B

On waking.	Orange or tomato juice.
Breakfast.	Boiled or poached egg, or Steamed white fish. Bread or toast and butter. Small cup of tea if allowed, with milk and sugar to taste (see note below).
Mid-morning.	Lemonade or milk drink.
Lunch.	Tomato juice or small cup of Marmite or Yeastrel. Chicken or steamed fish. Mashed potatoes. Sieved spinach or flower of cauliflower. Apple meringue (p. 267) or bread-and-butter pudding (p. 267).
Tea.	Biscuits or thin slice bread and butter with jelly, sieved tomato, or Marmite or Yeastrel if allowed (see below). Tea with milk. Sugar to taste.
Dinner.	As lunch.

Note on Diets for Hypochlorhydria.

For foods allowed and forbidden and list of suitable dishes, see p. 160. Special care must be taken to keep the amount of fat in each meal low. Glucose or lactose may be used in sweet beverages and puddings to increase the calorie value.

In certain cases no fluids should be taken with solid food; in others, small amounts of fluid are given with the main meals, and a biscuit or small slice of bread and butter with the fluid feeds. The physician should be consulted in each case as to which arrangement is desirable.

DIETS FOR GASTRIC OR DUODENAL ULCER

Suitable for :— PAGE

LENHARTZ TYPE OF TREATMENT

Preparation of Feeds.

Milk Feeds.—Whole milk, fresh or dried, should be used. It should be boiled or citrated. It may be flavoured with Ovaltine, Bournvita, Instant Postum, Marmite, or Yeastrel if desired; or Horlick's Malted Milk or baby food may be substituted.

Egg and Milk Feeds.—These consist of egg and milk beaten up in the following proportions, and divided into four feeds :—

Diet ..	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Eggs, No. ..	1	1	2	3	3	3	4	4	3	3	3	2	2	2
Milk, oz. ..	3	6	6	7	9	12	12	17	19	19	19	21	21	21

Sugar in Feeds.—Half a teaspoonful of sugar should be added to all feeds in Diets 3, 4, and 5, and one teaspoonful to each feed from Diet 6 up. If sugar tastes too sweet, glucose or lactose may be substituted.

Puddings and Gruels.—These should be made from milk with refined cereals (not wholemeal), egg, gelatine, or rennet. One tablespoonful equals approximately one ounce. The following are suitable :—

Milk Puddings made from barley kernels, cream of wheat, well-cooked rice, or ground or flaked rice, sago, semolina, tapioca, or vermicelli.

Custards made from egg and milk, boiled or baked, or from custard powder.

Jellies made with milk including honeycomb mould. Water jellies if the flavouring is not very acid. Orange jelly made with well-strained fresh orange juice and gelatine.

Blancmanges with flavourings such as almond, vanilla, ratafia, caramel and butterscotch, and orange mould.

Junkets flavoured with vanilla, almond, or ratafia, or with Ovaltine or Bournvita scattered over them when set.

Gruels.—Flour of oatmeal, strained porridge (see recipe, p. 273), groats, or patent barley.

Biscuits.—The most suitable are cream crackers or rusks which should be well buttered. Plain biscuits, such as Marie or Arrowroot, may be substituted occasionally. Digestive or other wholemeal varieties must on no account be given because of the roughage they contain.

Fish.—The following or similar white fish are suitable: Fresh haddock, hake, plaice, skate, sole, turbot, and also soft roes. They should be slightly salted, boiled or steamed, and served with milk and butter, or plain white sauce. One tablespoonful equals approximately two ounces. No condiments besides salt should be used.

Water.—This should be drunk between feeds, not more than 5 oz. being taken at a time.

Orange Juice.—This should be well strained and taken as instructed under vitamin C on p. 175.

LENHARTZ TYPE OF TREATMENT

Arranged for two-hourly feeding.

Diets 1–7.—These consists of fluid feeds only. Milk, and egg and milk are given alternately, starting with 1 oz. and rising daily by ½ oz. to 4 oz. on Diet 7.

Feeds by day	Food	Diets 8	9	10	11	12	13	14
1	Milk .. .. oz.	5	5	5	5	5	5	5
	Buttered rusks or cream crackers .. .. .. No.	—	1	1	1	2	2	2
	Gruel .. .. oz.	—	—	—	—	—	—	3
2	Egg and milk .. .. .. oz.	5	5	5	5	5	5	5
	Buttered rusks or cream crackers .. .. .. No.	—	—	1	1	1	1	2
3	Milk .. .. oz.	5	5	5	5	5	5	5
	Buttered rusks or cream crackers .. .. .. No.	—	1	1	1	2	2	2
4	Egg and milk .. .. .. oz.	5	—	—	—	—	—	—
	Fish	—	2	2	2	2	2	2
	Pudding .. .. .. oz.	—	3	3	3	3	3	3
	Buttered rusks or cream crackers .. .. .. No.	—	—	—	1	1	1	2
5	Milk .. .. oz.	5	5	5	5	5	5	5
	Buttered rusks or cream crackers .. .. .. No.	—	1	1	1	1	2	2
6	Egg and milk .. .. .. oz.	5	5	5	5	5	5	5
	Buttered rusks or cream crackers .. .. .. No.	—	1	1	1	1	2	2
7	Milk .. .. oz.	5	5	5	5	5	5	5
	Pudding .. .. .. oz.	—	3	3	3	3	3	3
	Buttered rusks or cream crackers .. .. .. No.	—	—	—	1	1	1	2
8	Egg and milk .. .. .. oz.	5	5	5	5	5	5	5
	Buttered rusks or cream crackers .. .. .. No.	—	—	1	1	1	1	2
Feeds at night when awake.	1. Milk .. .. oz.	5	5	5	5	5	5	5
	2. Milk .. .. oz.	5	5	5	5	5	5	5

Approximate composition of diets

Diets	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Carbohydrate .. g.	16	22	62	66	73	116	119	158	203	208	219	230	241	286
Protein .. g.	14	18	27	35	40	44	53	71	91	92	93	95	97	104
Fat .. .. g.	15	21	30	40	45	51	60	83	127	130	136	154	161	180
Calories ..	260	356	643	783	879	1127	1262	1712	2380	2444	2545	2768	2879	3267

HIGH CALORIE TYPE OF TREATMENT

Arranged for two-hourly feeding. Amounts in ozs.

Feeds by day	Food	Diets 1	2	3
1	Whole milk (fresh or dried)	5	5	5
	Flour of oatmeal (see recipe, p. 273) or patent barley	5	5	5
	Thin crustless stale white bread and butter, slices .. .. No.	—	1	2
2	1 egg beaten up in milk	5	5	5
	Barley sugar	½	½	½
	Buttered cream crackers or rusks	—	1	2
3	Whole milk (fresh or dried)	5	5	5
	Marmite or Yeastrel to taste			
	Thin crustless stale white bread and butter, slices .. .. No.	—	1	2
4	Fresh strained orange juice	1	1	1
	Vegetable purée (see list on next page) ..	3	4	5
	Boiled or steamed white fish and plain white sauce	—	—	3
	Pudding (see list, p. 171)	5	5	5
	Cream	1	1	1
5	1 egg beaten up in milk	5	5	5
	Barley sugar	½	½	½
	Buttered cream crackers or rusks	—	1	2
6	Whole milk, fresh or dried	5	5	5
	Pudding (see list, p. 171)	5	5	5
	Fruit purée (see list on next page)	3	3	3
	Cream	—	1	1
7	White soup (see recipe, p. 265) or whole milk (fresh or dried)	5	5	5
	Buttered cream crackers or rusks	—	1	2
8	1 egg beaten up in milk	5	5	5
	Black treacle or barley sugar	½	½	½
	Pudding (see list, p. 171)	5	5	5
	Fruit purée (see list on next page)	3	3	3
Feeds at night (when awake)	1. Whole milk (fresh or dried)	5	5	5
	2. 1 egg beaten up in milk	5	5	5
Between feeds	Strained orange or tomato juice	1	1	1
	Water between all feeds	5	5	5
Approximate food values:	Carbohydrate .. .. .. g.	260	310	370
	Protein .. .. g.	80	85	115
	Fat .. .. g.	100	160	180
	Calories	2324	3108	3662

Notes on High Calorie Type of Treatment.

Milk.—Whole milk, fresh or dried or infant food may be used, flavoured if desired with Ovaltine, Bournvita, Horlick's, Instant Postum, Marmite or Yeastrel. Milk should never be citrated.

Cream.—If cream is too expensive, ½ oz. of butter or vitaminised margarine may be substituted for each ounce of cream, and should be added to vegetable purée or soup in Diets 1 and 2, or to the fish in Diet 3.

Purées.—The following cooked fruits and vegetables are suitable for purée ; they should be rubbed through a sound hair sieve ; for potatoes a wire sieve or ricer may be used.

Fruits : Apple, peach, pear, if not woody, dried prunes, mixed dried fruit, or apple rings.

Vegetables : Carrot, cauliflower, *old* potatoes, marrow, spinach.

White Soups.—See p. 265.

Fish.—See list of suitable fish, p. 172.

Puddings.—See p. 171.

Sugar.—Wherever possible feeds should be sweetened with sugar or glucose in order to increase their Calorie value. Black treacle should be added to beverages or spread on biscuits or bread and butter when possible in order to increase the mineral and Calorie content of the diet.

Salt.—All suitable feeds should be seasoned with salt in moderation, but no other condiments should be used.

Vitamins :—

Vitamins A and D : Cod or halibut liver oil and malt or halibut liver oil capsules should be taken before meals three or four times a day.

Vitamin B Complex : Marmite or Yeastrel should be taken at least once a day in milk or on bread or biscuits.

Vitamin C : At least 1 oz. of fresh well-strained orange juice should be taken twice a day. Fresh tomato juice or a full tumbler of tinned tomato juice may be substituted for a change occasionally. If patients have been deprived of vitamin C for a long time, larger doses, in the form of ascorbic acid tablets, should be given until tests show them to be saturated with the vitamin after which the quantities above will suffice.

Diets for Convalescence from Gastric or Duodenal Ulcer.

Dinner.—The tender parts of chicken or meat, brains, sweetbreads, or well-stewed tripe without onion, may be substituted for fish. Thin crustless stale white bread and butter may be substituted for cream crackers or rusks at two or three feeds. Otherwise the diets are similar to those on p. 176.

DIETS FOR HYPERCHLORHYDRIA AND CONVALESCENCE FROM GASTRIC OR DUODENAL ULCER (pp. 75, 79)

	Diet I	Diet II	Diet III
Breakfast.	Weak tea with plenty of milk. Sugar if desired. One egg, lightly boiled or poached. Crustless stale white bread cut thinly, or crisp toast (not hot) and butter. Honey, golden syrup, strained jelly marmalade, apple, blackcurrant, or bramble jelly.		As Diets I and II with the following additional alternatives : Brown bread made from finely ground flour. Fresh white fish, steamed or grilled. Eggs may be scrambled and a second one added. Plum, greengage or apricot jam.
Mid-morning.	½ pt. of warm boiled milk, with cocoa, Ovaltine, Bournvita or the like, or Horlick's, Benger's, Marmite, or Yeastrel added as flavouring ; and cream crackers, rusks, or other plain biscuits (not wholemeal).		
Dinner.	Fresh white fish, boiled or steamed, or stewed sweetbreads, brains or tripe. Plain white sauce if desired. Mashed potatoes or crustless stale white bread cut thinly, or plain biscuits. Milk pudding, custard, junket, blancmange, jelly or plain steamed cake mixture pudding.	As Diet I with the following additional alternatives : Boiled or roast chicken or guinea fowl (no skin or gristle), stewed rabbit. Flower of cauliflower, sieved carrots, spinach or peas or tomato purée. Baked or stewed apple (no skin or core), sieved stewed prunes, apricots, peaches or pears, fresh, dried, or tinned, or sieved bananas.	As Diet II with the following additional alternatives : Tender lamb or mutton, ham, tongue, liver, veal. Grapes, soft ripe plums, pears, and peaches, avoiding skins, pips, and stringy portions.

Mid-afternoon.	As mid-morning.	
Tea.	Weak tea with plenty of milk. Sugar if desired. Crustless stale white bread cut thinly, or thin, crisp toast (not hot) and butter. Honey, golden syrup, apple, black currant or bramble jelly. Plain sponge or Madeira cake or biscuits.	As Diets I and II with the following additional alternatives: Brown bread made made finely ground flour. Plum, greengage, or apricot jam.
Supper or lunch.	One egg lightly boiled or poached, or fresh milk or cream cheese. Pudding as at dinner if desired, or well-strained milk soup, see pp. 171, 265. Cream crackers, rusks or other plain biscuits if desired. Warm boiled milk, flavoured if desired with cocoa, Bournvita or Ovaltine, Benger's, Horlick's, etc.	As Diets I and II with the following additional alternatives: Steamed or grilled fresh white fish, chicken, rabbit, brains, sweetbreads, or tripe.
Bedtime.	As mid-morning.	

On waking and during the night, if awake: Milk and plain biscuits.

Interval between meals and feeds.	2 hours.	2–2½ hours.	3–4 hours.

Water up to ¼ pint may be taken between feeds and the well-strained juice of an orange ***must be taken*** twice daily. Fresh strained tomato juice may be substituted occasionally, or a full glass of tinned tomato juice. In cases where fruit juices are not tolerated, 50–100 mg. ascorbic acid may be substituted. Larger doses should be given if the patient has been on a diet deficient in vitamin C for some time.

Food should be cooked with a little salt, but no other condiments may be used.

For suitable dishes and recipes for Diets I and II, see pp. 171, 172, 175: for Diet III, see p. 160.

SUGGESTED TIMES OF MEALS FOR SHIFT WORKERS SUFFERING FROM HYPERCHLORHYDRIA

Hours of shift.	6 a.m. to 2 p.m.	2 p.m. to 10 p.m.	10 p.m. to 6 a.m.
Times of meals.	5 a.m.		
	7.30 a.m.	7.30 a.m.	6.30 a.m.
	10 a.m.	10 a.m.	9 a.m.
	12.30 p.m.	*12.30 p.m.	Bed
	*3.0 p.m.	3.0 p.m.	
	5.30 p.m.	5.30 p.m.	*5.30 p.m.
	8 p.m.	8 p.m.	*8 p.m.
	10.30 p.m.	10.30 p.m.	10.30 p.m.
	Bed	Bed	1 a.m.
			3.30 a.m.

In the above scheme it is assumed that patients live half-an-hour's journey from their work. It must be re-arranged if longer distances are travelled.

The lines enclose the period at work when meals may consist of buttered cream crackers, rusks, or other plain biscuits, and if easily obtainable a milky drink such as cocoa or very weak tea. Patients must stop work entirely for the few minutes required to eat these snacks and take them punctually. The main cooked meal of the day (fish, etc.) can always be taken at home. This is marked with a *.

On a night shift the main meal may be taken either at 5.30 p.m. or at 8 p.m.

LOW RESIDUE DIETS

Suitable for :— PAGE

Acute diarrhœa 87
Chronic diarrhœa 88
Convalescence from typhoid fever 68
Lienteric diarrhœa 83
Meals must be taken dry. Fluids must only be taken between them, and must not be very hot.
Mucous colitis 89
Spastic constipation 87
Ulcerative colitis 89

LOW RESIDUE DIET A

Breakfast.
Flour of oatmeal or cornflakes with milk and sugar to taste.
Egg or smoked haddock.
White bread or toast and butter.
Golden syrup or honey.
Tea or coffee with milk and sugar to taste.

Mid-morning (if desired).
White bread and butter.
Cocoa or coffee made with milk. Sugar to taste.

Dinner.
Rabbit or fish (not herring or other fish with fine bones).
Mashed potatoes.
Milk pudding or chocolate blancmange.

Tea.
White bread and butter.
Golden syrup or honey if desired.
Madeira or sponge cake if desired.
Tea, with milk and sugar to taste.

Supper.
Eggs, cream or milk cheese, or fish.
White bread and butter.
Cocoa made with milk or other milk drink or carefully strained soup (pp. 264, 265).

Twice during day.
Well-strained orange, lemon, or tomato juice.

LOW RESIDUE DIET B

Breakfast.	Strained orange or grapefruit juice. Flour of oatmeal, patent barley or puffed rice with milk and sugar to taste. Eggs or grilled fish. White bread or toast and butter. Strained marmalade or honey. Tea or coffee with milk and sugar to taste.
Lunch.	Soup or strained tomato juice. Roast chicken or braised sweetbreads. Plain or browned mashed potatoes. Steamed cake mixture pudding and strained orange sauce. Milk or cream cheese and biscuits if desired.
Tea.	White bread and butter. Jelly or honey. Strained tomato juice or Marmite or Yeastrel sandwiches. Madeira or sponge cake or Swiss roll with chocolate or jelly filling. Tea, with milk and sugar to taste.
Dinner.	As lunch.
Twice during day.	Well-strained orange, lemon or tomato juice.

Note on Low Residue Diets.

The foods allowed and forbidden and the suitable dishes given under light, easily digested diet, pp. 160, 162, may be used provided that patients do not take any fruit except well-strained orange, tomato or other fruit juice, nor any vegetables except mashed potatoes.

For convalescence or mild forms of the above disorders the light, easily digested diet on p. 158 may be used. All fruit and vegetables should be carefully sieved so as to free them from stalks, skins, and pips.

For list of foods high and low in roughage, see p. 343.

HIGH CALORIE LOW RESIDUE DIET FOR PATIENTS SUFFERING FROM TYPHOID (p. 67)

Two-hourly feeds by day.

1. Boiled or poached egg, or patent barley with milk or cream and sugar to taste.
   White bread or cold toast and butter.
   Golden syrup or honey.
   Weak tea with milk and sugar to taste.
2. Cream crackers or rusks and butter.
   Coffee made with milk. Sugar to taste.
3. Sponge cake or sweet biscuits (not digestive or wholemeal or coconut).
   Vanilla egg nog (p. 264) or Marmite or Yeastrel and milk.
4. White fish or smoked haddock, steamed or boiled, with white sauce (no parsley).
   Sieved potatoes with milk and butter.
   Chocolate blancmange or milk pudding or vanilla ice cream.
5. Cream crackers or sweet biscuits.
   Strained orange juice, with water if desired.
6. White bread or toast (cold) and butter.
   Sponge or Madeira cake.
   Weak tea with milk and sugar to taste.
7. Boiled or poached egg, or fresh milk or cream cheese. White bread, toast, or biscuits. Butter.
   Milk pudding or custard.
8. Cream crackers or rusks and butter.
   Cocoa, Bournvita, or Ovaltine made with milk. Sugar to taste.

Feeds by night.

1. Biscuits or sponge or Madeira cake.
   Well strained orange juice, with water if desired.
2. Plain biscuits.
   Boiled milk or milk food.

Patients should take moderate feeds at first, gradually increasing their intake as they improve.

Glucose or lactose should be added to all feeds. Plenty of butter or margarine should be used, and 1 to 2 oz. cream in order to increase the Calorie value. Extra feeds may be given in order to raise the Calorie intake.

Suitable recipes may be chosen from those on pp. 264–268.

HIGH RESIDUE DIETS

Suitable for :— PAGE
Constipation due to cæcal stasis 87

HIGH RESIDUE DIET A

On waking. Water, lemonade, or tea.

Breakfast. Bran cereal, porridge or Shredded Wheat with milk and sugar to taste.
Bacon and tomato or egg dish or kipper.
Wholemeal bread or toast and butter.
Marmalade or jam.
Stewed prunes, figs, or other fruit.
Tea or coffee with milk and sugar to taste.

Mid-morning (if desired). Raw fruit or salad.
Tea or other beverage.

Dinner. Meat.
Cabbage or other green-leaf vegetable, large helping.
Potatoes or root vegetable, small helping.
Stewed fruit and custard, or steamed fruit pudding.

Tea. Wholemeal bread and butter.
Jam.
Salad or fruit.
Fruit cake, oatcakes or Quaker Oats fingers (p. 273) if desired.
Tea with milk and sugar to taste.

Supper. Herrings, kipper, bloater, eggs, or cheese.
Wholemeal bread and butter.
Stewed or raw fruit.
Tea, coffee, or cocoa.

Bedtime. Water or lemonade.

HIGH RESIDUE DIET B

On waking.	Water, lemonade or tea.
Breakfast.	Grapefruit or orange. Bran cereal, porridge or Shredded Wheat with milk and sugar to taste. Grilled kidney and tomato or mushrooms, or Bacon with egg or tomatoes, or other egg dish. Wholemeal bread or toast, or whole wheat or rye biscuits and butter. Tea or coffee with milk and sugar to taste.
Lunch.	Vegetable soup or grapefruit. Meat or fish. Cabbage or spinach (not sieved), green salad, or other green-leaf vegetables. Peas, carrots, parsnips or other vegetable. Potatoes, small portion if desired. Fruit salad and Quaker Oats fingers (p. 273) or mince pies.
Tea.	Wholemeal bread or whole wheat or rye biscuits and butter. Tomato, jam, cress, or Marmite or Yeastrel sandwiches. Fruit cake, or cherry or jam tart. Tea with milk and sugar to taste.
Dinner.	As lunch.
Bedtime.	Water or lemonade.

Note on High Residue Diets.

Any food may be considered suitable for high residue diets provided that the appetite is not spoilt by taking too much of those containing little roughage, such as milk puddings, potatoes, etc. See table, p. 343, for foods high and low in roughage.

Fruit or salad should be taken with each meal. Plenty of fluid should be drunk during the day.

Agar-agar as jelly (p. 271) or added to stewed fruit will have a laxative action.

MEATLESS DIET FOR TESTS FOR BLOOD IN THE FÆCES

No meat should be taken for four to seven days before the test. Ham, bacon, chicken, rabbit, sweetbreads, and all other offal must be avoided, as well as any foods, such as sausages or meat soup made from them. Fish, cheese, and egg dishes are allowed by some physicians. The recipes on p. 289 for low protein dishes may provide suggestions for a meatless diet, but here the amounts of cheese and egg need not be restricted.

Some physicians forbid all foods except milk, white bread, butter, and cheese for three days before the test.

LOW FAT DIETS

Suitable for :— PAGE

Catarrhal jaundice 86

Cholecystitis 84

Gallstones, before or after operations 84

(In some cases a little fat is allowed in the above two conditions, but cholesterol is frequently forbidden, in which case foods rich in it, *e.g.* eggs and brains, may not be taken.)

Cyclical vomiting in children .. ..

(At least 1 pint of skimmed milk and a vitamin A and D concentrate should be given daily.)

Migraine .. ..

(The diet should be high in carbohydrate in the above two conditions.)

Obstructive jaundice 86

Obstructive jaundice with liver degeneration 86

(Protein must be restricted, and meat is forbidden. Small portions of fish may be taken, and extra carbohydrate in the form of sugar, fruits, sweets, jam, etc., should be included in the diet.)

Note.—Plenty of sugar and glucose should be taken with low fat diets, as well as sweets such as barley sugar, acid drops, and peppermint creams after meals. The following menus may be used for children over 10 years of age. They should take 1–1¼ pints of skimmed milk daily, flavoured with weak tea, Bournvita, or Ovaltine if desired. A special low fat diet suitable for younger children is given on p. 190.

LOW FAT

Daily	Sunday	Monday	Tuesday
Breakfast.			
Bread and marmalade or jam. Tea or coffee with skimmed milk and sugar.	Smoked haddock.	Shredded Wheat. Skimmed milk and sugar.	Kedgeree (p. 276).
Dinner.			
Bread if desired.	Lean roast beef. Brussels sprouts or runner beans. Potatoes baked in their jackets. Stewed prunes. Skimmed milk custard (p. 278).	Cold lean beef. Beetroot, potatoes, and green salad in season with vinegar. Apple Charlotte (p. 279).	Stewed rabbit and vegetables. Boiled potatoes. Jelly with stewed fruit or fruit salad.
Tea.			
Bread and jam, honey or syrup, cress, tomato, or banana sandwich. Tea with			
Supper.			
Bread and jam, etc., or meat extract or Marmite. Weak tea or coffee with skimmed milk and sugar, or well sugared lemonade. A savoury if desired (see daily menu).	Tomatoes stuffed with boiled rice (p. 278).	"Creamed" fish (p. 275).	"Cream" of potato soup (p. 274).

Mid-morning and bedtime.

A skimmed milk beverage flavoured if desired with tea, coffee, meat extract, Fresh fruit should be taken as often as possible.

Note.—To prevent loss of weight extra sugar, glucose or lactose should be taken in

DIET A

Wednesday	Thursday	Friday	Saturday
Porridge. Skimmed milk and sugar.	Force or Shredded Wheat. Skimmed milk and sugar.	Porridge. Skimmed milk and sugar.	Kedgeree (p. 276).
Steamed white fish. Mashed turnips. Boiled potatoes. Fruit sago (p. 280).	Stewed liver and vegetables. Potatoes mashed with skimmed milk. Skimmed milk rice pudding.	Haddock and tomatoes baked with skimmed milk. Potatoes baked in their skins. Summer pudding.	Stewed lean steak and vegetables. Boiled potatoes. Coffee blancmange, made with skimmed milk (p. 278).
skimmed milk and sugar to taste. Buns if desired.			
Minced rabbit and skimmed milk sauce on dry toast.	Macaroni and tomatoes (p. 277).	Minced stewed liver on dry toast or mixed vegetable salad with boiled dressing (p. 275).	Meat extract and skimmed milk soup (p. 275).

Marmite or Yeastrel, or a little Bournvita or Ovaltine.

beverages, and with stewed fruit and puddings.

LOW FAT

Daily	Sunday	Monday	Tuesday
Breakfast.			
Bread or toast. Marmalade or jam. Tea or coffee with skimmed milk and sugar to taste.	Grapefruit. Smoked haddock.	Sliced banana. Force. Skimmed milk and sugar.	Orange. Kedgeree (p. 276).
Lunch.			
Bread or toast. Well-sugared lemonade. Raw fruit.	Steamed chicken. Boiled rice. Cauliflower. Trifle (p. 279).	Cold chicken. Potato and mixed vegetable salad with boiled dressing (p. 275). Skimmed milk tapioca pudding.	"Pan broiled" lean steak (p. 277). Boiled onions, mashed potatoes. Fruit jelly.
Tea.			
Bread and jam, jelly or golden syrup, sandwiches made of the white of a Oatcake, parkin (p. 281), or angel cake (p. 280). Tea with skimmed milk and			
Dinner.			
Bread or toast. Well-sugared lemonade. Raw fruit.	Consommé. Stuffed tomatoes (p. 278). Boiled dressing (p. 275). Apple Charlotte (p. 279).	Chicken broth with barley. Roast veal (lean). Boiled potatoes. Spinach. Compôte of pears. Skimmed milk custard (p. 278).	"Cream" of tomato soup (p. 275). "Creamed" chicken on dry toast (p. 276). Peas or mashed turnips. Boiled potatoes. Prune whip (p. 279).

See note, p. 186.

DIET B

Wednesday.	Thursday	Friday	Saturday
Peach or grapefruit. Porridge. Skimmed milk and sugar.	Grapefruit. Sole steamed in skimmed milk.	Sliced banana. Shredded Wheat, skimmed milk and sugar.	Orange. "Creamed" fish on dry toast (p. 275)
Macaroni and tomatoes (p. 277). Potatoes baked n their jackets. Meringues and red-currant jelly.	Minced liver or veal on dry toast. Boiled celery or seakale. Mashed potatoes. Fruit mould (p. 280).	Baked fresh haddock with tomatoes (p. 276). Boiled potatoes. Baked apple and skimmed milk custard (p. 278).	Stewed steak or liver and vegetables. Boiled potatoes. Summer pudding.

hard-boiled egg, and cress, tomato, banana, Marmite, Yeastrel, or meat extract. sugar to taste.

Marmite or Yeastrel soup with spaghetti. Roast beef or boiled salt beef (lean). Carrots. Boiled potatoes. Orange custard (p. 280).	"Cream" of potato soup (p. 274). Cold beef (lean). Potato and mixed vegetable salad. Apricot meringue (p. 267).	Mixed vegetable soup. Minced beef with red peppers, or Stuffed egg whites (p. 278). Coffee blancmange made with skimmed milk (p. 278) or baked cornflour pudding.	"Cream" of mushroom soup (p. 275). Chicken and peas in aspic, or Roast mutton (lean). Skimmed milk rice pudding.

LOW FAT DIET FOR CHILDREN

Breakfast. Porridge or Shredded Wheat or other cereal with skimmed milk and sugar to taste.
Smoked haddock or other fish, steamed or boiled.
Bread and marmalade, jam, or golden syrup.
Skimmed milk flavoured with tea or coffee and sugar to taste.

Mid-morning. Banana or other fruit and sugar, or
Bread and jam.
Skimmed milk or well-sweetened lemonade.

Dinner. Steamed fish or stewed rabbit or lean meat.
Boiled or mashed potatoes.
Cabbage or carrots.
Skimmed milk pudding or custard powder custard.
Stewed fruit.

Tea. Bread and jam, or tomato, or meat extract, or Marmite or Yeastrel, or banana sandwiches.
Sugared or currant buns or fruit.
Skimmed milk flavoured with tea and sugar to taste.

Supper. Skimmed milk soup or Ovaltine or Bournvita made with skimmed milk.
Bread and jam, or buns.

After meals: Barley sugar, acid drops, or boiled sweets. Marshmallows may be used as sweets or with puddings.

Note.—1 to 1½ pints of skimmed milk should be taken in some form daily. As this diet is deficient in vitamins A and D, these should be given medicinally.

FOOD LIST FOR LOW FAT DIETS

	Foods allowed without special restriction	Foods forbidden
Bread, biscuits, cereal foods, etc.	Bread of any kind. Porridge, groats, Shredded Wheat, Force, or other breakfast foods. Angel cake (p. 280), parkin (p. 281), meringues, buns.	Biscuits, shortbread, gingerbread. Cakes (except angel cake). Cream crackers.

	Foods allowed without special restriction	Foods forbidden
Dairy products and eggs.	Skimmed milk, fresh, tinned, or dried. Lister's Golden Spread.	Whole milk, fresh, tinned, or dried. Cream, ice-cream, butter, margarine, cheese. Eggs.
Fish	White fish, such as haddock, fresh or smoked, sole, plaice, whiting, skate, turbot, lobster, crab, oysters.	Herrings, fresh or smoked, kippers, bloaters, mackerel, halibut, sardines, anchovies, salmon. Fried fish.
Meat and fowl.	Very lean meat, chicken, rabbit, liver (stewed), tripe.	Fat meat, including pork, ham, bacon, brains, duck, goose.
Animal fats ..	None.	All.
Vegetables ..	All boiled or steamed vegetables, including potatoes and pulses.	Fried potatoes, onions, or other fried vegetables.
Fruits ..	All fruits, fresh, tinned, and dried, except olives and Avocado pears.	Olives and Avocado pears.
Nuts	Chestnuts.	All nuts, (except chestnuts) and sweets containing them.
Beverages ..	Tea, coffee, Instant Postum. Ovaltine or Bournvita in small quantities only. Fruit drinks with water or soda water.	Cocoa, chocolate.
Soups ..	Clear meat, chicken, or vegetable soup, Marmite or Yeastrel, or meat extracts (see pp. 269–270). Skimmed milk soups.	Soups and gravies containing fat, soups made with whole milk or cream.
Condiments and flavourings.	All except those containing oil.	Mayonnaise and other salad dressings containing oil.
Sweets ..	Barley sugar, boiled sweets, bull's-eyes, peppermint creams, marshmallows.	Chocolate, toffee, marzipan, fudge or other sweets containing fat or nuts.

LOW FAT DIETS—SUITABLE DISHES

Soups.	Consommé or other clear soup with tapioca, spaghetti, barley, or served with dry toast. Tomato soup (p. 274). Potato soup (p. 274). Mixed vegetable soup. *Skimmed milk soups.*—"Cream" of potato soup (p. 274). Carrot, artichoke, cauliflower, or other vegetable soup (p. 275). Meat extract, Marmite or Yeastrel, and skimmed milk soup (p. 275).
Fish.	Boiled or steamed fish with parsley or tomato sauce (p. 275). "Creamed" fish (p. 275). Scalloped fish (p. 276). Baked fish with tomatoes or mushrooms (p. 276). Fish in aspic (p. 276). Kedgeree (p. 276). Lobster salad with vinegar or boiled dressing (p. 275). Fish pie (p. 276).
Meat and fowl.	Stewed lean meat. Centre cuts of roast lean meat. Stewed rabbit or liver. Stewed tripe and onions or tomatoes (p. 277). Steamed, boiled, or stewed chicken or pigeon. Roast chicken, pheasant, or guinea-fowl (no skin or fat). "Creamed" chicken (p. 276). Chicken jelly (p. 272).
Vegetables and salads.	Potatoes mashed and moistened with skimmed milk. Celery and apple salad (p. 278).
Puddings.	Blancmange or rice, tapioca, or similar pudding made with skimmed milk. Fruit sago (p. 280) or fruit mould (p. 280). Skimmed milk junket or jelly (p. 281). Apple Charlotte (p. 279). May be made with any fruit. Apple meringue (p. 267). May be made with any fruit. Fruit whip (p. 279). Semolina whip (p. 280). Meringues with jam or jelly. Water ices. Jellies. Trifle (p. 279). Skimmed milk custard. "Creamed" rice and banana (p. 279). Boiled rice and jam. Orange custard (p. 280). Orange mould (p. 267). Compôte of fruit (p. 268).

Summer pudding.
Marshmallows or " Mallocream " may be used with any pudding or stewed fruit.

Savouries. Macaroni and tomatoes (p. 277).
Baked tomatoes (p. 277).
Stuffed tomatoes (p. 278).
Stuffed egg whites (p. 278).

Beverages. All fruit drinks (p. 264) made as for high Calorie diets.
Coffee, Instant Postum, Ovaltine, or Bournvita made with skimmed milk.

DIET FOR CHRONIC PANCREATITIS (p. 83)

Breakfast.	Stewed fruit and sugar, or mashed banana with sugar or jam. Tea or coffee with skimmed milk. Sugar to taste.
Mid-morning.	Well-sugared lemonade, or Benger's Food, Ovaltine or Bournvita made with skimmed milk. Grapes or other fruit.
Dinner.	Steamed fish, chicken, or rabbit. Baked or stewed tomatoes. Skimmed milk junket or jelly, or orange or other fruit jelly. Baked apple or other fruit with sugar.
Tea.	One rusk with jam or honey. Tea with skimmed milk. Sugar to taste.
Supper.	As dinner.

Starchy and fat foods are forbidden, and protein allowed in moderation only. Sugary foods, skimmed milk, fruits, and non-starchy vegetables therefore form the basis of the above diet.

FOOD LIST FOR CHRONIC PANCREATITIS

Bread, biscuits, cereal foods, etc.	Small amounts, if allowed.
Dairy products.	Skimmed milk only.
Eggs.	Whites only.
Fish.	White fish, including smoked and fresh haddock, plaice, sole, cod. Oysters.
Meat and fowl.	Very lean meat, tripe, sweetbreads. Chicken, rabbit, guinea-fowl, pheasant, pigeon. Gelatine.
Fruit.	All fruit, raw or stewed, fresh, dried or tinned, except olives and Avocado pears.
Nuts.	None.
Vegetables.	All vegetables except potatoes and pulses.

Beverages.	Tea and coffee. Well-sugared lemonade or other fruit drinks. Benger's Food, Ovaltine, or Bournvita made with skimmed milk.
Soups.	Clear chicken or rabbit broth, or skimmed milk vegetable soups without thickening, flavoured with suitable vegetables, or Marmite or Yeastrel.
Condiments and preserves.	Salt and pepper in moderation. Marmalade, jams, honey, golden syrup, black treacle, jellies.

DIET FOR LIVER DEGENERATION (p. 85)

DIET A

Food.			Protein.
g.	oz.		g.
		Breakfast	
180	6	Porridge, cooked	2·4
45	1½	Bread. Butter as desired. Jam, marmalade or syrup.	3·3
150	5	Milk in tea or coffee and on porridge. Sugar to taste.	4·5
		Mid-morning	
		(Can be combined with breakfast if desired) Well-sugared lemonade.	
30	1	Bread with butter as desired	2·2
		or	
22	¾	Biscuits. Fruit if desired.	
		Dinner	
60	2	Fish (cooked as desired) .. .. Potatoes and other vegetables.	10·2
100	3½	Milk as junket or with rice or tapioca .. .. Stewed fruit.	3·2
		Tea	
60	2	Bread. Butter as desired .. .. .. Salad, raw fruit, jam or honey.	4·4
60	2	Milk in tea	1·8
		Supper	
30	1	Cheese or 1 egg	7·1
60	2	Bread	4·4
100	3½	Milk, with weak tea or coffee if desired .. Stewed or raw fruit.	3·2
			46·7

DIET B

Food.			Protein.
g.	oz.		g.
		Breakfast	
		Grapefruit or other fruit with plenty of sugar.	
		1 Egg (cooked as desired)	5·9
60	2	Bread with butter and marmalade to taste ..	4·4
60	2	Milk in tea or coffee. Sugar to taste	1·8
		Lunch	
60	2	Macaroni cheese with tomatoes or alternative low protein dish (double recipe, p. 290).	14·0
		Potatoes and other vegetables.	
		Fruit mould (p. 280).	
		Cream.	
		Tea	
30	1	Bread or scones with butter to taste. Jam or honey.	2·2
30	1	Sweet biscuits or shortbread or Quaker Oats fingers (p. 273).	1·7
60	2	Milk in tea	1·8
		Dinner	
		Clear vegetable soup.	
90	3	Fish (cooked as desired)	15·3
		Potatoes and other vegetables.	
100	3½	Milk as "creamed" rice and banana or junket or milk pudding.	3·2
		Raw fruit.	
			50·3

Note on diets for liver degeneration.—Plenty of sugar, glucose, jam and butter should be taken with the above diets in order to increase the calories, and sweets such as barley sugar, acid drops, and peppermint creams after meals.

DIET FOR SPRUE (p. 82)

DIET I. (High protein, low fat)

Breakfast.
Two rusks.
Salisbury steak, 5 oz. (p. 281), or steamed fish, 6 oz.
Tea. Skimmed milk. Sugar or glucose to taste

Mid-morning.
Skimmed milk, 5 oz., and glucose, flavoured with coffee.
One rusk.

Dinner
Orange or tomato juice cocktail, or Marmite or Yeastrel or liver soup (p. 282), or spinach soup (p. 269).
Salisbury steak (p. 281), or lean beef or minced liver, 5 oz.
Spinach.
Sieved banana, strawberries, or ripe papaya or baked apple.
Skimmed milk jelly or junket with glucose (p. 281).

Tea.
Two rusks with scraped beef, minced liver, or Marmite or Yeastrel.
Tea. Skimmed milk. Glucose.

Supper.
Two rusks. Marmite or Yeastrel skimmed milk soup (p. 282).
Orange jelly (p. 281).

Bedtime.
Vanilla whip (p, 282).

Condiments.
Only salt may be used in seasoning meat dishes.
Marmite or Yeastrel should be taken daily in soup or on rusks.

DIET II.
Add a small portion of boiled or baked custard (p. 282) to dinner.
Honey, golden syrup, or black treacle should be spread on rusks.
Later a boiled or poached egg may be given about three times a week.

DIET III.
During convalescence the diet on p. 179 (low residue) would be suitable, provided the fat is kept at a minimum, and Marmite or Yeastrel and large helpings of lean meat or liver are taken daily.

Soups must not be served very hot. Marmite or other yeast extract should be given daily.

Only white fish (not fat) such as haddock, sole, plaice, cod, etc., are suitable.

Any lean meat, such as beef, veal, leg of mutton may be used, the fat parts being carefully removed.

Milk Diet.—A diet consisting of two-hourly feeds of milk (up to half a pint at each feed) is sometimes used for patients suffering from sprue. Well strained orange or tomato juice should be given daily with this diet.

LOW PURINE DIETS

Suitable for :— PAGE

Gout 111

LOW PURINE DIET A

Breakfast.

One egg, fried or scrambled.
White bread and butter.
Marmalade.
Very weak tea or Instant Postum

Mid-morning (if desired).

Bread and butter.
Tomato or other fruit.
Lemonade.

Dinner.

Welsh rarebit, macaroni cheese with tomatoes or other suitable dish (p. 292).
Potatoes and other vegetables.
Milk pudding.
Stewed fruit.

Tea.

White bread and butter.
Fruit or tomatoes if desired.
Biscuits, cake, buns, or shortbread.
Very weak tea.

Supper.

White bread and butter.
Cheese or 1 egg.
Milk, Instant Postum, or lemonade.

LOW PURINE DIET B

Breakfast.

Grapefruit or melon.
1 Egg, fried or scrambled, and tomato.
White bread and butter.
Marmalade.
Very weak tea or Instant Postum.

Lunch.

Orange or tomato juice cocktail.
Risotto with cheese, creamed egg, or other suitable dish (p. 292).
Potatoes and other vegetables.
Stewed fruit and cream.

Tea.

White bread and butter.
Jam, honey, golden syrup, cress, or tomato.
Cake, buns, shortbread, or biscuits.
Very weak tea.

Dinner.

Marmite or Yeastrel, or mixed vegetable soup.
Scotch egg (p. 290) or cheese soufflé.
Potatoes and other vegetables.
Honeycomb mould or apple Charlotte.
Raw fruit.

For purine content of foods, see Table IX., p. 342.

Note on Low Purine Diets.

Some physicians allow tea, coffee, and cocoa since these beverages contain methylpurines, and these substituted purines probably do not give rise to uric acid in the body.

Brown bread, oatmeal and other whole cereal foods should be avoided.

DIABETIC

MENU A. FOR

Meal	Sunday	Monday	Tuesday
Breakfast.			
Relish	Kipper.	Boiled egg.	Poached egg.
Dinner.			
Meat	Roast mutton.	Cold mutton.	Mince as shepherd's pie with potato from allowance.
Vegetables (see p. 334).	Potatoes daily. 2 oz. fresh peas or broad beans or beetroot may be 1 oz. potatoes.		
Vegetables (see p. 337).	Brussels sprouts or French beans.	Lettuce and tomato, or cabbage or marrow.	Brussels sprouts or cabbage.
Fruits (see p. 335) (These should be varied according to the season.)	Baked apple.	Stewed damsons or prunes.	Stewed apples.
Pudding (see recipes, pp. 284–286).	Baked custard.	Milk jelly (lemon flavour).	Baked custard.
Tea.			
Relish	Egg.	Cheese.	Sardines.
Supper.			
Moderately fat meat or alternative.	Ham.	Kippers.	Cheese.
Low fat meat or alternative.	Haddock.	Salt cod or smoked haddock.	Rabbit.
Fruit (see p. 335)	Orange.	Grapes.	Banana.

Bread, butter and milk in

DIETS (pp. 90–106)

DIABETIC PATIENTS

Wednesday	Thursday	Friday	Saturday
Bloater.	Boiled egg.	Scrambled egg (butter from allowance).	Smoked haddock.
Stewed steak.	Roast or boiled beef or mutton chops.	Grilled mackerel or cold beef.	Stewed steak.

substituted for 1 oz. potatoes when desired, or 1 oz. dried peas or beans for

Boiled celery or French beans.	Spinach or cabbage.	Cauliflower or cabbage.	Cabbage or other greens or marrow.
Stewed dried apricots.	Stewed apples or cherries.	Stewed prunes or raspberries.	Stewed pears or plums.
Junket.	Baked custard.	Milk jelly (vanilla flavour).	Coffee junket.
Egg.	Ham.	Cheese.	Sardines.
Smoked haddock and extra butter during the day.	Herring.	Ham or bloater.	Cheese.
Skate or smoked haddock.	Rabbit or milk cheese.	Haddock.	Rabbit.
Grapefruit.	Grapes.	Pear or orange.	Banana.

accordance with prescription.

MENU B. FOR

Meal	Sunday	Monday	Tuesday
Breakfast.			
Fruit	Grapefruit.	Orange.	Melon or sliced banana.
Relish.			
Low fat ..	Boiled egg.	Poached egg.	Grilled kidney.
Moderate fat ..	Egg and bacon.	Kipper.	Ham and eggs.
Lunch.			
Soup (see pp. 269–270).	Consommé.	Beef broth.	Chicken broth.
Meat	Roast beef.	Roast chicken.	Roast veal.
Vegetables (see p. 334).	Potatoes daily.	For alternatives, see Menu A.	
Vegetables (see p. 337).	Brussels sprouts or French beans.	Cauliflower or spinach.	Seakale or cabbage.
Fruit (these should be varied according to the season).	Baked apples.	Fresh fruit salad (p. 287).	Stewed fresh apricots or pears.
Pudding (see recipes, pp. 284–286).	Boiled custard.	Honeycomb mould.	Floating island.
Tea.			
Sandwich filling	Egg and cress.	Meat extract.	Lettuce or radishes.
Dinner.			
Soup (see recipes, p. 269).	Clear cauliflower soup.	Asparagus soup.	Spinach soup (meat stock).
Meat	Cold ham.	Grilled chop.	Roast duck.
Vegetables (see p. 334).	Potatoes daily.	For alternatives, see Menu A.	
	Beetroot. Green salad.	Carrots.	Peas.
Pudding (see recipes, pp. 287–288).	Rice pudding.	Bread-and-butter pudding.	Fruit jelly.
Fruit (see p. 335)	Pear or orange.	Grapes.	Orange.

Bread, butter and milk in

DIABETIC PATIENTS

Wednesday	Thursday	Friday	Saturday
Peach or grapes.	Apple or strawberries.	Grapefruit.	Orange.
Smoked haddock.	Poached egg.	Boiled egg.	Fresh roes or grilled kidney.
Poached egg on smoked haddock and extra butter during day.	Liver and bacon.	Scrambled egg.	Fresh roes or grilled kidney and bacon.
Meat extract.	Clear celery soup.	Marmite or Yeastrel.	Mutton broth.
Grilled sweetbreads.	Stewed steak and kidney.	Steamed fish.	Grilled steak.
Stewed celery or runner beans.	Baked tomatoes or cabbage.	Cauliflower or marrow.	Cabbage or stewed endive.
Stewed apples.	Stewed prunes or plums.	Stewed dried apricots or fresh raspberries.	Sliced fresh peaches or banana.
Milk jelly (coffee flavour).	Fruit whip.	Orange jelly.	Junket or baked custard.
Marmite or Yeastrel.	Watercress.	Tomato.	Cucumber.
Veal broth.	Beef broth.	Cabbage soup.	Meat extract.
Boiled halibut or pork chop.	Roast lamb.	Boiled salmon or chicken and ham patty.	Stewed lamb.
Carrots or apple sauce.	Broad beans or parsnips.	Peas or carrots.	Mashed turnips, swedes, or boiled onions.
Queen of puddings.	Creamed tapioca or baked custard.	Banana jelly.	Apple Charlotte.
Banana.	Peach or pear.	Apple.	Plums or grapes.

accordance with prescription.

THE "LINE RATION"

One black portion added to one red

Carbohydrate Foods (containing sugar or starch)

Black Portions (10 g. C.)	oz.
Flour, Rice, Sago, Tapioca (raw)	⅛
Biscuit or Toast; Oatmeal, Macaroni or Prunes (dry)	¼
Bread (all kinds)	⅓
Potato, Peas or Beans (dried or tinned); Banana or Grapes; Dried Apricots (stewed)	2
Parsnips; Ripe Greengages; Prunes (stewed)	3
Raw Apple, Pear, Cherries, Gooseberries, Plums, Damsons, Orange (skinned); Young Peas or Beetroot	4
Peach or Apricot (ripe); Greengages (stewed); Broad Beans	5
Strawberries; Stewed Pears, Damsons or Plums	6
Milk; Raspberries or Melon (ripe)	7
Apples or Cherries (stewed); Carrots or Leeks	8
Loganberries; Blackberries (stewed)	10
*Grapefruit (in skin); Tomatoes; Red Currants or Black Currants (stewed)	12
*Onions or Turnips	14

* Half portions of these are usually enough.

Negligible Starch Content in Average Helpings of—

Asparagus, Green Artichokes, French Beans, Brussels Sprouts, Cabbage, Cauliflower, Celery, Cranberries, Cress, Cucumber, Egg Plant, Endive, Stewing Gooseberries, Greens, Horse-radish, Lemons, Lettuce, Marrow, Mushrooms, Radishes, Rhubarb, Salsify, Scarlet Runners, Seakale, Spinach.

Extras of no food value: Tea, Coffee, Soda Water,

From *The Line Ration Scheme.* R. D. Lawrence. *By kind*

DIET SCHEME

portion = one Line ration.

Red Portions (Protein and Fat)

7½ g. Protein and	*9 g. Fat* *Extra fat oz.*
One Egg	0
Bacon 1 oz	(lean only to be used)
Ham 1 oz	0
Kipper 1 oz	¼
Herring 1 oz	½
Lean Beef or Mutton 1 oz	¼
Lean Lamb or Veal 1 oz	½
Lean Pork or Duck 1 oz	½
Chicken or Pigeon 1 oz	¼
Tongue (tinned or fresh) 1 oz	0
Liver 1 oz	¼
Kidney or Tripe 1½ oz	¼
Rabbit or Hare ½ oz	¼
Cheese 1 oz	½
White Fish or Sweetbreads 1½ oz	¼
Sardines 1 oz	½
Salmon 1 oz	¼
Crab or Lobster 1½ oz.	¼
Pheasant, Grouse, Partridge ½ oz	¼

Fats to be added in amounts stated are Meat Fats, Suet, Dripping, Butter, Margarine, Olive Oil; or Thick Cream in twice the amount stated for other fats.

Meat Extracts, ordinary condiments and flavourings.

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DIABETIC LINE RATION DIET

With insulin before breakfast and late dinner

Prescription : Carbohydrate .. 150 grams
Protein .. .. 75 ,,
Fat .. .. 90 ,,
Calories = 1,760

} 15 black portions and 10 red portions (9 grams fat per portion).

	Carbohydrate g.	Protein g.	Fat g.	Black portions	Red portions
Breakfast.					
2⅔ oz. bread	40	—	—	4	—
1½ oz. bacon (lean) ..	—	11½	13½	—	1½
Two eggs	—	15	18	—	2
Tea with 1½ oz. milk ..	2½	—	—	¼	—
Mid-morning (or with breakfast).					
3 oz. raw apple or orange	7½	—	—	¾	—
Lunch.	*50*	*26¼*	*31½*	*5 B.*	*3½ R.*
3 oz. chicken or lean meat (extra fat taken as cream or butter)	—	22½	27	—	3
3 oz. potato	15	—	—	1½	—
Cauliflower or cabbage as desired.					
4½ oz. stewed prunes ..	15	—	—	1½	—
1½ oz. cream or ¾ oz. extra butter (see above) ..	—	—	—	—	—
Tea.	*30*	*22½*	*27*	*3 B.*	*3 R*
1½ oz. bread	20	—	—	2	—
½ oz. butter.					
Celery, radishes, or lettuce as desired.					
Tea with 1½ oz. milk ..	2½	—	—	¼	—
Dinner.	*22½*	—	—	*2¼ B.*	—
Clear soup if desired.					
3 oz. lean beef (extra fat taken as butter for tea and dinner)	—	22½	27	—	3
3 oz. potatoes	15	—	—	1½	—
4 oz. carrots	5	—	—	½	—
½ oz. butter on vegetables.					
3½ oz. milk } baked custard	5	—	—	½	—
½ egg } (p. 284)	—	3½	4½	—	½
1½ oz. milk in coffee (ground)	2½	—	—	¼	—
1 oz. biscuits or 1½ oz. bread	20	—	—	2	—
	47½	*26¼*	*31½*	*4¾ B.*	*3½ R.*
Total	150	75	90	15 B.	10 R.

DIABETIC DIET

WEIGHED CARBOHYDRATE, UNWEIGHED PROTEIN AND FAT

(from Line Ration Diet Scheme)

With insulin before breakfast and late dinner

Prescription : Carbohydrate 120 grams = 12 black portions.
Protein and fat in moderate helpings as desired.

	Carbo-hydrate g.	Black portions
Breakfast.		
Kipper	—	—
1½ oz. toast	30	3
Butter	—	—
Tea with 1¾ oz. milk	2½	¼
Mid-morning (or with breakfast).		
One orange (3 oz.)	7½	¾
	40	*4*
Lunch.		
Fish	—	—
3 oz. potato	15	1½
Cauliflower	—	—
½ oz. biscuits	10	1
Cheese	—	—
Butter	—	—
	25	*2½*
Tea.		
¾ oz. bread		
Butter	10	1
3 oz. tomato	2½	¼
Tea with 1¾ oz. milk	2½	¼
	15	*1½*
Dinner.		
Clear soup	—	—
Meat	—	—
3 oz. potato	15	1½
4 oz. leeks	5	½
4 oz. stewed apple with cream (or custard). (See below)	5	½
3½ oz. milk with coffee or as custard (p. 284)	5	½
½ oz. biscuits	10	1
Cheese	—	—
	40	*4*
Total	120	12

SCHEME FOR ARRANGING A DIABETIC DIET,

WITH MEASURED CARBOHYDRATE;

Protein and Fat as desired.

Suitable for patients not taking insulin

(From "A Simple Diabetic Diet." R. D. Lawrence. H. K. Lewis & Co., Ltd., London.)

Foods Allowed Without Special Restriction:

Non-carbohydrate foods.

Drinks: Tea, coffee, water, soda, fresh lemonade, clear soups, beef-tea, meat and yeast extracts.

Seasoning: Saccharine for sweetening; salt, pepper, vinegar, mustard.

Meat, fish, etc.: (*Protein and fats*).

Average helpings of all animal foods, such as beef, veal, mutton, pork, bacon, ham, liver, kidney, tripe, etc.; eggs; poultry, game; fish, shell-fish; cheese, gelatine. Fats, such as meat fats, butter, cream, olive oil, dripping, suet.

Vegetables and fruit:

Vegetables: Group I.—Asparagus, Brussels sprouts, cabbage, cauliflower, celery, chicory, cress, cucumber, egg-plant, endive, French beans, greens, horse-radish, lettuce, marrow, mushrooms, olives, pumpkin, radishes, scarlet runners, seakale, spinach.

Fruit: Group I.—Cranberries, lemons, stewing gooseberries, and rhubarb.

Foods Allowed only as Prescribed:

Nine tablespoonfuls (*moderately heaped*) *per day of one of the following vegetables or fruit* (=about 5 g. C.):

Vegetables: Group II.—Carrots, leeks, onions, turnips.

Fruit. Group II.

Fresh fruit, stewed: Apples, apricots, blackberries, cherries, damsons, greengages, pears, plums.

Fresh fruit, raw : Loganberries, raspberries, strawberries; or *one* orange or small apple or peach or plum; or half grapefruit; or 1 slice melon.

Milk : 3½ oz. (⅓ teacupful).

Group III. *The following exact quantities* (=about 10 g. C.):

Bread (⅔ oz.) by weight or measure * (1 portion) or

One of the following in place of one bread portion:
Potato (size hen's egg).
Oatmeal, rice, or tapioca, 1 dessertspoon.
Benger's or Horlick's, 2 teaspoons.
Two plain biscuits (⅓ oz.), such as "Breakfast" or "Water," or two sections Vitaweat or Ryvita.

Forbidden Foods :

The following must not be taken, unless specially allowed :—

Sugar, jam, sweets, flour, biscuits, cakes, pastry, porridge, rice, tapioca, sago, tinned and dried fruits, peas, dried beans; grapes, figs, dates, bananas; beer, stout, port, sweet mineral waters (lemonade, ginger-beer, ginger-ale, etc.), coffee essence; sausages.

Fresh fruit and milk, bread and potatoes only as allowed. Special "Diabetic" breads or biscuits or sweets should not be taken unless specially ordered by the doctor. Sugar, flour, or breadcrumbs must not be used in cooking.

Sample Diet

Prescription.	Carbohydrate 100 grams.		Grams C.
Breakfast	Group 3	2 portions	20
Mid-day	Group 3	2 portions	20
Tea	Group 3	2 portions	20
Evening	Group 3	2 portions	20
Daily.			
Milk, 7 oz.	Group 2	2 portions	10
	Group 2	1 portion	10
	Group 1	As desired	—
			100

Non-carbohydrate foods as desired :

In case of illness, 2 lumps or 2 teaspoonsful of sugar may be substituted for 1 bread portion.

* A convenient metal measure may be obtained from H. K. Lewis & Co., Ltd., London.

DIABETIC DIETS WITH WEIGHED CARBOHYDRATE, PROTEIN AND FAT.

DIABETIC DIETS A

Without Insulin

For notes, see p. 218.

Prescription.			
Carbohydrate .. g.	100	120	150
Protein .. .. .. ,,	70	70	75
Fat .. .. .. ,,	100	100	100
Calories	1,627	1,709	1,853
Breakfast.	g. oz.	g. oz.	g. oz.
Egg .. .. .. No.	one	one	one
Bacon, raw weight	30 1	30 1	30 1
Tomato	60 2	60 2	60 2
Bread	30 1	30 1	45 1½
Milk in tea or coffee ..	45 1½	45 1½	45 1½
Mid-morning.			
Bread (Can be combined with breakfast if desired)	15 ½	20 ¾	30 1
Milk in tea or coffee (Can be combined with breakfast if desired)	45 1½	45 1½	45 1½
Carbohydrate at breakfast and mid-morning .. g.	*28·1*	*30·6*	*43·1*
Dinner.			
Meat	60 2	60 2	60 2
Cabbage or other vegetable on p. 337, as much as desired.			
Potatoes	60 2	60 2	120 4
Apple, raw	45 1½	90 3	90 3
or other fruit (p. 335) containing	5 g. C.	10 g. C.	10 g. C.
Milk as custard or junket ..	100 3½	100 3½	100 3½
or	or	or	or
unsweetened biscuit ..	7 ¼	7 ¼	7 ¼
Carbohydrate at dinner g.	*22·0*	*27·0*	*37·0*
Tea.			
Cheese	30 1	30 1	30 1
or	or	or	or
Egg .. .. .. No.	one	one	one
Bread	45 1½	52 1¾	60 2
Tomato	60 2	60 2	60 2
Green salad (see p. 337) if desired.			
Milk in tea	60 2	60 2	60 2
Carbohydrate at tea g.	*26·7*	*30·2*	*34·2*

Carbohydrate g.	100	120	150
Supper.	g. oz.	g. oz.	g. oz.
Ham, cheese, kipper, salmon, or meat	60 2	60 2	60 2
Bread	30 1	37 1½	45 1½
Orange	60 2	120 4	120 4
or other fruit (p. 335) containing	5 g. C.	10 g. C.	10 g. C.
Milk in tea or coffee ..	60 2	60 2	60 2
Carbohydrate at supper g.	*22·6*	*31·3*	*35·1*
Butter all day	45 1½	45 1½	45 1½

DIABETIC DIETS B

Without Insulin

Prescription.			
Carbohydrate .. g.	100	120	150
Protein .. .. .. ,,	70	75	75
Fat .. .. .. ,,	100	100	100
Calories	1,627	1,730	1,853
Breakfast.	g. oz.	g. oz.	g. oz.
Grapefruit	100 3½	100 3½	100 3½
or other fruit (p. 335) containing	5 g. C.	5 g. C.	5 g. C.
Egg	one	one	one
or	or	or	or
Kidney	30 1	30 1	30 1
Bacon (raw weight)	30 1	30 1	30 1
Bread	40 1½	45 1½	60 2
Milk in tea or coffee ..	60 2	60 2	60 2
Sugarless marmalade if desired.			
Carbohydrate at breakfast g.	*27·6*	*30·1*	*37·6*
Lunch.			
Clear soup if desired.			
Meat	90 3	90 3	90 3
Cauliflower or other vegetable on p. 337, as much as desired.			
Potatoes	60 2	90 3	120 4
Grapes	30 1	30 1	60 2
or other fruit (p. 335) containing	5 g. C.	5 g. C.	10 g. C.
Milk in jelly or other sweet containing 5 g. C. (p. 284)	100 3½	100 3½	100 3½
or	or	or	or
unsweetened biscuit ..	7 ¼	7 ¼	7 ¼
Carbohydrate at lunch g.	*22·0*	*27·0*	*37·0*

Carbohydrate g.	100	120	150
Tea	g. oz.	g. oz.	g. oz.
Bread	45 1½	60 2	67 2½
Cress, Marmite or Yeastrel, or meat extract as spread.			
Milk in tea	60 2	60 2	60 2
Carbohydrate at tea g.	*25·1*	*32·6*	*36·4*
Dinner.			
Clear soup if desired.			
Chicken, roast	60 2	60 2	60 2
Peas, fresh	65 2½	65 2½	65 2½
or	or	or	or
Carrots or other vegetable (p. 334)	120 4	120 4	120 4
containing	5 g. C.	5 g. C.	5 g. C.
Potatoes	60 2	90 3	100 3½
Milk) Baked custard or	100 3½	100 3½	100 3½
Egg) other sweet (p. 248)	half	half	half
Stewed apple or other fruit (p. 335)	120 4	120 4	240 8
containing	5 g. C.	5 g. C.	10 g. C.
Carbohydrate at dinner g.	*25·0*	*30·0*	*37·5*
Butter all day	52 1¾	52 1¾	52 1¾

DIABETIC DIETS A

With Ordinary Insulin before Breakfast and Supper

Prescription.					
Carbohydrate g.	100	120	150	175	200
Protein ,,	70	70	75	75	90
Fat ,,	100	100	100	100	110
Calories	1,627	1,709	1,853	1,955	2,212
	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Breakfast.					
Porridge, raw weight	—	—	—	—	30 1
Egg No.	one	one	one	one	two
Bacon, raw weight	30 1	30 1	30 1	30 1	—
Tomato	60 2	60 2	60 2	60 2	—
Bread	45 1½	52 1¾	60 2	70 2½	45 1½
Milk in tea or coffee (and with porridge)	45 1½	60 2	60 2	60 2	150 5
Mid-morning.					
Bread (Can be combined with breakfast if desired)	15 ½	20 ¾	30 1	30 1	30 1
Milk in tea or coffee (Can be combined with breakfast if desired)	45 1½	45 1½	45 1½	60 2	60 2
Carbohydrate at breakfast and mid-morning g.	*35·6*	*39·7*	*51·2*	*56·8*	*66·2*

Carbohydrate g.	100	120	150	175	200
Dinner.	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Meat	60 2	60 2	60 2	60 2	60 2
Cabbage or other vegetable on p. 337, as much as desired.					
Potatoes	60 2	60 2	120 4	150 5	90 3
Apple, raw	45 1½	90 3	90 3	90 3	90 3
or other fruit (p. 335) containing	5 g. C.	10 g. C.	10 g. C.	10 g. C.	10 g. C.
Milk as custard or junket	100 3½	100 3½	100 3½	100 3½	150 5
or with rice or tapioca	—	—	—	—	15 ½
or unsweetened biscuit	or 7 ¼	or 7 ¼	or 7 ¼	or 7 ¼	or 30 1
Carbohydrate at dinner g.	*22·0*	*27·0*	*37·0*	*42·0*	*45·8*
Tea.					
Cheese	30 1	30 1	30 1	30 1	30 1
or	or	or	or	or	or
Egg No.	one	one	one	one	one
Bread	10 ⅓	15 ½	15 ½	30 1	30 1
Tomato	60 2	60 2	60 2	60 2	60 2
Green salad (see p. 337) if desired.					
Milk in tea	60 2	60 2	60 2	60 2	60 2
Carbohydrate at tea g.	*9·2*	*11·7*	*11·7*	*19·2*	*19·2*
Supper.					
Ham, cheese, kipper, salmon or meat	60 2	60 2	60 2	60 2	60 2
Bread	50 1⅔	52 1¾	75 2½	90 3	90 3
Orange	60 2	120 4	120 4	120 4	120 4
or other fruit (p. 335) containing	5 g. C.	10 g. C.	10 g. C.	10 g. C.	10 g. C
Milk in tea, coffee	60 2	60 2	60 2	60 2	200 7
or in cocoa	—	—	—	—	6 ⅛
Carbohydrate at supper g.	*32·6*	*38·6*	*50·1*	*57·6*	*66·7*
Butter all day	45 1½	45 1½	45 1½	45 1½	45 1½

Carbohydrate g.	100	120	150
Tea	g. oz.	g. oz.	g. oz.
Bread	45 1½	60 2	67 2½
Cress, Marmite or Yeastrel, or meat extract as spread.			
Milk in tea	60 2	60 2	60 2
Carbohydrate at tea g.	*25·1*	*32·6*	*36·4*
Dinner.			
Clear soup if desired.			
Chicken, roast	60 2	60 2	60 2
Peas, fresh	65 2½	65 2½	65 2½
or	or	or	or
Carrots or other vegetable (p. 334)	120 4	120 4	120 4
containing	5 g. C.	5 g. C.	5 g. C.
Potatoes	60 2	90 3	100 3½
Milk) Baked custard or	100 3½	100 3½	100 3½
Egg) other sweet (p. 248)	half	half	half
Stewed apple or other fruit (p. 335)	120 4	120 4	240 8
containing	5 g. C.	5 g. C.	10 g. C.
Carbohydrate at dinner g.	*25·0*	*30·0*	*37·5*
Butter all day	52 1½	52 1½	52 1½

DIABETIC DIETS A

With Ordinary Insulin before Breakfast and Supper

Prescription.					
Carbohydrate g.	100	120	150	175	200
Protein ,,	70	70	75	75	90
Fat ,,	100	100	100	100	110
Calories	1,627	1,709	1,853	1,955	2,212
	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Breakfast.					
Porridge, raw weight	—	—	—	—	30 1
Egg No.	one	one	one	one	two
Bacon, raw weight	30 1	30 1	30 1	30 1	—
Tomato	60 2	60 2	60 2	60 2	—
Bread	45 1½	52 1¾	60 2	70 2½	45 1½
Milk in tea or coffee (and with porridge)	45 1½	60 2	60 2	60 2	150 5
Mid-morning.					
Bread (Can be combined with breakfast if desired)	15 ½	20 ¾	30 1	30 1	30 1
Milk in tea or coffee (Can be combined with breakfast if desired)	45 1½	45 1½	45 1½	60 2	60 2
Carbohydrate at breakfast and mid-morning g.	*35·6*	*39·7*	*51·2*	*56·8*	*66·2*

Carbohydrate g.	100	120	150	175	200
Dinner.	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Meat	60 2	60 2	60 2	60 2	60 2
Cabbage or other vegetable on p. 337, as much as desired.					
Potatoes	60 2	60 2	120 4	150 5	90 3
Apple, raw	45 1½	90 3	90 3	90 3	90 3
or other fruit (p. 335) containing	5 g. C.	10 g. C.	10 g. C.	10 g. C.	10 g. C.
Milk as custard or junket	100 3½	100 3½	100 3½	100 3½	150 5
or with rice or tapioca	—	—	—	—	15 ½
or unsweetened biscuit	or 7 ¼	or 7 ¼	or 7 ¼	or 7 ¼	or 30 1
Carbohydrate at dinner g.	*22·0*	*27·0*	*37·0*	*42·0*	*45·8*
Tea.					
Cheese	30 1	30 1	30 1	30 1	30 1
or Egg No.	or one	or one	or one	or one	or one
Bread	10 ⅓	15 ½	15 ½	30 1	30 1
Tomato	60 2	60 2	60 2	60 2	60 2
Green salad (see p. 337) if desired.					
Milk in tea	60 2	60 2	60 2	60 2	60 2
Carbohydrate at tea g.	*9·2*	*11·7*	*11·7*	*19·2*	*19·2*
Supper.					
Ham, cheese, kipper, salmon or meat	60 2	60 2	60 2	60 2	60 2
Bread	50 1⅔	52 1⅔	75 2½	90 3	90 3
Orange	60 2	120 4	120 4	120 4	120 4
or other fruit (p. 335) containing	5 g. C.	10 g. C.	10 g. C.	10 g. C.	10 g. C.
Milk in tea, coffee	60 2	60 2	60 2	60 2	200 7
or in cocoa	—	—	—	—	6 ¼
Carbohydrate at supper g.	*32·6*	*38·6*	*50·1*	*57·6*	*66·7*
Butter all day	45 1½	45 1½	45 1½	45 1½	45 1½

DIABETIC DIETS B

With Ordinary Insulin before Breakfast and Late Dinner

Prescription.					
Carbohydrate .. g.	100	120	150	175	200
Protein .. .. ,,	70	75	75	75	90
Fat .. .. .. ,,	100	100	100	100	110
Calories	1,627	1,730	1,853	1,955	2,212
Breakfast.	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Grapefruit	100 3½	100 3½	100 3½	100 3½	100 3½
or other fruit (p. 335) containing	5 g. C.	5 g. C.	5 g. C.	5 g. C.	5 g. C.
Porridge, raw weight ..	—	—	—	22 ¾	30 1
Eggs .. .. No.	one	one	one	one	two
or					
Kidney	30 1	30 1	30 1	30 1	60 2
Bacon (raw weight) ..	30 1	30 1	30 1	—	—
Bread	52 1¾	70 2½	90 3	60 2	75 2½
Milk in tea or coffee (and with porridge)	60 2	60 2	60 2	100 3½	100 3½
Cream (or ½ oz. extra butter)	—	—	—	22 ¾	22 ¾
Sugarless marmalade if desired.					
Carbohydrate at breakfast g.	*33·9*	*42·6*	*52·6*	*55·5*	*68·0*
Lunch.					
Clear soup if desired.					
Meat	90 3	90 3	90 3	90 3	90 3
Cauliflower or other vegetable on p. 337, as much as desired.					
Potatoes	60 2	90 3	120 4	150 5	180 6
Grapes	30 1	30 1	60 2	60 2	60 2
or other fruit (p. 335) containing	5 g. C.	5 g. C.	10 g. C.	10 g. C.	10 g. C.
Milk in jelly or other sweet containing 5 g. C. (p. 284)	100 3½	100 3½	100 3½	100 3½	100 3½
or	or	or	or	or	or
unsweetened biscuit ..	7 ¼	7 ¼	7 ¼	7 ¼	7 ¼
Carbohydrate at lunch g.	*22·0*	*27·0*	*37·0*	*42·0*	*47·0*
Tea.					
Bread	10 ½	15 ½	15 ½	37 1¼	37 1¼
Cress, Marmite or Yeastrel, or meat extract as spread.					
Milk in tea	60 2	60 2	60 2	60 2	60 2
Carbohydrate at tea g.	*7·6*	*10·1*	*10·1*	*21·4*	*21·4*

Carbohydrate g.	100	120	150	175	200
Dinner.	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Clear soup if desired.					
Chicken, roast	60 2	60 2	60 2	60 2	60 2
Peas, fresh	65 2½	65 2½	65 2½	65 2½	65 2½
or	or	or	or	or	or
Carrots	120 4	120 4	120 4	120 4	120 4
or other vegetables (p. 334) containing	5 g. C.	5 g. C.	5 g. C.	5 g. C.	5 g. C.
Potatoes	90 3	120 4	120 4	150 5	200 7
Milk } Baked custard or	100 3½	100 3½	—	—	—
Egg } other sweet (p. 284)	half	half	—	—	—
or milk with	—	—	150 5	150 5	150 5
Rice or tapioca as pudding	—	—	10 ½	10 ½	10 ½
Stewed apple	240 8	240 8	240 8	240 8	240 8
or other fruit (p. 335) containing	10 g. C.	10 g. C.	10 g. C.	10 g. C.	10 g. C.
Carbohydrate at dinner g.	*35·0*	*40·0*	*49·7*	*54·7*	*64·7*
Butter all day	52 1¾	52 1¾	52 1¾	52 1¾	52 1¾

DIABETIC DIETS A

With Retard (Protamine) Insulin or Protamine Zinc Insulin

Prescription				
Carbohydrate .. g.	150	175	200
Protein .. .. ,,	70	75	80
Fat .. .. .. ,,	100	100	110
Calories	1,832	1,955	2,171
Breakfast	g. oz.	g. oz.	g. oz.
Egg .. .. .. No.	one	one	one
Bacon, raw weight	30 1	30 1	30 1
Bread	45 1½	60 2	70 2½
Milk in tea or coffee ..	60 2	60 2	60 2
Mid-morning.			
Bread (Can be combined with breakfast if desired)	22 ¾	22 ¾	30 1
Milk in tea or coffee (Can be combined with breakfast if desired)	60 2	60 2	60 2
Carbohydrate at breakfast and mid-morning g.	*39·0*	*46·5*	*55·2*

Carbohydrate g.	150		175		200	
Dinner.	g.	oz.	g.	oz.	g.	oz.
Meat	60	2	60	2	60	2
Cabbage or other vegetable on p. 337, as much as desired.						
Potatoes	120	4	150	5	150	5
Apple, raw	120	4	120	4	180	6
or other fruit (p. 335) containing	10 g. C.		10 g. C.		15 g. C.	
Milk as custard or junket ..	100	3½	100	3½	100	3½
or	or		or		or	
unsweetened biscuit ..	7	½	7	½	7	½
Carbohydrate at dinner g.	*35·0*		*40·0*		*45·0*	
Tea.						
Cheese	30	1	30	1	30	1
or	or		or		or	
Egg .. .. .. No.	one		one		one	
Bread	40	1½	52	1¾	60	2
Tomato	60	2	60	2	60	2
Green salad (p. 337) if desired.						
Milk in tea	60	2	60	2	60	2
Carbohydrate at tea g.	*24·2*		*30·5*		*34·2*	
Supper.						
Ham, cheese, kipper, or meat	60	2	60	2	60	2
Bread	60	2	70	2½	75	2½
Orange	120	4	120	4	180	6
or other fruit (p. 335) containing	10 g. C.		10 g. C.		15 g. C.	
Milk in tea, coffee, or cocoa	60	2	60	2	60	2
Carbohydrate at supper g.	*42·6*		*47·6*		*55·1*	
Bed-time.						
Unsweetened biscuits ..	14	½	14	½	14	½
Carbohydrate at bed-time g.	*10·0*		*10·0*		*10·0*	
Butter all day	37	1¼	37	1¼	50	1¾

DIABETIC DIETS B

With Retard (Protamine) or Protamine Zinc Insulin

Prescription.			
Carbohydrate .. g.	150	175	200
Protein .. .. ,,	70	75	80
Fat .. .. .. ,,	100	100	110
Calories	1,832	1,954	2,171
Breakfast.	g. oz.	g. oz.	g. oz.
Grapefruit	100 3½	100 3½	200 7
or other fruit (p. 335) containing	5 g. C.	5 g. C.	10 g. C.
Eggs .. .. .. No.	one	one	two
or	or	or	or
Kidney	30 1	30 1	30 1
Bacon, raw weight	30 1	30 1	30 1
Bread	67 2¼	82 2¾	90 3
Milk in tea or coffee ..	60 2	60 2	60 2
Sugarless marmalade if desired.			
Carbohydrate at breakfast g.	*41·4*	*48·9*	*57·6*
Lunch.			
Clear soup if desired.			
Meat	60 2	60 2	60 2
Cauliflower or other vegetable on p. 337, as much as desired.			
Potatoes	120 4	120 4	150 5
Grapes	75 2½	112 3¾	112 3¾
or other fruit (p. 335) containing	10 g. C.	15 g. C.	15 g. C.
Milk in jelly	100 3½	100 3½	100 3½
or other sweet (p. 284) containing	5 g. C.	5 g. C.	5 g. C.
or	or	or	or
Unsweetened biscuit ..	7 ¼	7 ¼	7 ¼
Carbohydrate at lunch g.	*35·0*	*40·0*	*45·0*
Tea.			
Bread	45 1½	52 1¾	60 2
Cress, Marmite, Yeastrel, or meat extract as spread.			
Milk in tea	60 2	60 2	60 2
Carbohydrate at tea g.	*25·1*	*28·9*	*32·6*

Carbohydrate g.	150		175		200	
Dinner.	g.	oz.	g.	oz.	g.	oz.
Clear soup if desired.						
Chicken, roast	60	2	60	2	60	2
Peas, fresh	65	2½	65	2½	65	2½
or	or		or		or	
Carrots	120	4	120	4	120	4
or other vegetables (p. 339) containing	5 g. C.		5 g. C.		5 g. C.	
Potatoes	90	3	105	3½	150	5
Rice or taploca } pudding	10	½	10	½	10	½
Milk } pudding	150	5	150	5	150	5
or other pudding (p. 287) containing	15 g. C.		15 g. C.		15 g. C.	
Stewed apple	120	4	240	8	240	8
or other fruit (p. 335) containing	5 g. C.		10 g. C.		10 g. C.	
Carbohydrate at dinner g.	*40·0*		*47·5*		*55·0*	
Bedtime.						
Ovaltine or Bournvita } ..	7	½	7	½	7	½
Milk .. .. .. } ..	100	3½	100	3½	100	3½
or	or		or		or	
Unsweetened biscuits ..	14	½	14	½	14	½
Unsugared lemonade if desired.						
Carbohydrate at bedtime g.	*10·0*		*10·0*		*10·0*	
Butter all day	45	1½	45	1½	52	1¾

Note on Diabetic Diets.

1 oz. cream may be taken during the day if ½ oz. of the daily allowance of butter is given up. Bacon may be omitted if desired, and 1 oz. cream or ½ oz. extra butter should then be added to the diet.

Diets containing 70 g. fat only.—The fat in the A diets may be reduced to 70 g. by omitting bacon from breakfast and either ½ oz. butter from the day's allowance or by giving 2½ oz. smoked haddock or white fish instead of ham, kipper, etc., at supper.

The fat in the B diets may be reduced to 70 g. by omitting bacon from breakfast and ½ oz. butter from the day's allowance, leaving 1½ oz. butter daily.

For carbohydrate arrangement with different kinds of insulin, see p. 361.

Some physicians recommend that patients having protamine zinc insulin should omit 10 g. carbohydrate from breakfast and take it at the time of injection. In this case ½ oz. bread should be deducted from breakfast and taken earlier, or ½ oz. unsweetened biscuits may be substituted.

EXAMPLES OF THE USE OF SPECIAL COOKED FOOD RECIPES IN HIGH CARBOHYDRATE DIETS

Diet containing 175 g. carbohydrate. For use with ordinary insulin before breakfast and supper.

Prescription : C., 175 g. ; P., 75 g. ; F., 100 g. ; Calories, 1,955.

Food g.	Food oz.		C. g.	P. g.	F. g.
		Breakfast			
150	5	Kedgeree	15·0	14·5	8·5
82	2¾	Bread	41·3	6·1	0·6
60	2	Milk in tea	2·6	1·8	2·2
		Carbohydrate at breakfast ..	*58·9*		
		Dinner			
135	4¾	Hot Pot	15·0	12·6	14·4
		Cabbage or other vegetables on p. 337, as much as desired ..	2·0	1·0	—
90	3	Cabinet, sago, semolina, or bread-and-butter pudding, or blancmange, plain jelly, or custard powder custard	15·0	3·9	3·9
120	4	Orange or other fruit containing 10 g. C. (see p. 335)	10·0	0·8	—
		Carbohydrate at dinner ..	*42·0*		
		Tea			
30	1	Cherry, chocolate, coconut, orange, sponge, or Queen cake	15·0	1·4	6·8
60	2	Milk in tea	2·6	1·8	2·3
		Carbohydrate at tea ..	*17·6*		
		Supper			
120	4	Cheese omelette	—	20·0	35·2
45	1½	Bread, or 4½ oz. potatoes	22·5	3·3	0·3
150	5	Blancmange	25·0	4·5	3·5
120	4	Apple, stewed without sugar ..	5·0	0·4	—
90	3	Milk in tea or coffee	3·9	2·7	3·3
		Carbohydrate at supper ..	*56·4*		
20	¾	Butter all day	—	0·1	16·1
		Total	174·9	74·9	99·0

Note.—For cooked food recipes, see p. 250, and analyses, see pp. 302–325. For use with protamine insulin, see p. 361.

Diet containing 200 g. carbohydrate. For use with ordinary insulin before breakfast and supper.

Prescription : C., 200 g.; P., 80 g.; F., 110 g.; Calories, 2,171

Food g.	Food oz.		C. g.	P. g.	F. g.
		Breakfast			
200	7	Fish cakes	20·0	24·5	28·0
82	2¾	Bread	41·3	6·1	0·6
60	2	Milk in tea	2·6	1·8	2·2
		Carbohydrate at breakfast ..	*63·9*		
		Dinner			
120	4	Steak and kidney pie or toad-in-the-hole	20·0	17·6	21·6
		Cabbage or other vegetable on p. 337	2·0	1·0	—
90	3	Queen of puddings or chocolate mould or rice or tapioca pudding	20·0	4·5	8·4
90	3	Apple or other fruit containing 10 g. C. (see p. 335)	10·0	—	—
		Carbohydrate at dinner ..	*52·0*		
		Tea			
32	1	Currant cake, gingerbread, rock buns, jam or treacle tart, or scones with egg	20·0	1·8	5·2
60	2	Milk in tea	2·6	1·8	2·2
		Carbohydrate at tea	*22·6*		
		Supper			
135	4¾	Macaroni cheese	20·0	11·0	18·0
40	1½	Bread or 4 oz. potatoes	20·0	2·9	0·3
75	2¾	Trifle	20·0	2·9	2·9
90	3	Milk in tea or coffee	3·9	2·7	3·3
		Carbohydrate at supper ..	*63·9*		
20	¾	Butter all day	—	0·1	16·1
		Total	202·4	77·7	108·8

Note.—See p. 219.

DIETS FOR DIABETIC CHILDREN

Ordinary Insulin before Breakfast and Supper

Prescription:					
Carbohydrate .. .. g.	100	120	150	175	200
Protein .. .. .. „	65	70	75	80	85
Fat .. .. „	80	80	90	100	100
Calories	1,421	1,523	1,760	1,976	2,099
Breakfast.	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Egg .. .. .. No.	one	one	one	one	one
Bread	45 1½	60 2	52 1¾	60 2	60 2
Porridge (raw weight), shredded wheat or other cereal	—	—	15 ½	22 ¾	30 1
Milk	200 7	200 7	300 10	300 10	300 10
(½ pint, 200 g., may be omitted from breakfast and taken at school, or unsugared lemonade may be taken during the morning.)					
Carbohydrate at breakfast .. g.	*32·5*	*40·0*	*51·6*	*60·5*	*65·6*
Dinner.					
Meat	60 2	60 2	60 2	60 2	60 2
or	or	or	or	or	or
Fish	75 2½	75 2½	75 2½	75 2½	75 2½
with extra butter during the day	15 ½	15 ½	15 ½	15 ½	15 ½
Cabbage or other vegetable on p. 337 as much as desired.					
Potatoes	60 2	90 3	90 3	120 4	150 5
Orange	60 2	60 2	120 4	120 4	120 4
or other fruit (p. 335) containing	5 g. C.	5 g. C.	10 g. C.	10 g. C.	10 g. C.
Milk as junket or jelly or to drink, or as custard (see note p. 222)	200 7	200 7	200 7	200 7	200 7
Carbohydrate at dinner .. g.	*27·0*	*32·0*	*37·0*	*42·0*	*47·0*
Tea.					
Bread	10 ½	10 ½	15 ½	30 1	37 1½
or	or	or	or	or	or
Unsweetened biscuit	7 ½	7 ½	10 ½	22 ¾	30 1
Milk in weak tea	60 2	60 2	60 2	60 2	60 2
or	or	or	or	or	or
Orange juice (with water if desired)	30 1	30 1	30 1	30 1	30 1
Carbohydrate at tea .. g.	*7·6*	*7·6*	*10·1*	*17·6*	*21·4*

Carbohydrate .. g.	100	120	150	175	200
Supper.					
	g. oz.	g. oz.	g. oz.	g. oz.	g. oz.
Cheese, fresh milk or cream for younger children, or ham ..	60 2	60 2	60 2	60 2	60 2
or	or	or	or	or	or
Eggs .. .. .. No.	two	two	two	two	two
Bread	37 1¼	52 1¾	60 2	60 2	80 2¾
Cress or lettuce or other salad on p. 337 as desired.					
Apple	45 1½	45 1½	90 3	90 3	90 3
or other fruit (p. 335) containing	5 g. C.	5 g. C.	10 g. C.	10 g. C.	10 g. C.
Milk	200 7	200 7	270 9	300 10	300 10
Carbohydrate at supper .. g.	*33·8*	*41·3*	*51·7*	*55·0*	*65·0*
Butter all day	30 1	30 1	30 1	37 1¼	37 1¼

Note.—If a custard is desired at dinner, omit ¾ oz. cheese or ham or 1 egg at supper, and use one egg with the milk at dinner time.

To reduce the fat in the diets by 20 g. serve 2½ oz. smoked haddock or white fish at supper instead of cheese or eggs and omit ¼ oz. butter from the daily allowance.

Concentrates of Vitamins A and D should be given daily.

DIET FOR DIABETIC CHILDREN UNDER THREE YEARS OF AGE

Ordinary Insulin before Breakfast and Tea

Prescription: C., 100 g.; P., 45 g.; F., 60 g.; Calories, 1,154.

Food. g.	Food. oz.		C. g.	P. g.	F. g.
		Breakfast			
15	½	Porridge (raw weight), shredded wheat or other cereal	10·3	1·9	1·1
30	1	Bread, or ½ oz. rusks	15·2	2·2	0·2
200	7	Milk on porridge and to drink	9·1	6·3	7·7
		Mid-morning			
		Lemon juice with water..	—	—	—
			34·6		
		Dinner			
30	1	Lean meat, rabbit or chicken, or 1¼ oz. white fish, or one egg	—	8·4	2·1
		Spinach, cabbage or other vegetables on p. 337, small portion	0·8	2·8	—
60	2	Potatoes	10·0	0·8	—
100	3½	Milk as junket, custard (p. 284) or to drink	4·6	3·1	3·9
60	2	Banana or other fruit containing 10 g. C.	10·0	0·6	—
			25·4		
		Tea (5 p.m.)			
		One egg, or ¾ oz. fresh milk cheese	—	5·9	6·2
30	1	Bread, or ½ oz. rusks	15·2	2·2	0·2
200	7	Milk	9·1	6·3	7·7
60	2	Grapes or other fruit containing 10 g. C.	10·0	0·4	—
			34·3		
		Bedtime			
100	3½	Milk	4·6	3·1	3·9
30	1	Butter all day	—	0·1	24·2
		Total	98·9	44·1	57·4

HIGH CALORIE DIETS FOR DIABETIC PATIENTS SUFFERING FROM TUBERCULOSIS

Ordinary Insulin before Breakfast and Supper

Prescription: C., 250 g.; P., 110 g.; F., 120 g.; Calories, 2,600.

DIET A

Food g.	Food oz.		C. g.	P. g.	F. g.
		Breakfast			
		Two eggs	—	11·8	12·4
90	3	Bread	45·0	6·6	0·6
60	2	Milk in tea	2·6	1·8	2·2
		Mid-morning			
		One egg, Milk — Egg nog	—	5·9	6·2
150	5		6·5	4·5	5·5
60	2	Bread	30·0	4·4	0·4
			84·1		
		Dinner			
90	3	Meat, fat	—	21·0	21·0
		Cabbage or other vegetable on p. 337, moderate portion	1·2	0·6	—
180	6	Potatoes	30·0	2·4	—
15	½	Rice or tapioca, Milk — Pudding	12·3	1·0	0·2
150	5		6·5	4·5	5·5
90	3	Apple, raw, or other fruit, containing 10 g. C.	10·0	0·3	—
			60·0		
		Tea			
45	1½	Bread	22·5	3·3	0·3
60	2	Tomato	1·6	0·6	—
60	2	Milk in tea	2·6	1·8	2·2
			26·7		
		Supper			
60	2	Cheese or ham	—	14·2	19·6
90	3	Bread	45·0	6·6	0·6
120	4	Orange or other fruit containing 10 g. C.	10·0	0·8	—
150	5	Milk	6·5	4·5	5·5
6	¼	Cocoa	2·0	1·2	1·1
		Bedtime			
180	6	Milk	7·8	5·4	6·6
7	¼	Unsweetened biscuits (or ½ oz. glucose)	5·0	0·6	1·0
			76·3		
45	1½	Butter all day	—	0·2	36·3
		Total	247·1	104·0	127·2

Note.—The diets on pp. 224–227 may be adapted for patients not taking insulin by rearranging the carbohydrate so that the amounts taken at each meal are approximately equal.

For patients taking protamine insulin the diets should be rearranged in accordance with the tables on p. 361.

DIET B

Food g.	Food oz.		C. g.	P. g.	F. g.
		Breakfast			
		One egg or 1 oz. kidney	—	5·9	6·2
30	1	Porridge (raw weight) or Shredded Wheat or other cereal	20·6	3·8	2·5
90	3	Bread (toasted if preferred) ..	45·0	6·6	0·6
150	5	Milk on porridge and in tea or coffee	6·5	4·5	5·5
		Mid-morning			
200	7	Milk (in coffee if desired)	9·1	6·3	7·7
			81·2		
		Lunch			
90	3	Chicken, roast	—	25·2	6·3
		Cauliflower or other vegetable on p. 337, moderate portion ..	0·9	1·2	—
180	6	Potatoes	30·0	2·4	—
10	½	Rice } Creamed	8·2	0·6	0·1
150	5	Milk } rice (p. 288)	6·5	4·5	5·5
75	2½	Banana	12·5	0·5	—
30	1	Cream	0·7	0·5	11·9
			60·8		
		Tea			
45	1½	Bread	22·5	3·3	0·3
		Cress or Marmite as spread.			
60	2	Milk in tea	2·6	1·8	2·2
			25·1		
		Dinner			
60	2	Meat (fat)	—	14·0	14·0
65	2½	Peas or other vegetable containing 5 g. C.	5·0	3·2	—
150	5	Potatoes	25·0	2·0	—
		One egg } Bread-and-butter	—	5·9	6·2
150	5	Milk } pudding	6·5	4·5	5·5
30	1	Bread }	15·0	2·2	0·2
120	4	Peach or other fruit containing 10 g. C.	10·0	0·8	—
		Bedtime			
240	8	Milk	10·4	7·2	8·8
15	½	Ovaltine or Bournvita	10·0	1·9	1·1
			81·9		
45	1½	Butter all day	—	0·2	36·3
		Total	249·0	109·0	120·9

See note, p. 224.

DIET FOR DIABETIC PATIENTS SUFFERING FROM INDIGESTION

Ordinary Insulin before Breakfast and Supper

Prescription: C., 150 g.; P., 75 g.; F. 75 g.; Calories, 1,620.

Food g.	Food oz.		C. g.	P. g.	F. g.
		Breakfast			
		One egg, boiled or poached ..	—	5·9	6·2
60	2	Bread, stale white	30·0	4·4	0·4
60	2	Milk in weak tea	2·6	1·8	2·2
		Mid-morning (Can be combined with breakfast if desired)			
30	1	Bread, stale white	15·0	2·2	0·2
100	3½	Warm milk	4·6	3·2	3·9
			52·2		
		Dinner			
45	1½	Lamb, chicken, rabbit, or sweetbreads	—	12·6	3·2
60	2	Cauliflower, or 1 oz. mashed carrots	0·9	1·2	—
90	3	Mashed potato	15·0	1·2	—
90	3	Baked apple (weighed before baking), or 2 oz. mashed banana ..	10·0	0·3	—
100	3½	Milk as custard, jelly or junket (p. 284)	4·6	3·2	3·9
			30·5		
		Tea			
		One egg, or 1 oz. fresh milk or cream cheese	—	5·9	6·2
30	1	Bread, stale white	15·0	2·2	0·2
60	2	Milk in weak tea	2·6	1·8	2·2
			17·6		
		Supper			
75	2½	Steamed fish	—	14·2	0·7
90	3	Mashed potato or 1 oz. white bread	15·0	1·2	—
100	3½	Milk } ..	4·6	3·2	3·9
9	¼	Rice or tapioca (raw weight) or cornflakes } ..	8·2	0·6	0·1
		Bedtime			
7	¼	Bournvita or Ovaltine	5·0	1·0	0·6
150	5	Milk	6·5	4·5	5·5
15	½	Unsweetened biscuits	10·0	1·2	1·9
			49·7		
45	1½	Butter all day	—	0·2	36·3
		Total	149·6	72·0	77·6

See note, p. 224.

DIET FOR DIABETIC PATIENTS SUFFERING FROM DIARRHŒA

Ordinary Insulin before Breakfast and Supper

Prescription: C., 150 g.; P., 75 g.; F. 90 g.; Calories, 1,760.

Food g.	Food oz.		C. g.	P. g.	F. g.
		Breakfast			
		One egg, boiled or poached ..	—	5·9	6·2
60	2	Bread, white (toasted if desired) ..	30·0	4·4	0·4
60	2	Milk in tea or coffee	2·6	1·8	2·2
		Mid-morning (Can be combined with breakfast if desired)			
30	1	Bread, white	15·0	2·2	0·2
60	2	Milk in tea or coffee	2·6	1·8	2·2
			50·2		
		Dinner			
60	2	Chicken, rabbit or sweetbreads ..	—	16·8	4·2
150	5	Mashed potato, or 1⅝ oz. white bread	25·0	2·0	—
200	7	Milk } Boiled or baked custard,	9·1	6·3	7·7
		One egg } (double recipe on p. 284)	—	5·9	6·2
			34·1		
		Tea			
30	1	Bread, white	15·0	2·2	0·2
60	2	Milk in tea	2·6	1·8	2·2
		Marmite or Yeastrel.			
			17·6		
		Supper			
		Two eggs, or 2 oz. fresh milk cheese or 2½ oz. fish and ½ oz. extra butter	—	11·8	12·4
60	2	Bread, white	30·0	4·4	0·4
60	2	Milk in tea or coffee	2·6	1·8	2·2
		Bedtime			
100	3½	Milk	4·6	3·2	3·9
7	¼	Bournvita or Ovaltine	5·0	1·0	0·6
7	¼	Unsweetened biscuit	5·0	0·6	1·0
			47·2		
45	1½	Butter all day	—	0·2	36·3
		Total	149·1	74·1	88·5

Note.—Beverages must not be taken very hot or very cold.
See also note, p. 224.

INVALID DIABETIC DIETS CONTAINING 100 GRAMS OF CARBOHYDRATE

Ordinary Insulin before Breakfast and Supper

Food g.	Food oz.	FLUID	C. g.	Food g.	Food oz.	LIGHT	C. g.
		Breakfast				*Breakfast*	
100	3½	One egg, Milk, Egg nog	—			One egg, boiled or poached	—
22	¾	Glucose	4·6	100	3½	Milk, with tea or coffee to taste	4·6
			22·0	45	1½	Bread	22·5
		Mid-morning				*Mid-morning*	
120	4	Orange juice	10·0			Lemonade	—
			36·6	15	½	Unsweetened biscuits	10·0
							37·1
		Dinner				*Dinner*	
150	5	Milk as junket or jelly	6·5	90	3	Fish if desired.	—
		Lemonade	—	150	5	Milk as junket or jelly Lemonade if desired.	6·5
15	½	Glucose	15·0	90	3	Potatoes or 1 oz. bread	15·0
			21·5				21·5
		Tea				*Tea*	
60	2	Milk in tea	2·6	60	2	Milk in tea	2·6
7	¼	Glucose	7·0	15	½	Bread	7·5
			9·6				10·1
		Supper				*Supper*	
		One egg, Milk, Glucose — Boiled custard or ice-cream	—			One egg, boiled or poached	—
100	3½		4·6	100	3½	Milk, Bread — As bread and milk if desired	4·6
15	½		15·0	30	1		15·0
		Bedtime				*Bedtime*	
7	¼	Bournvita or Ovaltine	5·0	7	¼	Bournvita or Ovaltine	5·0
180	6	Milk	7·8	150	5	Milk	6·5
			32·4				31·1
						Butter all day up to 1 oz.	
		Total Carbohydrate	100·1			Total Carbohydrate	99·8

Note.—This diet, or any meal from it, may be substituted for the 100 g. C. diets on pp. 212–215, without altering the patient's carbohydrate intake. Breakfast and the mid-morning meal, and supper and the bed-time drink, should be reckoned as substitutes for breakfast or supper if no mid-morning or bed-time meal is normally taken.

INVALID DIABETIC DIET CONTAINING 120 GRAMS OF CARBOHYDRATE

Ordinary Insulin before Breakfast and Supper

Food g.	Food oz.	FLUID	C. g.	Food g.	Food oz.	LIGHT	C. g.
		Breakfast				*Breakfast*	
		One egg }	—			One egg, boiled or poached	—
100	3½	Milk } Egg nog	4·6	100	3½	Milk	4·6
22	¾	Glucose }	22·0	45	1½	Bread	22·5
		Mid-morning				*Mid-morning*	
		Lemonade }	—			Lemonade	—
15	½	Glucose }	15·0	22	¾	Unsweetened biscuits	15·0
			41·6				*42·1*
		Dinner				*Dinner*	
				90	3	Fish if desired.	—
				150	5	Milk as junket or jelly	6·5
				45	1½	Banana or 3 oz. orange	7·5
150	5	Milk as junket or jelly } ..	6·5			Lemonade if desired	—
7	¼	Glucose } ..	7·0	90	3	Potatoes or 1 oz. bread	15·0
		Lemonade }					*29·0*
15	½	Glucose } ..	15·0			*Tea*	
			28·5	60	2	Milk in tea	2·6
				15	½	Bread	7·5
		Tea					*10·1*
60	2	Milk in tea } ..	2·6				
7	¼	Glucose } ..	7·0			*Supper*	
			9·6			One egg, boiled or poached	—
		Supper		100	3½	Milk } As bread	4·6
				45	1½	Bread } and milk if desired	22·5
		One egg } Boiled	—				
100	3½	Milk } custard or	4·6			*Bedtime*	
22	¾	Glucose } ice-cream	22·0	7	¼	Bournvita or Ovaltine	5·0
				150	5	Milk	6·5
		Bedtime					*38·6*
7	¼	Bournvita or Ovaltine	5·0				
180	6	Milk	7·8			Butter all day up to 1 oz.	
			39·4				
		Total Carbohydrate	119·1			Total Carbohydrate	119·8

Note.—This diet, or any meal from it, may be substituted for the 120 g. C. diets on pp. 212–215, without altering the patient's carbohydrate intake. Breakfast and the mid-morning meal, and supper and the bedtime drink, should be reckoned as substitutes for breakfast or supper if no mid-morning or bedtime meal is normally taken.

INVALID DIABETIC DIET CONTAINING 150 GRAMS CARBOHYDRATE

Ordinary Insulin before Breakfast and Supper

Food g.	Food oz.	FLUID	C. g.	Food g.	Food oz.	LIGHT	C. g.
		Breakfast				*Breakfast*	
150	5	Milk ..	6·5			One egg, boiled or poached	—
15	½	Glucose ..	15·0				
		Bournvita or		30	1	Bread	15·0
15	½	Ovaltine ..	10·0	15	½	Marmalade, ordinary	10·0
				60	2	Milk	2·6
		Mid-morning				*Mid-morning*	
		One egg } Egg	—	150	5	Milk (with coffee if	
150	5	Milk } nog	6·5			desired)	6·5
15	½	Glucose }	15·0	15	½	Glucose	15·0
			53·0				49·1
		Dinner				*Dinner*	
150	5	Milk as junket or jelly ..	6·5	90	3	Fish if desired ..	—
				150	5	Milk } Rice	6·5
7	¼	Glucose ..	7·0	15	½	Rice } pudding	12·3
		Lemonade ..	—	90	3	Stewed prunes, or	
22	¾	Glucose or sugar ..	22·0			mashed potato ..	15·0
			35·5				33·8
		Tea				*Tea*	
60	2	Milk in tea ..	2·6	60	2	Milk in tea	2·6
10	⅓	Glucose ..	10·0	20	⅔	Bread	10·0
			12·6				12·6
		Supper				*Supper*	
		One egg } Boiled cus-	—			One egg, boiled or poached, if desired.	—
150	5	Milk } tard or ice-	6·5				
10	⅓	Glucose } cream	10·0	150	5	Milk } As bread and	6·5
		Lemonade	—	50	1⅔	Bread } milk if de-	25·0
15	½	Glucose	15·0			sired.	
		Bedtime				*Bedtime*	
7	¼	Bournvita or Ovaltine ..	5·0	7	¼	Bournvita or Ovaltine	5·0
150	5	Milk ..	6·5	150	5	Milk	6·5
7	¼	Glucose ..	7·0	10	⅓	Glucose or ½ oz. unsweetened biscuit	10·0
			50·0				
						Butter all day up to 1 oz.	53·0
		Total Carbohydrate	151·1			Total Carbohydrate	148·5

Note.—This diet, or any meal from it, may be substituted for the 150 g. C. diets on pp. 212–215, without altering the patient's carbohydrate intake. Breakfast and the mid-morning meal, and supper and the bed-time drink, should be reckoned as substitutes for breakfast and supper if no mid-morning or bed-time meal is normally taken.

INVALID DIABETIC DIET CONTAINING 175 GRAMS CARBOHYDRATE

Ordinary Insulin before Breakfast and Supper

Food g.	Food oz.	FLUID	C. g.	Food g.	Food oz.	LIGHT	C. g.
		Breakfast				*Breakfast*	
150	3	Milk ..	6·5			One egg, boiled or poached	—
20	¾	Glucose ..	20·0				
15	½	Bournvita or Ovaltine ..	10·0	30	1	Bread	15·0
				30	1	Marmalade	19·8
				60	2	Milk in tea or coffee	2·6
		Mid-morning				*Mid-morning*	
		One egg }	—	150	5	Milk (with coffee if desired) ..	6·5
150	5	Milk } Egg nog	6·5				
15	½	Glucose }	15·0	15	½	Glucose ..	15·0
			58·0				58·9
		Dinner				*Dinner*	
150	5	Milk as junket or jelly ..	6·5	90	3	Fish if desired.	—
				120	4	Milk } Rice	5·2
7	¼	Glucose ..	7·0	10	½	Rice } pudding	8·2
		Lemonade }	—	7	¼	Glucose }	7·0
22	¾	Glucose }	22·0	90	3	Stewed prunes or mashed potatoes	15·0
			35·5				35·4
		Tea				*Tea*	
60	2	Milk in tea } ..	2·6	60	2	Milk in tea	2·6
15	½	Glucose } ..	15·0	30	1	Bread	15·0
			17·6				17·6
		Supper				*Supper*	
		One egg } Boiled	—			One egg, boiled or poached, if desired.	—
150	5	Milk } custard or ice-	6·5	150	5	Milk } As bread and	6·5
15	½	Glucose } cream	15·0	10	⅓	Glucose } milk if de-	10·0
				50	1¾	Bread } sired.	25·0
		Lemonade }	—				
22	¾	Glucose }	22·0				
		Bedtime				*Bedtime*	
7	¼	Bournvita or Ovaltine ..	5·0	7	¼	Bournvita or Ovaltine ..	5·0
180	6	Milk ..	7·8	200	7	Milk ..	9·1
7	¼	Glucose ..	7·0	7	¼	Glucose ..	7·0
			63·3			Butter all day up to 1 oz.	62·6
		Total Carbohydrate	174·4			Total Carbohydrate	174·5

Note.—Patients may take ½ oz. glucose or barley sugar instead of marmalade if preferred.

This diet, or any meal from it, may be substituted for the 175 g. C. diets on pp. 212–215, without altering the patient's carbohydrate intake. Breakfast and the mid-morning meal and supper and the bedtime drink should be reckoned as substitutes for breakfast or supper if no mid-morning or bedtime meal is normally taken.

INVALID DIABETIC DIET CONTAINING 200 GRAMS CARBOHYDRATE

Ordinary Insulin before Breakfast and Supper

Food g.	Food oz.	FLUID	C. g.	Food g.	Food oz.	LIGHT	C. g.
		Breakfast				*Breakfast*	
150	3	Milk ..	6·5			One egg, boiled or poached	—
22	¾	Glucose or lactose ..	22·0	45	1½	Bread	22·5
15	½	Bournvita or Ovaltine ..	10·0	37	1¼	Marmalade, ordinary	24·8
		Mid-morning				*Mid-morning*	
		One egg	—	150	5	Milk (with coffee if desired)	6·5
150	5	Milk Egg nog	6·5	15	½	Glucose	15·0
22	¾	Glucose or lactose	22·0				68·8
			67·0				
		Dinner				*Dinner*	
150	5	Milk as junket or jelly ..	6·5	90	3	Fish, if desired ..	—
7	¼	Glucose ..	7·0	120	4	Milk Rice pudding	5·2
		Lemonade		10	½	Rice	8·2
37	1¼	Glucose	37·0	7	¼	Glucose	7·0
			50·5			Lemonade	—
				15	½	Glucose	15·0
				90	3	Stewed prunes or mashed potatoes ..	15·0
							50·4
		Tea				*Tea*	
60	2	Milk in tea	2·6	60	2	Milk in tea	2·6
15	½	Glucose	15·0	30	1	Bread	15·0
			17·6				17·6
		Supper				*Supper*	
		One egg Boiled	—			One egg, boiled, or poached, if desired.	—
150	5	Milk custard or	6·5				
15	½	Glucose ice-cream	15·0	150	5	Milk	6·5
				15	½	Glucose or lactose As bread and milk if desired	15·0
		Lemonade	—	45	1½	Bread	22·5
22	¾	Glucose	22·0				
		Bedtime				*Bedtime*	
7	¼	Bournvita or Ovaltine ..	5·0	7	¼	Bournvita or Ovaltine ..	5·0
150	5	Milk ..	6·5	150	5	Milk ..	6·5
10	⅓	Glucose ..	10·0	7	¼	Glucose ..	7·0
			64·5				62·5
						Butter all day up to 1½ oz.	
		Total Carbohydrate	199·6			Total Carbohydrate	199·3

Note.—Patients suffering from tuberculosis should receive 2 oz. cream in addition to the above diet, adding C., 1·4 g.; Calories, 262.

This diet, or any meal from it, may be substituted for the 200 g. C. diets on pp. 212–215, without altering the patient's carbohydrate intake. Breakfast and the mid-morning meal, and supper and the bedtime drink should be reckoned as substitutes for breakfast or supper if no mid-morning or bedtime meal is normally taken.

HIGH PROTEIN DIET B

Food. g.	Food. oz.		P. g.
		Breakfast	
		Grapefruit.	
120	4	Kidneys, liver, or roes; or 6 oz. herring or white fish	30·4
60	2	Bread or toast	4·4
60	2	Milk in tea or coffee	1·8
		Mid-morning	
		One egg } Egg nog.	5·9
150	5	Milk }	4·5
		Lunch	
		Tomato juice cocktail.	
150	5	Chicken or lean meat	36·0
		Potatoes and other vegetables as desired.	
		Vanilla soufflé or other pudding containing one egg and 5 oz. milk	5·9 4·5
		Stewed or raw fruit if desired.	
		Tea	
		One egg or 1 oz. cheese or salmon as sandwich filling	5·9
60	2	Bread, with butter to taste	4·4
30	1	Cake, plain, or sweet biscuits	1·8
60	2	Milk in tea	1·8
		Dinner	
150	5	Lean meat	36·0
		Potatoes and other vegetables as desired.	
		Stewed or raw fruit.	
30	1	Cheese	7·1
15	½	Biscuits	1·7
100	3½	Milk in pudding or coffee	3·2
		Bedtime	
180	6	Milk	5·4
15	½	Bournvita or Ovaltine	1·8
			162·5

Note on high protein diets.

Sugar, butter, jam, and marmalade may be taken as desired, so long as care is taken that the patient's digestion is not overtaxed.

The protein may be still further increased by using casein bread in place of some of the ordinary bread (see recipe, p. 293. A pinch of salt should be added to the ingredients given).

EPSTEIN TYPE OF DIET

(High protein, low fat)

DIET A

Food.			P.	F.
g.	oz.		g.	g.
		Breakfast		
180	6	White fish, boiled or steamed ..	37·8	1·2
60	2	Bread	4·4	0·4
		Marmalade or jam to taste.		
60	2	Skimmed milk	2·0	0·2
		Tea or coffee. Sugar to taste.		
		Mid-morning		
		(Can be combined with breakfast if desired)		
		Fruit or salad if desired.		
30	1	Bread	2·2	0·2
		Jam or golden syrup to taste.		
150	5	Skimmed milk	5·0	0·5
		Tea or coffee. Sugar to taste.		
		Dinner		
120	4	Lean meat or rabbit	28·8	3·2
		Potatoes and other vegetables as desired.		
150	5	Skimmed milk as custard, or rice or other low fat pudding (p. 278)	5·0	0·5
		Stewed prunes or other fruit.		
		Tea		
		Fruit or salad.		
60	2	Bread, or plain buns	4·4	0·4
		Jam or honey to taste.		
60	2	Skimmed milk	2·0	0·2
		Tea. Sugar to taste.		
		Supper		
180	6	White fish, boiled or steamed, or 5 oz. lean meat	37·8	1·2
60	2	Bread. Jam or syrup to taste ..	4·4	0·4
150	5	Skimmed milk	5·0	0·5
15	½	Bournvita or Ovaltine	1·8	1·0
			140·6	9·9

DIET B

Food.			P.	F.
g.	oz.		g.	g.
		Breakfast		
180	6	White fish	37·8	1·2
60	2	Bread or toast	4·4	0·4
		Marmalade or jam to taste.		
60	2	Skimmed milk	2·0	0·2
		Tea or coffee. Sugar to taste.		
		Lunch		
150	5	Skimmed milk soup (p. 274) ..	5·0	0·5
120	4	Lean meat or chicken	28·8	3·2
		Potatoes and other vegetables as desired.		
150	5	Skimmed milk as blancmange or other low fat pudding (p. 278)	5·0	0·5
		Stewed or raw fruit.		
		Tea		
60	2	Bread or buns	4·4	0·4
		Jam, tomatoes, or cress to taste.		
		Angel cake (p. 280) if desired.		
60	2	Skimmed milk	2·0	0·2
		Tea. Sugar to taste.		
		Dinner		
		Grapefruit or tomato juice cocktail.		
180	6	White fish, boiled or steamed, or 4 oz. roast pheasant	37·8	1·2
		Potatoes and other vegetables as desired.		
100	3½	Skimmed milk and one egg white	3·5	0·4
		as jelly or vanilla whip (pp. 281, 282).	2·6	—
		Bedtime		
150	5	Skimmed milk	5·0	0·5
15	½	Bournvita or Ovaltine	1·8	1·0
			140·1	9·7

Note on Epstein type of diet.

For extra foods allowed and forbidden see low-fat food list (pp. 190–193).

RESTRICTED PROTEIN DIETS

FOOD LIST IF SALT IS NOT SPECIALLY RESTRICTED

	Foods allowed without special restriction	*Foods forbidden unless specially allowed*
Bread, biscuits, cereal foods, etc.	Arrowroot, cornflour, rice, tapioca, sago.	Wheat flour contains 3 grams of protein per oz. Bread, pastry, puddings, etc., made from flour must therefore be taken in limited quantities only.
Dairy products.	Butter and cream.	Cheese, milk or invalid foods containing milk or eggs unless these are calculated as part of the diet.
Meat, fish, and fowl.	Only limited amounts of these foods are allowed. Some physicians forbid "red" meats, though colour is no indication of protein or purine content, chicken, for instance, containing rather more of both substances weight for weight than beef.	
Fruit and nuts.	Any stewed, tinned, or raw fruit or fruit salad.	All nuts except chestnuts.
Vegetables.	All vegetables and salads except dried pulses.	Dried pulses.
Puddings.	Fruit mould (p. 280), or fruit sago (p. 280). Boiled rice and jam. Butterscotch sago (p. 291). Semolina whip (p. 280).	Puddings made with milk or eggs unless the protein of these is calculated in the diet. Puddings containing wheat flour or breadcrumbs. See note above.
Beverages.	Lemonade, orangeade or any fruit drink. Tea or Instant Postum.	
Soups.	Vegetable soups, such as tomato, parsley, potato, mixed vegetables, Marmite, Yeastrel.	Meat soups and meat extracts if red meat if not allowed.
Condiments, flavourings, and sweets.	All. An excess of salt should be avoided.	None if salt is unrestricted.

RESTRICTED

Suitable for :—

Albuminuria of pregnancy—later stages .. ..
Chronic nephritis without œdema but with nitrogen retention ..
Gradual heart failure .. ..

DIET A

Prescription :	40 g. Protein		50 g. Protein		60 g. Protein	
	g.	oz.	g.	oz.	g.	oz.
Breakfast.						
1 Egg or Porridge, cooked	180	6	180	6	180	6
1 Egg or Force or Shredded Wheat	30	1	30	1	30	1
1 Egg or Milk	90	3	90	3	90	3
Bread	60	2	60	2	60	2
Milki n tea	30	1	30	1	60	2
Eggs No.	—		—		one	
Marmalade.						
Mid-morning.						
(Can be combined with breakfast if desired)						
Bread	45	1½	45	1½	60	2
Sweetened lemonade.						
Dinner.						
Fish	60	2	120	4	120	4
or	or		or		or	
Chicken or rabbit	45	1½	90	3	90	3
Potatoes and other vegetables.						
Low protein pudding (see list, p. 237).						
Stewed fruit.						
Tea.						
Bread, scones or buns	60	2	60	2	60	2
Milk in tea	60	2	60	2	60	2
Jam or golden syrup.						
Salad or fruit.						
Supper.						
Bread	60	2	60	2	75	2½
Milk in weak tea	60	2	60	2	60	2
Stewed fruit.						
Butter all day	60	2	60	2	60	2

Note.—Red meat may be substituted for the fish or chicken if allowed by

See also note, p. 240 and food list, p. 237.

PROTEIN DIETS

DIET A ADAPTED FOR CHILDREN AND MATERNITY PATIENTS

Prescription:	40 g. Protein	50 g. Protein	60 g. Protein
	g. oz.	g. oz.	g. oz.
Breakfast.			
1 Egg or { Porridge, cooked	180 6	180 6	180 6
1 Egg or { Force or Shredded Wheat	30 1	30 1	30 1
1 Egg or { Milk	90 3	90 3	90 3
Bread	45 1½	45 1½	45 1½
Milk in tea	60 2	60 2	60 2
Eggs .. .. .. No.	—	—	one
Marmalade.			
Mid-morning.			
(Can be combined with breakfast if desired)			
Bread	30 1	45 1½	60 2
Milk (in tea if desired)	120 4	150 5	150 5
Dinner.			
Fish	37 1½	75 2½	75 2½
or	or	or	or
Chicken or rabbit	30 1	60 2	60 2
Potatoes and other vegetables.			
Low protein pudding (see list, p. 273).			
Stewed fruit.			
Tea.			
Bread, scones or buns	45 1½	45 1½	60 2
Milk in tea	60 2	60 2	60 2
Jam or golden syrup.			
Salad or fruit.			
Supper.			
Bread	30 1	60 2	75 2½
Milk in cocoa	150 5	150 5	150 5
Cocoa	7 ¼	7 ¼	7 ¼
Stewed fruit.			
Butter all day	60 2	60 2	60 2

the physician. The quantity should be the same as that given for chicken.

RESTRICTED PROTEIN DIET B

Prescription:	40 g. Protein		50 g. Protein		60 g. Protein	
	g.	oz.	g.	oz.	g.	oz.
Breakfast.						
Grapefruit with sugar.						
1 Egg or { Porridge, cooked	180	6	180	6	180	6
1 Egg or { Force or Shredded Wheat	30	1	30	1	30	1
1 Egg or { Milk	90	3	90	3	90	3
Bread (as toast if desired)	60	2	60	2	60	2
Marmalade.						
Milk in tea	60	2	60	2	60	2
Lunch.						
Fish, fresh	37	1½	75	2½	75	2½
or	or		or		or	
Sweetbreads	30	1	60	2	60	2
or	or		or		or	
Eggs (see alternatives, p. 289) No.	one		two		two	
Potatoes and other vegetables.						
Stewed fruit.						
Tea.						
Bread, scones or buns	60	2	60	2	75	2½
Jam or honey.						
Milk in tea	60	2	60	2	60	2
Dinner.						
Chicken or game	45	1½	60	2	90	3
or	or		or		or	
Fish, fresh	60	2	75	2½	120	4
Potatoes and other vegetables.						
Stewed fruit.						
Low protein pudding (see list, p. 237).						
Bread	30	1	30	1	45	1½
Butter all day	60	2	60	2	60	2

Note on restricted protein diets.

Plenty of sugar should be taken with restricted protein diets including sweets such and extra butter may be added if the patient is under weight.

Lemonade and other fruit juices may be taken as desired.

The foods may be rearranged to taste so long as the total quantities remain the

To increase or decrease the protein in the diet, see tables of protein contents, p. 333

For note on "red" meat, see p. 238.

Maternity Patients Diet B.—If the milk at dinner is taken as a beverage a low

Diet B adapted for Children.—Omit chicken, fish or eggs and vegetables from

DIET B ADAPTED FOR MATERNITY PATIENTS

Prescription:	40 g. Protein		50 g. Protein		60 g. Protein	
	g.	oz.	g.	oz.	g.	oz.
Breakfast.						
Grapefruit with sugar.						
1 Egg or { Porridge, cooked	180	6	180	6	180	6
1 Egg or { Force or Shredded Wheat	30	1	30	1	30	1
1 Egg or { Milk	150	5	150	5	150	5
Bread (as toast if desired)	45	1½	45	1½	60	2
Marmalade.						
Milk in tea	90	3	90	3	90	3
Lunch.						
Fish, fresh	37	1¼	75	2½	75	2½
or	or		or		or	
Sweetbreads or chicken	30	1	60	2	60	2
Potatoes and other vegetables.						
Stewed fruit.						
Milk to drink or in pudding	120	4	150	5	180	6
Tea.						
Bread, scones or buns	45	1½	60	2	60	2
Jam or honey.						
Milk in tea	90	3	90	3	90	3
Dinner.						
Chicken	30	1	30	1	60	2
or	or		or		or	
Fish, fresh	37	1¼	37	1¼	75	2½
or	or		or		or	
Eggs (see alternatives, p. 289) No.	one		one		two	
Potatoes and other vegetables.						
Stewed fruit.						
Milk to drink or in pudding	120	4	150	5	180	6
Butter all day	60	2	60	2	60	2

as barley sugar, acid drops, peppermint creams, and toffee after meals. Cream

same.
or general tables, p. 301.

protein pudding may be added (see list. p. 237).
the evening meal and give the allowance of eggs at teatime.

LOW SALT DIETS

Suitable for :— PAGE

LOW SALT DIETS

Diet I

(Strict, containing about 0·1 g. sodium chloride)

Breakfast.
Grapefruit or other fruit, fresh or stewed, with sugar if desired.
Low-salt casein bread (p. 293), toasted if desired.
Low-salt butter.
Jam or marmalade.
Tea or coffee with low-salt milk (p. 293) and sugar as desired.

Dinner.
Low-salt meat or savoury dish (p. 294).
Vegetables (see list, p. 244) boiled without added salt or soda. Low-salt butter may be added as desired.
Stewed fruit.
Cream or custard powder custard or blancmange made with low-salt milk (p. 293).
Low-salt casein bread (p. 293).

Tea.
Low-salt casein bread (p. 293).
Low-salt butter.
Jam, marmalade, honey, tomato, or mustard and cress.
Shortbread biscuits (p. 295).
Tea with low-salt milk (p. 293) and sugar as desired.

Supper.
Low-salt casein bread (p. 293).
Low-salt butter.
Low-salt cream cheese (p. 293).
Raw tomato with pepper.
Tea or coffee with low-salt milk (p. 293) and sugar as desired.

Diet II

(Less strict, containing about 0·5 g. sodium chloride)

Breakfast.
Grapefruit with sugar.
Low-salt bread.
Low-salt butter.
Boiled egg.
Jam or marmalade.
Tea or coffee with cow's milk and sugar as desired.

Lunch.
Beef stewed without salt. Curry powder (p. 295) may be added if desired.
Potatoes and boiled rice.
Vegetables boiled without added salt or soda.
Baked apple.
Cream if desired.

Tea.
Low-salt bread.
Low-salt butter.
Jam, marmalade, honey, tomato, or mustard and cress.
Shortbread (p. 295).
Tea with cow's milk and sugar as desired.

Dinner.
Cold boiled chicken or steamed fish.
Green salad or celery, radishes, or tomato with pepper.
Low-salt bread.
Low-salt butter.
Tea, coffee, or cocoa with cow's milk and sugar as desired.

FOOD LIST FOR LOW SALT DIETS

Foods allowed in strictly low salt diets	Additional foods allowed in less strict diets	Foods forbidden in diets with salt restriction
Arrowroot	Chicken, boiled	Bacon
Barley sugar	Chocolate	Baked beans
Boiled sweets	Fresh fish, steamed or boiled without salt	Beef, corned
Bread, low-salt, with or without casein (p. 293)	Eggs	Beef, salt
Butter, low-salt	Meat, stewed without salt. No gravy	Biscuits
Cornflour	Milk, cow's	Bloaters
Cream	Vegetables, raw, or boiled without salt or soda, including beetroot, carrots, celery, radish, spinach, watercress	Bread, baker's
Cream cheese, low-salt (p. 293)		Butter, salted
Flour		Cheese
Fruit, fresh, stewed or tinned		Gravy
Fondant (p. 295)		Haddock, smoked
Gelatine		Ham
Golden syrup		Kippers
Green salads		Meat extracts
Honey		Olives, bottled
Jam		Proprietary breakfast cereals
Jelly		Salmon, tinned
Macaroni		Sardines
Marmalade		Sausages
Meat dishes, low-salt (p. 294)		Shellfish
Milk, low-salt (p. 293).		
Mustard		
Nuts (not salted)		
Olive oil		
Pepper		
Rice		
Semolina		
Sugar (including glucose and lactose)		
Tapioca		
Tomatoes		
Vegetables, raw, or boiled without salt or soda (not beetroot, carrots, celery, radish, spinach, watercress).		
Vegetables fried in salt-free butter or olive oil		
Vinegar (distilled white wine)		

LOW CALCIUM DIET

Containing 100 *mg. Calcium*

Suitable for :— PAGE

Lead poisoning (used alternately with high calcium diet) 118

Calcium balance experiments 119

TOTAL DAILY QUANTITIES

Food g.	Food oz.		C. g.	P. g.	F. g.	Calcium mg.	Phosphorus mg.	Acid c.c. N/10	Base c.c. N/10
150	5	Bread, white	76·0	11·0	1·0	32·8	104·0	20	—
60	2	Beef, raw weight ..	—	11·0	6·0	3·0	156·0	104	—
60	2	Chicken, boiled ..	—	14·8	5·8	6·0	154·0	118	—
100	3½	Apple	12·0	0·3	—	3·6	7·7	—	28
60	2	Banana	11·0	0·6	—	3·8	16·0	—	46
30	1	Cream	0·7	0·5	11·9	16·8	7·1	—	5
80	2¾	Tomato	2·1	0·8	—	10·1	16·2	—	43
120	4	Potato, baked in skin. Skin discarded ..	28·4	2·8	—	10·4	54·9	—	140
30	1	Bacon, raw weight ..	—	4·0	10·6	3·8	34·6	21	—
45	1½	Butter, fresh	—	0·2	36·3	6·3	10·2	2	—
30	1	Honey	21·7	0·1	—	1·5	4·8	—	2
60	2	Sugar, white	60·0	—	—	0·8	—	—	—
5	¼	Salt (pure sodium chloride)	—	—	—	—	—	—	—
			211·9	46·1	71·6	98·9	565·5	265	264

Calories = 1,726.

ARRANGEMENT OF MEALS

Breakfast.	Bread	60 grams
	Bacon	30 ,,
	Tomato	80 ,,
	Cream, sugar and butter from allowance.	
	Tea made with distilled water.	
Lunch.	Beef	60 ,,
	Potato	60 ,,
	Banana	60 ,,
Tea.	Bread	60 ,,
	Honey	30 ,,
	Cream, sugar and butter from allowance.	
	Tea made with distilled water.	
Dinner.	Chicken	60 ,,
	Potato	60 ,,
	Apple	100 ,,
	Bread	30 ,,

Note on low calcium diets.

Special precautions are necessary in preparing and cooking the food (see p. 120).

The amount of salt and sugar (and glucose or lactose if desired) may be altered to suit the patient's requirement, but it should remain constant throughout the experiment.

LOW PHOSPHORUS DIET

Containing approximately 0·6 g. phosphorus and providing 2,300 Calories

Suitable for:— PAGE

Chronic hypoparathyroidism 122

Food g.	Food oz.		Phosphorus mg.	Calcium mg.
		Breakfast.		
60	2	Orange juice or 3 oz. grapes	12·4	6·6
90	3	White bread	62·4	19·8
30	1	Fried bacon	66·4	3·3
		Butter from portion.		
30	1	Marmalade	3·6	9·9
		Tea with cream from portion and sugar if desired.		
		Dinner.		
45	1½	Meat or fish or chicken	121·5	2·7
120	4	Potatoes	32·8	4·8
180	6	Cabbage	40·8	75·0
120	4	Stewed fruit	8·4	2·0
		Cream from portion.		
		Tea.		
90	3	White bread	62·4	19·8
		Butter from portion.		
30	1	Jam or marmalade or honey	5·1	3·4
		Tea with cream from portion and sugar if desired.		
		Supper.		
60	2	White bread	41·6	13·2
		Butter from portion.		
60	2	Ham	108·8	7·2
90	3	Salad (lettuce, tomato, cucumber, etc.)	21·6	22·2
		Daily allowances.		
45	1½	Butter	10·2	6·3
60	2	Cream	14·2	33·6
45	1½	White sugar	—	0·6
			612·2	230·4

Foods forbidden unless specially prescribed.—Milk, cheese, eggs, peas, beans, brown bread, oatmeal.

LOW POTASSIUM DIET

Containing approximately 1·5 g. of potassium and providing 2,200 Calories.

Normal potassium intake, approximately 3·5 g. per day.

Suitable for :— PAGE

Addison's disease 123

Food			Potassium grams
..	oz.		
		Breakfast.	
90	3	White bread	0·10
		One egg	0·07
60	2	Raw apple or other fruit, amount in list (p. 346) containing 0·05 g. K	0·05
60	2	Milk in tea or coffee	0·10
		Dinner.	
90	3	Roast beef, mutton, pork, steamed or fried cod, or six times any other meat or fish in the list (p. 345)	0·30
60	2	Carrots or marrow, or other vegetable, amount in list containing 0·05 g. K	0·05
80	2⅔	Potatoes cut very small and cooked in eight times their volume of water	0·10
180	6	Stewed apples or 5 oz. stewed pears, or other fruit, twice amount in list (p. 346) containing 0·10 g. K	0·10
22	¾	Cheddar cheese and ½ oz. sweet or water biscuit *or* ¾ oz. cereal and 1 oz. cream as pudding, or pear caramel (p. 297)	0·05
		Tea.	
90	3	White bread	0·10
37	1¼	Jam or ¾ oz. lettuce or ½ oz. tomatoes	0·05
60	2	Milk in tea	0·10
45	1½	Snow cake (p. 299)	0·03
		Supper.	
60	2	White bread or 1½ biscuits (not digestive)	0·07
45	1½	Salmon or haddock or chicken, or three times meat or fish in list (p. 345)	0·15
60	2	Orange, or other fruit, twice amount in list (p. 346) containing 0·10 g. K, or gooseberry fool, twice amount in recipe (p. 298)	0·10
75	2½	Butter all day	0·01
			1·53

Sugar or glucose, butter, suet and salt may be taken as desired.

Ordinary gravy, and the water from cooked fruit or vegetables must not be used. Special gravy may be made with cornflour and water, coloured with browning, and salted.

CHAPTER XII

RECIPES

GENERAL PROPORTIONS IN COOKERY

A few useful rules and recipes

CEREALS

Coarse cereals (rice, tapioca, etc.).—1½ oz. of cereal to 1 pint milk for milk puddings, baked or boiled.

For baked puddings put washed cereal and cold milk in dish and place in a slow oven.

If cereals are to be boiled they should be added to boiling liquid (milk, soup, fruit juice, etc.) to prevent their burning. A double saucepan should be used for puddings. In the case of boiled rice about 2 pints of water should be used to 1½ oz. cereal, and the rice cooked for about 18 minutes, drained, and cold water poured over it to wash away starchy particles which would make the grains stick together.

Porridge.—2 oz. oatmeal to 1 pint water. Add oatmeal to boiling salted water.

Fine cereals (cornflour, arrowroot, custard powder, patent barley, ground rice, etc.).—For moulded shapes, use 1½ oz. cornflour, etc., to 1 pint liquid. For sauces, use 1 oz. to 1 pint.

Mix the cereal to a smooth paste with a little cold liquid. Boil the rest, pour it gradually over the paste, stirring all the time, return to the fire and stir until cooked. A double saucepan should be used if possible.

JELLIES

½ oz. gelatine or isinglass to 1 pint liquid, or one to one and a half sheets of gelatine to ½ pint. If acid fruit juice, such as lemon is used, or if the weather is very warm, use from quarter to half as much more gelatine than is given above. If fresh pineapple is used in jellies it must be added when they are nearly set.

CUSTARDS

Two eggs to 1 pint milk.

Baked custard.—Beat up egg, add milk and flavouring. Place in pie-dish in a pan of cold water. Bake in a slow oven to prevent curdling.

Boiled egg custard.—The quickest way of making this is to boil the milk with sweetening in a double saucepan, and pour it over the beaten-up egg. Return to the pan, stir for approximately two minutes, until it coats a metal spoon (leaving a straight line across it). Remove the upper part of the pan containing the custard immediately from the lower part containing the boiling water; add vanilla or other flavouring. Should the custard have curdled, place in a pan of cold water and stir vigorously.

NOTE ON SWEETENING

Sugars.—Ordinary sugar, known technically as cane sugar, includes the product of both the sugar-cane and the beet. If its flavour is too sweet for a patient, equal calorie value may be obtained from glucose or lactose. It should be noted that lactose can only be dissolved satisfactorily in a warm fluid.

Sugar substitutes.—If sugar is not allowed on account of its fattening properties or in cases of diabetes mellitus, saccharine, saxine, or other sweetening agents without food value may be used. A ½-grain tablet is usually sufficient to sweeten a large cup of tea or coffee, or ¼ pint of custard, milk jelly, or the like. Lemonade or jelly requires about double this amount. Some patients may prefer to use a whole tablet in tea, etc., but if more than that is taken the flavour of the saccharine becomes noticeable and spoils the taste of whatever it is used to sweeten. Saccharine in cooked dishes should, where possible, not be added until 10 minutes before the food has finished cooking.

Sugarless sweetening of acid stewed fruit.—It is usually best to cook the fruit or rhubarb in water and then add a pinch of bicarbonate of soda to neutralise the acid. Scum will form, and this must be carefully removed. Saccharine may then be added to taste. It should be remembered that bicarbonate of soda spoils the flavour of the fruit to some extent, and therefore as little as possible should be used.

RECIPES FOR CAKES, PUDDINGS, ETC., WHOSE COMPOSITION IS GIVEN IN TABLE I.

CAKES

Rock Buns.

8 oz. flour.	2 oz. currants.
3 oz. margarine.	4 oz. milk.
3 oz. sugar.	1 teaspoon baking powder.

Rub the fat into the flour. Add the dry ingredients. Mix to a stiff dough with the milk. Place in heaps on a greased tin. Bake in a hot oven for 15–20 minutes.

Cherry Cake.

8 oz. flour.	3 eggs.
8 oz. butter or margarine.	6 oz. glacé cherries.
8 oz. sugar.	1 teaspoon baking powder.

Beat the butter and sugar to a cream. Add each egg separately and beat well. Stir in the flour and baking powder and add the cherries cut into pieces. Bake in a moderate oven for 1½–2 hours.

Chocolate Cakes.

4 oz. flour.	2 eggs.
3 oz. margarine.	½ oz. cocoa.
4 oz. sugar.	1 teaspoon baking powder.

Cream the fat and sugar and add the well-beaten eggs. Sift in the flour, cocoa, and baking powder. Beat well. Half fill small cake tins and bake in a moderate oven for 20–30 minutes.

Coconut Cakes.

8 oz. flour.	1 egg.
3 oz. margarine.	2½ oz. milk.
2½ oz. sugar.	1½ oz. desiccated coconut.
	1 teaspoon baking powder.

Mix the flour, baking powder and sugar and rub in the fat. Add the coconut. Mix to a stiff consistency with the egg and milk. Half fill small cake tins and bake in a hot oven for 15–30 minutes.

Currant Cake.

8 oz. flour.	2 eggs.
4 oz. margarine.	4 oz. currants.
4 oz. sugar.	1 teaspoon baking powder.

Cream the sugar and margarine and beat in the eggs. Add the flour and baking powder and then the fruit. Bake in a moderate oven for 1½–2 hours.

Orange Cake.

5 oz. flour.	2 eggs.
4 oz. margarine.	1 oz. orange juice.
4 oz. sugar.	1 teaspoon baking powder.

Cream the fat and sugar. Add the eggs slowly, beating well. Sift in the flour and baking powder, and finally mix in the orange juice. Bake in a moderate oven for 1 to 1½ hours.

Queen Cakes.

6 oz. flour.	2 eggs.
4 oz. butter or margarine.	1 oz. sultanas.
4 oz. sugar.	1 oz. currants.
	1 teaspoon baking powder.

Cream the butter and sugar. Add the eggs one at a time and beat well. Stir in the flour and baking powder and add the fruit. Half fill small cake tins and bake in a moderate oven for 20 minutes.

Rock Cakes.

8 oz. flour.	1 egg.
3 oz. margarine.	4 oz. currants.
3 oz. sugar.	1½ oz. milk.
	1 teaspoon baking powder.

Rub the fat, flour, baking powder and sugar well together. Mix in the beaten egg and milk. Add the currants. Drop the mixture in small portions on to a baking sheet. Bake in a hot oven for about 15 minutes.

Sponge Cake.

2 oz. flour.	2 oz. sugar.
2 eggs.	

Whisk the sugar and eggs together in a basin over hot water till stiff. Fold in the flour. Bake in a moderate oven for 20 to 30 minutes.

Gingerbread.

6 oz. flour.	1 egg.
2 oz. butter or margarine.	1½ oz. milk.
2 oz. sugar.	½ oz. ground ginger.
4 oz. golden syrup.	1 teaspoon sodium bicarbonate

Put the butter, sugar and syrup into a saucepan and heat gently till melted. Beat the egg well. Mix all the ingredients together and bake in a moderate oven for about 1½ hours.

Jam Tarts.

6 oz. uncooked short pastry. 6 oz. jam.

Make short pastry (see below), roll out and cut into rounds to fit the tart tins. Fill each tart with jam and bake in a hot oven for about 15 minutes.

Mince Pies.

10 oz. uncooked short pastry. 5 oz. mincemeat.

Roll out the pastry and cut into rounds. Place half the rounds in tart tins. Fill up with mincemeat and cover with the remaining rounds. Bake in a moderate oven for about 20 minutes.

Pastry, Flaky.

8 oz. flour. 6 oz. margarine.
3¾ oz. water.

Make the pastry according to the standard method described in all cookery books.

Pastry, Short.

8 oz. flour. 4 oz. margarine.
3½ oz. water.

Make the pastry according to the standard method described in all cookery books.

Scones (with egg).

8 oz. flour. 1 egg.
1 oz. butter or margarine. 4 oz. milk.
1 oz. sugar. 1 teaspoon baking powder.

Rub the butter into the flour and baking powder. Add the sugar, egg and enough milk to make a soft dough. Roll out ½-inch thick and cut into rounds. Bake in a hot oven for 10 to 15 minutes.

Scones (without egg).

8 oz. flour. 5 oz. milk.
1½ oz. butter or margarine. 1 teaspoon baking powder.
½ oz. sugar.

Rub the fat into the flour, baking powder and sugar. Mix in the milk. Roll out and cut into rounds. Bake in a hot oven for 15 to 20 minutes.

Shortbread.

8 oz. flour. 4 oz. butter or margarine.
2 oz. castor sugar.

Beat the butter and sugar to a cream. Mix in the flour and knead till smooth. Press into a flat tin to about ½ inch in thickness. Bake in a moderate oven for 45 to 60 minutes.

PUDDINGS

Apple Charlotte.

13½ oz. apples, peeled and cored.
3 oz. fresh breadcrumbs.
3 oz. suet.
2½ oz. sugar.
1 oz. jam.
½ oz. margarine.

Grease a pie dish and line with breadcrumbs. Fill the dish with alternate layers of apple, suet, sugar, jam and breadcrumbs. Cover the top with crumbs and place dabs of margarine on the surface. Bake in a moderate oven till golden brown.

Apple Dumpling.

6 oz. flour
3 oz. margarine
2½ oz. water
} short pastry.
3 apples (18½ oz. peeled and cored).
1½ oz. sugar.

Make the pastry. Divide into three and roll out. Peel and core the apples. Place one on each piece of pastry. Fill the centre of the apple with sugar. Work the pastry round the apple until it is well covered. Bake for 30 to 40 minutes in a moderate oven.

Apple Pudding.

8 oz. flour
4 oz. suet
4½ oz. water
1 teaspoon baking powder
} suet crust pastry
10 oz. apples, peeled and cored.
3 oz. sugar.
1 oz. water.

Make the suet crust pastry. Roll out and line a basin. Trim off the uneven edges. Fill with peeled apples and a little water and sugar. Roll out the trimmings to cover the basin. Steam for 1½ to 2 hours.

Apple Tart.

6 oz. uncooked short pastry.
8 oz. apples, peeled and cored.
2 oz. sugar.
1 oz. water.

Place the prepared apples, sugar and water in a pie dish. Roll out the pastry and place over the dish. Bake in a moderate oven for 30 to 40 minutes.

Banana Custard.

1 pint milk
1 oz. custard powder
1½ oz. sugar
} custard
6 bananas.

Make the custard (see p. 255) and slice the bananas into it. Serve when cold.

Blancmange.

1 pint milk.
1½ oz. sugar.
1½ oz. cornflour.

Mix the cornflour to a smooth paste with a little of the milk. Heat the remainder of the milk and sugar together. When hot stir into the paste and then transfer the whole to the saucepan. Cook gently, stirring for about 5 minutes. Turn into a mould and allow to set.

Bread-and-Butter Pudding.

1 pint milk.
1 oz. sugar.
2 eggs.
1 oz. currants.
2½ oz. bread.
½ oz. butter or margarine.

Cut the bread very thinly and spread with butter. Beat the eggs with the sugar and add the milk. Place the bread and the currants in a pie-dish in alternate layers. Pour the egg and the milk over the bread and bake in a moderate oven for about 30 minutes.

Cabinet Pudding.

¾ pint milk.
1½ oz. sugar.
2 eggs.
2 oz. raisins.
3 oz. bread.
½ oz. butter or margarine.

Cut the bread into slices and spread with butter. Mix the egg, sugar and milk, and pour over the bread and raisins. Soak for about half an hour. Pour into a greased basin. Cover with greased paper and steam slowly till set.

Canary Pudding.

6 oz. flour.
4 oz. butter or margarine.
4 oz. sugar.
2 eggs.
½ oz. milk.
1 teaspoon baking powder.

Cream the butter and sugar together and beat in the eggs. Stir in the flour, baking powder and milk. Bake in a moderate oven for 30 to 45 minutes.

Castle Pudding (baked or steamed).

3 oz. flour.
2 oz. butter or margarine.
2 oz. sugar.
1 egg.
½ teaspoon baking powder.

Cream the butter and sugar together and beat in the egg. Add the flour and baking powder. Put in greased dariole tins and bake in a moderate oven for about 20 minutes or steam for 1 hour.

Chocolate Mould.

1 pint milk.
2 oz. sugar.
1¾ oz. cornflour.
¼ oz. cocoa.

Mix the cornflour and cocoa to a smooth paste with a little of the milk. Heat the rest of the milk and the sugar. Pour the hot liquid on to the paste. Return to the pan and boil for 5 minutes, stirring all the time. Pour into a mould and allow to set.

College Pudding.

2 oz. breadcrumbs.
2 oz. suet.
2 oz. sugar.
1 oz. currants.
1 oz. sultanas.
1 egg.
1 teaspoon baking powder.

Mix all the dry ingredients together. Add the egg, previously well beaten, and stir till thoroughly mixed. Put the mixture into greased dariole tins and bake for 25 minutes.

Custard, Egg, Baked or Boiled.

1 pint milk.
1 oz. sugar.
2 eggs.

Beat the eggs and sugar together. For baked custard add the milk and place in a greased pie-dish. Stand in a pan of water and bake in a moderate oven until set. (About 40 minutes.)

For boiled custard, boil the milk and pour over the beaten eggs and milk, stirring all the time. Return to the pan. Stir for a few minutes until the mixture coats the back of a spoon. Remove from the fire and allow to cool.

Custard, Powder.

1 pint milk.
1½ oz. sugar.
1 oz. custard powder.

Blend the custard powder with a little of the milk. Add the sugar to the remainder of the milk, bring to the boil and pour immediately over the paste, stirring all the time. Allow to cool.

Dumpling.

4 oz. flour.
1½ oz. suet.
3½ oz. water.
1 teaspoon baking powder.

Mix all the ingredients together with cold water to form a soft dough. Divide into twelve balls. Flour each one and place in boiling water. Boil for half an hour.

Gooseberry Tart.

6 oz. uncooked short pastry.
8 oz. gooseberries.
2 oz. sugar.
1 oz. water.

Place the prepared gooseberries, sugar and water in a pie-dish. Roll out the pastry and place over the dish. Bake in a moderate oven for 30 to 40 minutes.

Jam Omelette.

2 eggs.
½ oz. butter or margarine.
1 oz. jam.
½ oz. sugar.

Beat the yolks and sugar together. Whisk the whites stiffly and fold into the yolks. Pour the mixture into an omelette pan and cook until well risen. Brown slightly under the grill. Spread with jam and fold into two.

Jam Roll, Baked.

8 oz. flour.
4 oz. margarine } short pastry.
3½ oz. water
6 oz. jam.

Make the pastry. Roll out and spread with jam. Damp the edges and roll up. Bake in a moderate oven for 40 to 50 minutes.

Jelly.

6½ oz. jelly cubes.
Water.

Dissolve the jelly cubes in hot water. Make up to a pint with water. Pour into a mould and allow to set.

Jelly, Milk.

6½ oz. jelly cubes.
Water.
½ pint milk

Dissolve the jelly cubes in as little hot water as possible. Allow to cool. Add half a pint of milk slowly, stirring all the time. Make up to a pint of mixture with water. Leave to set in a mould.

Pancakes.

4 oz. flour.
½ pint milk.
1 egg.
2 oz. sugar.
1½ oz. margarine.

Break the egg into the flour, add a little milk and stir till smooth. Add the rest of the milk by degrees, beating all the time. Allow to stand for an hour. Heat a little margarine in a frying pan. Pour into the pan enough batter just to cover the bottom thinly. Cook both sides and then turn on to sugared paper. Repeat till all the batter is used up. (Sufficient for about twelve pancakes.)

Plum Tart.

6 oz. uncooked short pastry.
8 oz. plums (weighed with stones).
2 oz. sugar.
1 oz. water.

Place the plums, sugar and water in a pie-dish. Roll out the pastry and cover the dish. Bake in a moderate oven for about 30 to 40 minutes.

Queen of Puddings.

¼ pint milk.
2 oz. breadcrumbs.
2 eggs.
1 oz. butter or margarine.
1 oz. sugar.
2 oz. jam.

Pour the heated milk and butter over the breadcrumbs and sugar. Allow to stand for a few minutes. Add the beaten yolks and pour into a greased pie-dish. Bake in a moderate oven till set (20 minutes). Remove from the oven and spread with jam. Whisk the whites stiffly and pile on top. Return to a slow oven and bake till golden brown.

Rhubarb Tart.

6 oz. uncooked short pastry.
8 oz. rhubarb.
2 oz. sugar.
1 oz. water.

Place the prepared rhubarb, sugar and water in a pie-dish. Roll out the pastry and cover the dish. Bake in a moderate oven for about 30 to 40 minutes.

Rice Pudding.

1 pint milk.
1 oz. sugar.
2 oz. rice.
1 oz. butter or margarine.

Place the rice, milk, butter and sugar in a pie-dish. Bake in a slow oven for about 2 hours.

Sago Pudding.

1 pint milk.
1½ oz. sugar.
2 oz. sago.

Soak the sago in the milk for 20 minutes. Add the sugar and bake in a slow oven for 30 minutes.

Semolina Pudding.

1 pint milk.
1½ oz. sugar.
2 oz. semolina.

Heat the milk and sprinkle in the semolina. Bring slowly to the boil and simmer till the grain is soft. Add the sugar and pour into a pie-dish. Bake in a moderate oven for about 20 minutes.

Suet Pudding, Plain.

2 oz. flour.
2 oz. breadcrumbs.
2 oz. suet.
1½ oz. sugar.
3½ oz. milk.
1 teaspoon baking powder.

Place all the dry ingredients together in a basin. Mix to a soft paste with the milk. Pour into a greased basin. Steam for 2½ hours.

Suet Pudding with Raisins.

2 oz. flour.
2 oz. breadcrumbs.
2 oz. suet.
2 oz. raisins.
1½ oz. sugar.
3½ oz. milk.
1 teaspoon baking powder.

Place the flour, breadcrumbs, suet, sugar, and baking powder in a basin and mix to a soft paste with the milk. Add the raisins and mix well. Pour into a greased basin. Steam for 2½ hours.

Tapioca Pudding.

1 pint milk.
1½ oz. sugar.
2 oz. tapioca.

Pour the milk over the tapioca and allow to stand for ½ hour. Add the sugar. Bake in a slow oven for 20 minutes.

Treacle Tart.

12 oz. uncooked short pastry.
1¾ oz. fresh breadcrumbs.
10 oz. golden syrup.

Line shallow tins with pastry. Pour in the golden syrup. Sprinkle with breadcrumbs. Bake in a hot oven for about 30 minutes.

Trifle.

3½ oz. sponge cake.
1 pint custard powder custard (recipe, p. 255).
2¾ oz. jam.

Pour the custard over the sponge cakes which have been previously cut into slices and spread with jam. Allow to cool.

White Sauce, Sweet.

½ pint milk.
¾ oz. flour.
1 oz. sugar.
¾ oz. margarine.

Make the sauce in the same way as the savoury sauce (recipe p. 263), adding the sugar instead of salt.

Yorkshire Pudding.

½ pint milk.
4 oz. flour.
1 egg.
¾ oz. dripping.
1 level teaspoon salt.

Salt the flour and break the egg into it. Beat till smooth, gradually adding about half the milk. Add the remainder of the milk and allow to stand for at least half an hour. Pour into a tin containing very hot dripping. Bake in a hot oven for 20 minutes.

SAVOURY DISHES

Beef Steak Pudding.

6 oz. flour	suet crust.	8 oz. raw steak.
2 oz. suet		½ oz. flour.
4 oz. water		1 oz. water.
1 teaspoon baking powder		2 level teaspoons salt.
½ teaspoon salt		

Make the suet crust pastry and line a pudding basin, leaving sufficient for a lid. Cut the meat into slices and roll in the salted flour. Put into the basin. Add a little water and cover with the remainder of the pastry. Steam for about 2 hours.

Bread Sauce.

½ pint milk.	1 small onion.
2 oz. fresh breadcrumbs.	½ teaspoon salt.
¼ oz. butter or margarine.	

Put the milk and onion in a saucepan and bring to the boil. Add the breadcrumbs and simmer gently for about 20 minutes. Remove the onion and add the seasoning, stir in the butter and serve.

Buck Rarebit.

3 oz. cheese.	2 oz. white toast.
1 oz. butter or margarine.	¼ oz. butter on toast.
⅛ oz. milk.	1 egg.

Grate the cheese and make the toast. Mix together the cheese, butter and milk and spread evenly on the buttered toast. Place under the grill and cook until a light brown. Poach the egg and place on top of the toasted cheese.

Cheese Sauce.

½ pint milk	white sauce.	1½ oz. cheese.
¾ oz. flour		1 level teaspoon salt.
¾ oz. margarine		

Melt the fat in a pan. Add the flour and cook gently for a few minutes, stirring all the time. Add the milk and cook until the mixture thickens, stirring continually. Add the grated cheese and seasoning. Cook for a few minutes.

Cheese Straws.

2 oz. flour.	½ an egg yolk.
2 oz. butter or margarine.	¾ oz. water.
3 oz. cheese.	½ teaspoon salt.

Rub the butter into the flour. Add the grated cheese and seasoning. Bind to a stiff paste with the yolk and water. Roll out thinly and cut into narrow strips. Bake in a hot oven for about 10 minutes.

Cheese Omelette.

2 eggs.
1½ oz. cheese.
¼ oz. butter or margarine.
1 level teaspoon salt.

Beat the eggs with the seasoning and add the grated cheese. Heat the butter in an omelette pan, pour in the mixture and stir till it begins to thicken evenly. While still creamy fold the omelette in two and brown lightly.

Curried Meat.

9½ oz. cooked meat.
2½ oz. dripping.
3 onions, peeled (12¾ oz.).
1 apple, peeled and cored (2½ oz.).
2 oz. sultanas.
½ oz. desiccated coconut.
1 oz. flour.
1 oz. curry powder.
1 pint stock or water.
2 level teaspoons salt.

Chop the onions and fry in the dripping. Add the chopped apple, sultanas and coconut, then the flour and curry powder and fry a minute or two. Add the stock and bring to the boil. Simmer for five minutes. Add the cooked meat which has been cut into pieces and reheat.

Egg Sauce.

½ pint milk
¾ oz. flour
¾ oz. margarine
} white sauce.
1 hard-boiled egg.
1 level teaspoon salt.

Make the sauce and add the chopped egg and seasoning.

Fish Cakes.

8 oz. steamed cod.
4 oz. mashed potato.
1 egg.
¼ oz. flour.
½ oz. margarine.
1 oz. dried breadcrumbs.
1 level teaspoon salt.

Heat the fat in a pan and add the coarsely chopped fish, potato and half the beaten egg. Mix well and allow to cool. Shape into six flat round cakes. Coat with flour, then with the other half of the egg and finally with dried breadcrumbs. Fry in very hot, deep fat for 2 minutes.

Fish Pie.

8 oz. steamed cod.
4 oz. mashed potato.
2 oz. suet.
1 egg.
7 oz. milk.
¾ oz. margarine.
¾ oz. breadcrumbs.
2 level teaspoons salt.

Chop the fish coarsely, and add the suet, potato, half the breadcrumbs and the seasoning. Stir in the beaten egg and the milk. Place in a greased pie-dish. Cover the surface with breadcrumbs and dabs of margarine. Bake in a moderate oven for about half an hour.

Hot Pot.

8 oz. raw steak.
2 onions, peeled (5 oz.).
2 carrots, scraped (3 oz.).
8 oz. raw potato, peeled.
4 oz. water.
2 level teaspoons salt.

Cut the steak into small pieces and arrange in layers with slices of carrot and onion. Add a little water and seasoning. Slice the potatoes and place on top. Bake in a moderate oven for about 1½ hours.

Irish Stew.

8 oz. neck of mutton (weighed with bone).
8 oz. potato, peeled.
4 oz. onion, peeled.
12 oz. water.
½ oz. pearl barley.
½ teaspoon salt.

Cut up the meat, potato and onion, and put into a saucepan. Add the water and barley and bring to the boil. Skim well and allow to simmer slowly for 1½ hours.

Kedgeree.

8 oz. smoked fillet, steamed.
2 oz. rice.
1 oz. margarine.
2 eggs (one hard boiled).
½ teaspoon salt.

Boil the rice. Melt the margarine and add the boiled rice, flaked fish, beaten egg and seasoning. Mix well and stir in the chopped hard-boiled egg. Put in a pie-dish and cook in a moderate oven for 20 minutes.

Macaroni Cheese.

½ pint milk.
1 oz. margarine.
1 oz. flour.
2 oz. macaroni.
3 oz. cheese.
2 level teaspoons salt.

Break the macaroni into small pieces and boil; drain well. Make a sauce of the milk, flour and margarine. Stir in three-quarters of the grated cheese. Add the boiled macaroni. Put the mixture in a pie-dish and sprinkle the remainder of the cheese on top. Brown under the grill.

Omelette.

2 eggs.
1½ oz. butter or margarine.
½ oz. water.
1 level teaspoon salt.

Beat the eggs with the salt and add the water. Heat the butter in an omelette pan, pour in the mixture and stir till it begins to thicken evenly. While still creamy fold the omelette in two and brown lightly.

Onion Sauce.

½ pint milk
¾ oz. flour
¾ oz. margarine
} white sauce.
8 oz. onion, boiled.
1 level teaspoon salt.

Make the sauce and add the chopped onion and seasoning.

Potato Soup.

13½ oz. potatoes, peeled.
1 onion, peeled (4¾ oz.).
1 oz. dripping.
½ pint milk.
½ pint water.
2 level teaspoons salt.

Melt the fat in a pan. Slice the vegetables and fry in the fat. Add the water and seasoning. Bring to the boil, cover and simmer for an hour. Rub through a sieve, add the milk and reheat.

Sausage Roll.

5½ oz. uncooked flaky pastry.
2 oz. raw sausage meat.

Make the pastry, roll out and cut into squares of 4 inches. Place some sausage in the middle of each. Fold over and bake in a hot oven for 20 to 30 minutes.

Scotch Egg.

3 eggs.
8 oz. raw sausage or sausage meat.
¼ oz. flour.
⅛ oz. beaten egg.
⅛ oz. breadcrumbs.

Hard boil the eggs, cool and remove shells. Skin the sausages and flatten each on a floured board. Dip each egg in flour and cover with the sausage meat. Brush with beaten egg and coat with crumbs. Fry in very hot, deep fat for about three minutes.

Scrambled Eggs.

2 eggs.
1 level teaspoon salt.
¾ oz. butter or margarine.
½ oz. milk.

Beat the eggs with the seasoning and add the milk. Heat the butter in a pan and add the beaten eggs and milk. Stir over a gentle heat until the mixture thickens.

Shepherd's Pie.

6½ oz. beef, cooked.
3½ oz. onion, boiled.
18½ oz. potato, boiled.
2 oz. milk.
¾ oz. margarine.
6 oz. water.
2 level teaspoons salt.

Mince the meat and chop the onion. Moisten with water and add the seasoning. Mash the potatoes with the milk and margarine. Place the mince and onion in a pie-dish. Pile the potato on top. Bake in a hot oven till brown.

Steak and Kidney Pie.

7 oz. uncooked flaky pastry.
7½ oz. raw beef steak.
3½ oz. raw kidney.
2 oz. water.
2 level teaspoons salt.
¼ oz. flour.

Make the pastry. Cut the steak and kidney into pieces and roll in flour. Place with water and seasoning in the pie-dish. Cover with pastry. Bake in a hot oven for 20 minutes, then reduce the heat and continue cooking slowly for 2 to 2½ hours.

Toad-in-the-Hole.

½ pint milk
4 oz. flour
2 eggs
} batter.
8 oz. raw sausage or sausage meat.
2 oz. dripping.
2 level teaspoons salt.

Make the batter and pour into a pie-dish containing hot dripping. Skin the sausages and place them in the batter. Add the salt. Bake in a hot oven for about 40 minutes.

Welsh Rarebit.

3 oz. cheese.
1 oz. butter or margarine.
½ oz. milk.
2 oz. white toast.
¼ oz. butter on toast.

Make as for Buck Rarebit (p. 259), omitting the egg.

White Sauce, Savoury.

½ pint milk.
¾ oz. margarine.
¾ oz. flour.
1 level teaspoon salt.

Melt the fat in a pan. Add the flour and cook for a few minutes, stirring all the time. Add the milk and seasoning and cook gently until the mixture thickens, stirring continually.

RECIPES FOR HIGH CALORIE AND INVALID DIETS, AND DIETS SUITABLE FOR DISORDERS OF THE DIGESTIVE TRACT

BEVERAGES

Coffee (211 Cals. without cream ; 327 Cals. with cream).

Mix 1 oz. lactose with ¼ pint milk. Bring to the boil. Add a heaped dessertspoonful of coffee without stirring. Cook five minutes. Strain into a cup. Add 1 oz. cream if possible, stir and serve. This mixture may be taken iced through a straw if preferred.

Cocoa (237 Cals. without cream).

Use one heaped teaspoonful cocoa to ¼ pint milk and prepare in the usual way. Dissolve 1 oz. lactose in this. Add cream if possible. Chocolate may be used instead of cocoa.

Vanilla Egg Nog (293 Cals.).

Dissolve 1 oz. glucose or lactose in ¼ pint of milk, warming slightly if necessary. Beat up an egg and stir it into the milk mixture. Add vanilla to taste.

Treacle Egg Nog (257 Cals.).

Beat up an egg and mix it well with ¼ pint milk. Add a tablespoonful of black treacle, and continue stirring till it is dissolved.

Milk and Cream Mixture (327 Cals. with 1 oz. glucose or lactose).

Dissolve glucose or lactose in ¼ pint milk. Add 1 oz. cream and stir well. Serve very cold. If desired a few drops of vanilla may be added.

Lemonade. High Calorie Recipe (234 Cals.).

1 oz. lemon juice. 5 oz. water.
2 oz. glucose.

Boil the water with lemon rind and glucose for about five minutes. Allow to cool a little, add the lemon juice, strain, serve very cold.

A quicker method is to dissolve the glucose in 1 oz. lemon juice mixed with 4 oz. cold water. Strain carefully through butter muslin if to be used for a patient with colitis or typhoid.

Orangeade (about 100 Cals.).

Squeeze a large orange, add a little lemon juice if desired. Strain, add water and glucose to taste.

SOUPS AND SAUCES

Cream of Chicken Soup (¼ pint provides 127 Cals.).

Chicken carcass. 2 pints milk.

Cover chicken carcass and bones with milk. Stew gently, preferably in a double saucepan, for one to two hours, adding milk when necessary to keep the quantity constant. Strain off liquid and thicken with 1 oz. flour and 1 oz. fat, or 1 oz. cornflour to each pint. Add seasoning as allowed. Serve with cream crackers or dry toast.

Cream of Tomato Soup (258 Cals.).

4 oz. tomato juice. 1 oz. lactose.
1 oz. cream. Salt and pepper if allowed.

Warm the tomato juice and dissolve the lactose in it. When ready to serve stir in the cream, but do not allow to boil. Season well.

Tomato Soup. High Calorie and Low Fat Recipe (157 Cals.).

4 oz. tomatoes. ½ oz. cornflour.
1 oz. lactose. Salt and pepper if allowed.
4 oz. water.

Boil the tomatoes in the water until soft. Sieve them. Add the lactose and stir till dissolved. Mix the cornflour with a little water. Pour the tomato purée over it, stirring well. Return to the saucepan, stir until thickened. Allow to cook a few minutes, then serve.

Plain White Sauce (127 Cals.).

½ oz. cornflour. ½ pint milk (skimmed if for patients on low fat diets).

This is very easy to make, and is more readily digested than if made with fat.

Mix the cornflour with a little cold milk. Boil the remainder, pour over the cornflour, stirring well. Return to the saucepan, stir until the mixture thickens and tastes cooked (about five minutes), or leave to cook in a double saucepan. Use seasoning as allowed.

White Soup (suitable for gastric ulcer and colitis patients).

5 oz. milk. About 2 oz. of sieved carrots,
½ oz. butter or margarine. potatoes, peas, spinach or
½ oz. flour. tomatoes, or Marmite or
Salt. Yeastrel to taste.

Melt the butter and stir in the flour to a smooth paste. Add the milk gradually, stirring to avoid lumps. Then add the sieved, cooked vegetable and continue cooking for a few minutes after the

mixture has boiled. If tomatoes are used the milk mixture should be thoroughly cooked first, and the tomato then added slowly and carefully to avoid curdling; this soup should not be boiled. If potatoes are used it may be necessary to increase the amount of milk.

FISH

Fish Custard (253 Cals.).

4 oz. cooked fish (smoked haddock may be used if salt is not restricted).
¼ pint milk.
½ egg.
Little salt.

Flake fish. Beat up egg and add milk, and a little salt if allowed. Pour over the fish in a fireproof dish and bake in a pan of water in a cool oven.

Steamed Fish Cream (238 Cals.).

Proceed as for fish custard, sieving the fish if preferred, but pour the mixture into greased moulds. Cover with greaseproof paper, and steam gently until set. Serve with white sauce.

CHICKEN

Chicken or Rabbit Custard (244 Cals.).

Make as fish custard, using 2 oz. minced chicken or rabbit instead of fish.

Chicken Jelly (250 Cals.).

1½ oz. chicken.
2 sheets gelatine.
1 oz. cream.
¼ pint chicken stock.
Salt to taste if allowed.

Put chicken twice through the mincer or rub through a sieve. Heat the chicken stock, with seasoning if allowed. Remove from the fire, add the gelatine, and stir in the chicken. Place in a mould, add the cream, and turn out when set.

Meat Extract Custard (82 Cals., *i.e.* the value of 1 egg).

1 egg.
¼ pint well-flavoured meat extract or beef tea.

Beat up the egg. Mix well with the meat extract or beef tea. Bake in a fireproof dish placed in a pan of water in a cool oven for about 40 minutes until set.

N.B.—This is not suitable for patients suffering from acute dyspepsia or typhoid, unless Marmite or Yeastrel is substituted for meat extract.

PUDDINGS

Apple or Apricot Meringue (50–100 Cals.).

½ lb. stewed apple or stewed and sieved dried apricots.	White of 1 egg. Sugar.

Invalid and Low Fat Recipe.—Place the apple in a pie-dish. Whip the egg white till stiff, then add a little sugar to it. Pile on the apple. Brown in a quick oven, or under the grill. If preferred, the egg white may be folded into the apple and the pudding served as a whip.

Low Residue Recipe. May be made suitable for convalescence from colitis or gastric ulcer by sieving the fruit before use.

Bread-and-Butter Pudding (283 Cals.).

2 slices of bread and butter.	1 egg.
½ pint milk.	Sugar to taste.

Cut the bread and butter into small squares and place in a pie. dish. Beat up the egg and mix well with the milk and sugar. Flavour with vanilla or cocoa if desired. Pour over the bread and allow to stand half an hour if possible. Stand in a pan of water in a cool oven and bake 30 to 40 minutes until set.

Orange Mould. Individual serving (206 Cals.).

3 oz. strained orange juice.	½ oz. cornflour or ½ oz. arrow-root.
Rind of half a lemon.	1 oz. glucose.

Boil ¼ pint of water with the lemon rind and glucose until the volume is reduced by half. Mix the cornflour or arrowroot with a little water to a smooth paste. Strain the water flavoured with lemon rind over this, stirring well. Add the orange juice, return to the fire, and stir until the mixture is clear. This mixture can be set with one to one and a half sheets gelatine instead of cornflour if preferred. Other fruit juice may be used, but for patients suffering from hyperchlorhydria, acid fruits must be avoided.

Queen of Puddings (454 Cals.).

2 oz. white bread-crumbs.	Honey or jelly.
½ pint milk.	Sugar to taste.
1 egg.	

Put the bread-crumbs in a buttered pie-dish. Separate the yolk from the white of egg. Beat the yolk, mix with the milk and add sugar or glucose to taste. Pour over the crumbs, place in a pan of water in a slow oven and bake until set. Spread honey or jelly

over the top (red currant may be used if not intended for a patient suffering from hyperchlorhydria), or jam if there is no digestive disturbance. Beat the white of egg until stiff, add one teaspoonful of sugar. Pile on the pudding and brown in a quick oven or under the grill. One teaspoonful of cocoa and a few drops of vanilla may be mixed with the egg and milk if desired to make a chocolate pudding; golden syrup or honey should then be used instead of jelly.

Trifle (506 Cals.).

2 sponge cakes.
¼ pint boiled custard (made with egg or custard powder).
Vanilla.
Honey or black-currant jelly.

Cut the sponge cakes crosswise into three. Spread with honey, black-currant jelly, or jam if there is no digestive disturbance, and put together again. Cut downwards into four. Lay the pieces in a glass dish. Make an egg or custard powder custard, flavour with vanilla, and pour over the sponge cakes. Leave to cool. Decorate with jelly before serving.

Compôte of Fruit (280 Cals.).

¼ lb. fruit (fresh, or dried soaked fruit).
¼ pint water.
2 oz. glucose.
Lemon rind.

Boil the glucose in the water with lemon rind until the volume is reduced by half. Put in fruit and cook until soft but whole. Remove lemon rind. Serve cold with custard or cream.

N.B.—Fresh peaches or apricots make an excellent compôte. To peel them, put them on a fork and place them in boiling water for a minute. The peel will then come off easily.

Milk or French Toast (328 Cals.).

¼ pint milk.
3 slices bread.

Toast the bread to a delicate brown, and put it into a covered dish. Heat the milk, season it with a saltspoonful of salt, and pour over the toast. A little butter may be spread on each slice before the milk is added. White sauce may be used instead of milk if preferred.

Pain Perdu.

Dip thick slices of stale, crustless bread in sweetened milk, then in beaten egg. Fry in butter. While the bread is still hot, sprinkle it with castor sugar. Serve with compôte of fruit or rings of tinned pineapple.

RECIPES FOR LOW CALORIE DIETS

SOUPS

Note.—Stock must be carefully freed from fat. (See p. 274).

Mixed Vegetable Soup.

Use vegetables in season (not potatoes or pulses). Chop finely and cook in water or chicken stock until tender. Season and add a little chopped parsley before serving.

Celery or Mushroom Skimmed Milk Soup.

3½ oz. skimmed milk.
Head of celery, or about 2 oz. mushrooms.
Parsley.
Salt and pepper.

Stew the celery in sufficient water to cover, until tender, then strain through a hair sieve. Add the skimmed milk, seasoning and a little finely chopped parsley. Bring to the boil and serve immediately.

Mushrooms may be used instead of celery. Prepare in the same way, chopping the mushrooms finely instead of sieving.

Asparagus Soup.

½ pint stock.
6 to 8 sticks of fresh asparagus, or small tin of asparagus.
Salt and pepper.

Boil the asparagus in the stock until the tips are tender. Remove these and set aside. When the rest of the asparagus is soft rub it through a sieve. Reheat this with the soup and add the tips. Season well and serve. If tinned asparagus is used the tips should be removed at once, and the stalks, liquor from the tin, and ½ pint stock cooked together. Then proceed as above.

Marrow Soup.

½ pint stock.
½ lb. cooked marrow.
Bay leaf, shred of onion.
Salt and pepper.

Cook the stock for about 10 minutes with the onion and bay leaf. Sieve the marrow and add to the stock. Cook another 10 minutes. Remove the bay leaf, season well and serve. Garnish with chopped parsley if desired. Cucumber soup may be made by using cucumber instead of marrow.

Cauliflower or Spinach Soup.

½ pint stock or skimmed milk.
1 small cauliflower or 1 lb. spinach (or small tin).
Shred of onion if desired.
Salt and pepper.

Bring the stock to the boil with the onion, put in the cauliflower or well-washed spinach, and cook till tender. Sieve, season well, reheat and serve. If skimmed milk is used, cook the vegetable in very little water and add to the skimmed milk when sieved. Reheat and serve.

Celery Soup.

½ pint stock.
Outside stems of a head of celery.
Few shreds of onion.
Salt and pepper.

Clean the celery and cut in small pieces crosswise. Cook with the onion in the stock until tender. Season well and serve.

Cabbage Soup.

½ pint stock.
4 oz. raw cabbage.
Few shreds of onion.
Salt and pepper.

Shred the cabbage finely. Cook in the stock with the onion until tender. Season well and serve.

Potage à la Bonne Femme (modified).

½ pint stock.
1 small lettuce.
3 oz. cucumber.
2 leaves sorrel.
Yolk of 1 egg.
Salt and pepper.
2 or 3 sprigs taragon and chervil.

Shred all the vegetables finely. Pour boiling stock over them. Add salt. Cook gently for 20 to 30 minutes until the vegetables are tender. Leave to cool. Beat up the egg yolk and add. Reheat and stir until thick, but do not allow to boil. Serve at once.

PUDDINGS

Lemon Jelly.

Boil ¼ pint water with lemon rind for about five minutes. Dissolve one and a half sheets of gelatine in this after removing from the fire. Add the juice of a good sized lemon and one or more crushed saccharine tablets to taste. Add lemon colouring. Strain, pour into a mould. Turn out when set. Decorate with stewed cranberries sweetened with saccharine if desired. Peppermint essence may be used instead of lemons if preferred.

Coffee Jelly.

Make ¼ pint well-flavoured coffee. Sweeten with half or one saccharine tablet to taste. Dissolve one to one and a half sheets of gelatine in the liquid off the fire. Strain and pour into a mould. Turn out when set.

Agar-Agar Jelly.

½ teaspoonful powdered agar-agar. ¾ pint water or coffee.

Mix the agar to a smooth paste with a little of the water or coffee. Add the rest of the water, and boil 10 minutes. Strain, colour, and sweeten with saccharine to taste. Add flavouring if the jelly has been made with water. Pour into moulds, and cool at room temperature. This recipe may be adapted for certain diabetic diets by reducing the amount of water and replacing it with cream.

Cranberry Whip.

Stew cranberries in water until soft. Add a pinch of bicarbonate of soda to counteract some of the acidity. Remove the scum. Sweeten with saccharine to taste. Strain off the juice. Fold in a stiffly beaten egg white and serve immediately.

Stewed Rhubarb.

Cook rhubarb in water as cranberries, adding bicarbonate of soda if very tart. Sweeten with saccharine to taste.

Orange Jelly. See p. 286.

Fruit Jelly. See p. 287.

Fruit Whip. See p. 286.

BULKY SALADS AND SAVOURY DISHES PROVIDING ABOUT 80 CALORIES

Egg Salad.

Cut up 1 hard-boiled egg and serve with lettuce, tomato, celery, cucumber, cress and chopped chives.

Stuffed Egg.

Cut a hard-boiled egg in half, remove the yolk carefully, and mix with a little anchovy essence, or tomato juice and seasoning, or skimmed milk and seasoning. Replace in the white, and serve on lettuce and tomato with pimento if desired.

Sardine Salad.

Remove as much oil as possible from 1 oz. sardines. Place on a lettuce and tomato salad. Decorate with pimento if desired.

Cheese Salad.

Mix 1 oz. milk (not cream) cheese such as York, Bondon, or Little Wilts, with enough tomato juice and seasoning to mould into a ball. Serve in a bed of lettuce decorated with tomato, cucumber, etc.

Lobster or Crab Salad.

Serve 2 oz. lobster or crab on a salad with special dressing (see below).

Chicken Jelly.

Make aspic, or jelly with ½ pint of tomato juice, or stock or chicken broth carefully freed from fat, and 1 sheet of gelatine. Season well. Decorate a mould with tomato, cucumber, diced carrots, or similar vegetables in season. Dice 1½ oz. chicken (or rabbit) and place on the vegetables. Pour in the remainder of the jelly and leave to set. Serve on lettuce and tomatoes.

Baked Tomato and Egg.

Remove the centre from a large tomato. Slip in a whole egg and bake in a moderate oven until set. This may be served with whole tomatoes baked in a little water. They must be pricked on top to prevent them from bursting.

Baked Egg and Mushrooms.

Bake some sliced mushrooms in liquid paraffin in the bottom of a small fireproof dish. When nearly cooked add an egg, seasoning, and bake until set. Tomatoes may be used as well as, or instead of, the mushrooms.

Stewed Sweetbreads and Mushrooms.

Blanche and stew 1½ oz. sweetbreads in water or skimmed milk with mushrooms. Season well before serving.

Meat Extract Custard. See p. 266.

SALAD DRESSINGS WITH NEGLIGIBLE FOOD VALUE

French Dressing.

Make as ordinary dressing, substituting liquid paraffin for salad oil.

Mayonnaise.

Make as ordinary mayonnaise, with liquid paraffin instead of salad oil. If any sweetening is desired use a little crushed-up saccharine.

Mint Sauce.

Make in the usual way, substituting saccharine to taste for sugar.

LOW RESIDUE RECIPES

Flour of Oatmeal.

1½ oz. flour of oatmeal.
1 pint water.
Salt.

Mix the flour of oatmeal to a smooth paste with a little of the water. Bring the rest of the water to the boil, and stir in the oatmeal and a pinch of salt. Continue simmering, stirring occasionally, for about half an hour, until the mixture tastes cooked. If flour of oatmeal is not available, ordinary porridge may be rubbed through a fine sieve and reheated before serving.

Strained Marmalade.

Warm marmalade in a saucepan until liquid, stirring to prevent its burning, or in a fireproof dish in the oven. Pour through a fine sieve and allow to cool. The rind left behind may be used for puddings, etc., for those not requiring special diets. Plum and other stone fruit jams may be strained in the same way.

HIGH RESIDUE RECIPE

Quaker Oats Fingers.

4 oz. Quaker oats.
2 oz. margarine.
3 oz. sugar.
1 teaspoonful treacle or golden syrup.

Melt the margarine, treacle and sugar in a saucepan. Add the Quaker oats and stir all together for a few minutes over gentle heat. Then spread thinly on a greased baking tin and bake 15 to 20 minutes in a moderate oven until golden brown. Mark out in neat fingers and leave in the tin until cool. Cut up and store in a tin.

FRACTIONAL TEST MEAL

Gruel.

1 to 2 oz. fine oatmeal.
2 pints water.

Simmer the oatmeal in the water until the volume is reduced to 1 pint. Strain through fine muslin or a hair sieve. Bring to blood heat to serve.

RECIPES FOR LOW FAT DIETS

Where quantities are given, the recipes below are sufficient for 1 *good or* 2 *small servings. They do not contain more than* 1 *gram of fat.*

SOUPS MADE FROM STOCK OR WATER

To clear stock from fat.—Allow stock to stand overnight. Remove carefully with a spoon as much fat as possible. Then warm if jellied and absorb the remainder by running pieces of clean white paper across the surface until no fat spots can be seen on a fresh piece of paper.

Potato Soup.

2 good sized potatoes.
¾ pint stock freed from fat, or water.
Small onion and other vegetables to flavour.
Herbs or parsley.
Salt and pepper.

Wash and prepare vegetables, and cut in pieces. Stew in stock or water. When cooked, sieve and season. Finely chopped parsley may be added just before serving or herbs tied up in muslin may be cooked in the soup.

Tomato Soup. (See also p. 265.)

½ lb. tomatoes.
¾ pint stock freed from fat, or water.
¾ oz. cornflour.
Salt and pepper.

Cook the tomatoes in the stock or water. Mix the cornflour to a smooth paste with a little cold water in a basin. Sieve the cooked tomatoes and pour them over the cornflour, stirring them well. Return the soup to the saucepan, continue stirring for about five minutes, until the soup tastes cooked. Season with salt and pepper and serve. Tomato juice or sauce, or tinned tomatoes may be used instead of fresh fruit.

SKIMMED MILK SOUPS (See also p. 269.)

Skimmed milk, fresh or dried, may be used for low-fat soups, sauces, fish, chicken or sweet dishes.

"Cream" of Potato Soup.

1 good sized cooked potato.
½ pint skimmed milk.
½ oz. patent barley or cornflour.

Bring the skimmed milk nearly to the boil. Sieve the potato and add it to the milk. Cook them together for a few minutes, stirring all the time. Mix the barley or cornflour to a smooth paste in a basin with a little cold skimmed milk or water. Pour the potato and milk over the paste; stir well. Return to the fire. Stir for about five minutes until cooked. Season, and serve with chopped parsley to flavour if desired.

Other Vegetable Soups.

Any cooked sieved vegetables, for instance, carrots, turnips, peas, cauliflower, may be used with skimmed milk to make soup. Patent barley for thickening gives a rather richer flavour than cornflour.

If tomatoes are used, the milk, should be thickened first and added very gradually off the fire to the sieved tomatoes to prevent its curdling, or a pinch of bicarbonate of soda may be added to the tomatoes.

Soup containing 8½ oz. Skimmed Milk.

Make as above, using 3½ oz. skimmed milk and ½ oz. patent barley or cornflour.

Meat or Yeast Extract and Skimmed Milk Soup.

Flavour hot skimmed milk with meat extract, Marmite or Yeastrel to taste. Thicken with cornflour or barley if desired.

SAUCES

Tomato Sauce.

Make as for tomato soup (p. 274), but use 1 oz. cornflour to thicken instead of ¾ oz.

White Sauce.

Make as for plain white sauce (p. 265), using skimmed milk instead of whole milk. Chopped parsley, meat extract, tomato ketchup, Marmite or Yeastrel may be added just before serving to vary the flavour.

Egg Sauce.

The white of one hard-boiled egg may be chopped and added to the above sauce if protein is not strictly limited.

Boiled Dressing.

½ tablespoon salt.
1 teaspoon mustard.
1½ tablespoons sugar.
Few grains cayenne.
½ pint skimmed milk.
2 tablespoons vinegar.
½ oz. cornflour.

Mix the dry ingredients, then add milk and vinegar very slowly. Cook over boiling water until the mixture thickens. Strain and cool.

FISH

Suitable fish : haddock, fresh or smoked, cod, skate, sole, lemon sole, plaice.

"Creamed" Fish.

Flaked cooked fish. White sauce (see recipe above).

Mix the fish with the sauce, season well. Reheat, pile on a plate, and serve immediately, with dry toast if desired. Anchovy flavouring or finely chopped parsley may be added to the sauce if desired.

Scalloped Fish.

Proceed as for "creamed" fish, then place in a shell or fireproof dish, cover with browned bread raspings, reheat in the oven and serve.

Fish Pie.

Fill a pie-dish with "creamed" fish (see p. 275). Add chopped parsley if desired. Cover with mashed potato moistened with skimmed milk. Brown under the grill or in a hot oven, and serve.

Baked Fish with Tomatoes.

Place whole fish or fillets in a fireproof dish. Add skimmed milk to moisten. Slice tomatoes crosswise and cover the fish with these; bake until the fish comes away easily from the bone. Partly cooked sliced mushrooms or onions may be used as well as the tomatoes, or in place of them if preferred.

Kedgeree.

Fillet of cooked smoked haddock or other fish.
Equal quantity of boiled rice.
White sauce (see recipe, p. 275).
White of hard-boiled egg.
Salt and pepper.

Chop the egg white and mix with the other ingredients. Season well and serve very hot with sippets of dry toast.

Fish Salad.

The kedgeree above may be served cold on lettuce or cress, substituting tomato juice for white sauce. Chopped celery or capers may be added to the salad, and special boiled dressing (p. 275) may be used as desired.

Fish in Aspic.

Make aspic in the usual way, or use fish stock and add one sheet of gelatine to ½ pint. Season well. Decorate two individual moulds with cooked peas, diced cooked carrots, or other vegetables. Add well-seasoned cooked fish or pieces of lobster. Pour the aspic or fish stock carefully on to these and leave to set in a cool place. Turn out and serve with lettuce, cress, or other salad, and special boiled dressing (see recipe, p. 275) if desired.

CHICKEN, RABBIT, TRIPE, STEAK

"Creamed" Chicken or Rabbit.

3 tablespoons minced or diced chicken or rabbit.
1 tablespoon boiled rice.
Skimmed milk white sauce (see recipe, p. 275).
Sliced stewed mushrooms, tomatoes, chopped capers, or peppers to flavour if desired.
Salt and pepper.

Mix the chicken or rabbit with the rice and enough sauce to moisten. Add mushrooms or other vegetables. Heat and serve with sippets or on a slice of dry toast.

Chicken Jelly (see p. 272).

Stewed Tripe and Onions.

6 oz. tripe.
¾ pint skimmed milk.
½ oz. cornflour.
A small onion.
Salt and pepper.

Cut the tripe in neat pieces about 1½ inches square. Peel the onion and slice it crosswise. Place these in enough skimmed milk to cover and bring gently to the boil. Simmer for at least two hours until tender, adding more skimmed milk if necessary. Thicken with ½ oz. cornflour mixed to a paste in cold skimmed milk or water. Stir until the sauce tastes cooked. Season. Serve with dry toast and parsley to decorate.

Stewed Tripe and Tomatoes.

6 oz. tripe.
3 medium tomatoes or a small tin of tomatoes.
Half a small onion.
½ oz. cornflour.
¾ pint water or stock.

Cover the tripe, tomatoes, and sliced onion with water or fat-free stock and stew until tender, which will take at least two hours. Thicken the sauce with the cornflour mixed to a smooth paste with cold water. Stir until the sauce tastes cooked. Season, adding a little tomato ketchup, meat extract, Marmite or Yeastrel if desired. Serve with dry toast. Omit onion if used for light diet.

"Pan broiled" Steak.

Trim the fat carefully off a thin cut of rump steak. Heat a frying-pan and cook the steak in it, turning it over frequently. Use meat extract for gravy if required.

VEGETABLES AND MEAT SUBSTITUTES

Macaroni and Tomatoes.

6 sticks macaroni.
½ oz. cornflour.
Salt and pepper.
½ lb. tomatoes or a small tin of tomatoes.

Cook the macaroni in boiling salted water until tender. Boil the tomatoes in water and when cooked rub through a sieve. Add some of the water in which they were boiled so that the total volume is ½ pint. Thicken with the cornflour, season to taste, pour over the macaroni and serve. ½ oz. of rice may be substituted for the macaroni.

Baked Tomatoes.

Make a small hole in the top of the tomatoes with a knife or fork. Place in a fireproof dish with a little water. Bake about 10 to 15 minutes, until soft.

Stuffed Tomatoes.

2 large tomatoes.
About 2 tablespoonsful of boiled rice.
White of a hard-boiled egg.
Cooked vegetable.
Salt and pepper.

Cut the tops off the tomatoes. Scoop them out carefully. Chop the egg white, mix with the rice, the inside of the tomatoes, and some chopped cooked beetroot, carrot, or other vegetables. Season well. Stuff the tomatoes with the mixture. Serve cold on lettuce or cress, or bake in the oven in a little water for about 15 minutes, and serve on small rounds of dry toast or in a bed of boiled rice.

Stuffed Egg Whites.

Whites of 2 hard-boiled eggs.
About 2 tablespoons boiled rice.
Cooked vegetables and tomatoes.

Cut the hard-boiled eggs in half, longwise. Scoop the yolks out carefully as these must not be used for low fat diets. Mix the rice with the vegetables and a little vinegar if desired. Fill the egg whites, piling the stuffing up. Serve on salad.

Celery and Apple Salad.

Celery
Apple.
Seedless raisins.
Lettuce.

Chop the celery and peel and chop the apple. Mix, add a few seedless raisins, and serve on a bed of lettuce, with vinegar and sugar if desired, or boiled dressing, p. 275.

PUDDINGS

Skimmed Milk Custard.

1 oz. custard powder.
1 pint skimmed milk.
Sugar.

Stir the custard powder to a smooth paste in a little of the cold skimmed milk. Sweeten the remainder and bring to the boil, pour over the custard powder, stir well, and return to the fire. Cook in a double saucepan, or stir all the time, until the custard tastes cooked.

Coffee Custard.

This may be made by adding strong coffee or coffee essence to flavour the above custard.

Coffee Blancmange.

½ oz. cornflour.
½ pint skimmed milk.
Strong coffee or coffee essence.
Sugar.

Mix the cornflour to a smooth paste in a little of the skimmed milk. Bring the remainder to the boil in a double saucepan with about a dessertspoonful of sugar (one or more tablespoonfuls of glucose may be substituted if extra Calories are required). Pour over the cornflour, stirring all the time. Return to the saucepan. Add coffee or coffee essence to taste. Stir well, and leave 5 to 10 minutes until cooked. Pour into a mould and turn out when cold.

"Creamed" Rice and Banana.

½ oz. rice.	1 or 2 bananas.
½ pint skimmed milk.	Jam.
1 dessertspoonful of sugar.	Lemon rind.

Wash the rice. Place in a double saucepan with the skimmed milk, sugar, and lemon rind. Stew for one to two hours until soft. Remove the rind. Place in a glass dish or individual glasses. When cool, cover with jam. Slice banana on top. Add a little lemon juice if not to be used at once. Decorate with jam or cherries and angelica.

Trifle.

Angel cake (p. 280) or plain buns.	Jam.
Custard made from skimmed milk and custard powder (see p. 278).	Sugar.

Spread slices of angel cake or buns with jam. Make into sandwiches, cut into squares and place in a glass dish. Make a custard with custard powder and skimmed milk, pour it hot over the cake. When cool decorate with cherries and angelica. Marshmallows cut in pieces may also be used on top if desired, and may be browned under the grill.

Fruit Whip.

Stewed or tinned fruit, or fresh strawberries or raspberries.	White of 1 egg.
	Sugar.

Sieve the fruit, draining off any juice, and sweeten to taste. Beat the egg white until stiff. Fold it into the fruit. Pile in individual glass dishes and serve at once.

Apple Charlotte.

½ lb. cooking apples.	1 teacupful bread-crumbs.
1 oz. sugar.	Golden syrup.

The grated rind of half a lemon or a few cloves.

Cook the apples. When they are reduced to a soft pulp, add the lemon rind and sweeten to taste. Cover the bottom of a pie-dish with bread-crumbs, cover this with a layer of apple pulp, and continue with alternate layers of bread-crumbs and apple, finishing with a layer of bread-crumbs. Place golden syrup or brown sugar on the top, and bake in a moderate oven for about 30 minutes.

Apple Meringue (see p. 267).

Fruit Mould.

¼ pint fruit juice or pulp.
Sugar.
1 oz. cornflour or arrowroot.

Mix the cornflour with cold water to a smooth paste. Heat the fruit juice or pulp, sweetened to taste, and pour slowly over the cornflour, stirring all the time. Return to the fire and stir for about five minutes until cooked. If no fruit juice is available, boil some lemon rind with sugar and water, remove the rind, add lemon juice to taste, and continue as above.

Fruit Sago.

¼ pint fruit juice or pulp.
Sugar.
1 oz. sago or seed tapioca.

Bring the fruit juice or pulp to the boil and sweeten to taste. Add the sago or tapioca and cook in a double saucepan, stirring occasionally. In about 20 minutes the mixture will be clear and cooked. Place in a glass bowl or individual dishes. When cool decorate with fruit if desired and serve.

Semolina Whip.

Make as fruit sago, substituting semolina for sago. When cold, whip until frothy.

Orange Custard.

1 or 2 oranges.
¼ pint skimmed milk.
1 oz. custard powder.
Sugar.

Peel the oranges and slice them crosswise. Cover them with sugar or glucose and allow to stand in a glass bowl. Make custard with skimmed milk and custard powder and sweeten to taste. Cool and pour over the orange and serve very cold, decorated with cherries and grated orange peel if desired.

Banana Custard.

Make as above, substituting sliced banana and jam for orange.

CAKE AND TOAST (Family Recipes)

Angel Cake.

Whites of 6 eggs.
1 teaspoonful of cream of tartar.
4 oz. castor sugar.
3 oz. flour.
¼ teaspoonful salt.
1 teaspoonful vanilla.

Beat the egg whites until stiff. Sift the cream of tartar and the flour and add the sugar and salt. Fold into the egg whites. Add the vanilla. Bake 45 to 50 minutes in an ungreased tin in a moderate oven. When the cake begins to brown cover it with greaseproof paper.

Parkin.

2 oz. medium oatmeal.
2 oz. flour.
¼ teaspoon ground ginger.
Skimmed milk.
¼ teaspoon grou nd cinnamon.
¼ teaspoon bicarbonate of soda.
1 oz. sugar.
1½ oz. black treacle and syrup.

Heat the syrup and treacle; mix the dry ingredients, and add the melted syrup. Heat the milk and add sufficient to make a stiff consistency. Bake in a flat tin in a moderate oven.

Toast Melba.

Cut thin slices of bread. Place in a baking tin in a slow oven, removing directly they are crisp and a golden brown.

LOW FAT RECIPES SPECIALLY SUITABLE FOR PATIENTS SUFFERING FROM SPRUE

Individual Servings

Salisbury Steak.

Mince raw lean steak, removing any tough parts. Season and shape into a patty. Cook very lightly in a hot frying-pan without fat.

Skimmed Milk Jelly.

¼ pint skimmed milk.
1 to 1½ sheets gelatine.
White of 1 egg.
1 oz. glucose or lactose.
Lemon rind, vanilla, or coffee essence.

Heat the skimmed milk till nearly boiling, adding glucose and lemon rind or coffee essence if desired. Remove from the fire and stir in the gelatine, previously cut into shreds, until dissolved. Strain, add beaten egg white, and leave to set in a mould. If vanilla is used instead of lemon rind or coffee essence, add it after straining. This mixture may be frozen to make vanilla or coffee ice.

Skimmed Milk Junket.

Fresh raw skimmed milk should be used. Make as ordinary junket, using glucose to sweeten, and vanilla or coffee to flavour.

Orange Jelly.

Juice of 1 large or 2 small oranges.
Lemon rind.
1 egg white.
1 to 1½ sheets gelatine.
Glucose to taste.

Boil 4 oz. water with 1 oz. glucose and a piece of lemon rind until the volume is reduced by about half. Remove from the fire and dissolve the gelatine in it, mix with the orange juice and strain. When cool add the egg white. Stir up thoroughly and leave to set. This jelly may be whipped just before setting to form a snow, or it may be frozen and served as orange ice.

Baked Banana.

Cut the skin of a banana lengthwise to prevent its bursting. Lay it in a fireproof dish or on a baking-tin. Bake in a moderate oven for 20 to 30 minutes until quite soft. Serve warm in skin.

Banana Whip.

1 large banana. Glucose to taste.
White of 1 egg.

Sieve a banana, add strained lemon juice and glucose to taste. Colour with cochineal and fold in the beaten white of an egg. Serve in a glass dish and decorate with red-currant jelly.

Vanilla Whip.

Dissolve a tablespoonful of glucose in a glass of skimmed milk. Add vanilla to taste. Chill. Stir in a stiffly beaten-up egg white just before serving.

Custard (for Sprue in convalescent stage only).

Make boiled or baked egg custard in the ordinary way, using skimmed milk instead of whole milk. This dish is not suitable for ordinary low fat diets.

Marmite or Yeastrel Soup with Skimmed Milk.

Add Marmite or Yeastrel to hot skimmed milk, and season to taste.

Spinach Soup. See p. 269.

RECIPES FOR DIABETIC DIETS

For recipes of dishes with negligible food value, see p. 269.

SOUPS CONTAINING 5 g. C.

Clear Vegetable Soup. C., 5 g.

½ pint stock.
3 oz. cooked carrots and leeks.
1½ oz. cooked turnips and onions.
1 stick celery.
Salt and pepper.

Cook the stock with a stick of celery cut in small pieces for 15 minutes. Add the other vegetables, cut very fine or shredded, and cook until they are all tender. Season well and serve.

Carrot or Leek Soup. C. 5 g.

¼ pint meat stock.
4 oz. sieved cooked carrots or leeks.
Salt and pepper.

Add the carrots or leeks to the stock, heat, season to taste, and serve. Finely chopped parsley may be added if desired.

Cauliflower or Cucumber Milk Soup. C., 5 g.; P., 3·3 g.; F., 3·7 g.

A small cauliflower or cucumber.
3½ oz. milk.
Salt and pepper.

Prepare and partially cook a small cauliflower in water in the top part of a double saucepan. Add the milk and finish cooking over boiling water. Sieve the cauliflower, return it to the soup, reheat and season to taste. Sliced cucumber may be substituted for cauliflower if desired.

Celery or Mushroom Milk Soup. C., 5 g.; P., 3·3 g.; F., 3·7 g.

Make as described on p. 269, using whole milk instead of skimmed.

FISH AND MEAT

Fish in Casserole. C., 5 g.; P., 16 g.; F., 10 g.

2½ oz. filleted sole, plaice, or dab.
3½ oz. milk.
¼ oz. butter or margarine.
Seasoning.
Slice lemon.
Chopped parsley.

Wipe the fish and sprinkle with pepper and salt. Place in a small greased casserole and cover with the milk and dabs of the butter. Cook in a moderate oven 20 to 30 minutes. If a casserole is not available the fish can be cooked between two plates over a saucepan of boiling water. Garnish with lemon and chopped parsley, and serve immediately.

Cold Fish Soufflé. C., 1·4 g.; P., 29 g.; F., 3 g.

4 oz. cooked fish.
1 anchovy.
Half hard-boiled egg.
1 oz. fish stock.
1 oz. milk (or whipped cream, making the recipe: C., 0·7 g.; P., 28·5 g.; F., 15·6 g.).
1 sheet gelatine.
Asparagus if desired.

Flake the fish and sieve with the anchovy and hard-boiled egg. Dissolve the gelatine in the fish stock. Season with salt, pepper, cayenne, and lemon. Add the milk or cream. Pour into a small soufflé case and leave to set. Serve in the case, or turn out and garnish with green salad and aspic. If preferred the mould may be lined with cooked, fresh or tinned asparagus, and the fish poured into this. When turned out, this will make a fish Charlotte Russe.

Sweetbreads in Casserole.

Sweetbread or brains may be cooked and served in the same way as fish in casserole (p. 283), ½ oz. onion being added if desired and ½ oz. less milk used (3 oz. only). Tripe cut in small pieces may also be used. It must be stewed for 2 hours.

Yorkshire Pudding. (*Family recipe, making six 2-oz. portions, each containing C., 10 g.; P., 4·5 g.; F., 6 g., which can be substituted for 2 oz. potatoes or ¾ oz. bread.*)

½ pint milk.
2 oz. flour.
2 eggs.
Seasoning.

Weigh the flour and put it with the seasoning into a basin. Break in the eggs, stir, and add part of the milk gradually, stirring to a smooth batter. Beat well for 10 minutes. Add rest of milk. Bake in a greased tin in a hot oven.

PUDDINGS CONTAINING 5 g. C.

Baked Custard. C., 5 g.; P., 7 g.; F., 6 g.

Half an egg.
3½ oz. milk.
½ grain saccharine.

It is usually more convenient to use a whole egg and make two custards.

Beat the egg well, mix with the milk. Sweeten with crushed saccharine. Divide the mixture into halves with a measuring glass. Bake them separately in two small pie-dishes standing in a pan of water. The oven should be cool, and the custards will take about an hour to set.

Boiled Custard. C., 5 g.; P., 6 g.; F., 7 g.

Half an egg. ½ grain saccharine.
3½ oz. milk.

It is easiest to make double quantity, weigh the custard and halve it.

Heat the milk in a double saucepan or in a jug in a saucepan of boiling water. Dissolve the saccharine in it. Beat up an egg. Pour the hot milk over it and stir. Return to the saucepan or jug. Stir constantly for two to three minutes until the custard forms a straight line across a metal spoon. Remove immediately from the boiling water. Flavour with vanilla or almond essence. Serve very cold.

Vanilla Ice Cream.

Make as boiled custard and freeze. It is best to use 14 oz. milk and two eggs, so as to fill a small freezer, then weigh out four portions each weighing 4½ oz. as required.

Floating Island. C., 5 g.; P., 9 g.; F., 10 g.

1 egg. ½ grain saccharine.
3½ oz. milk. Vanilla.

Separate the white from the yolk of the egg. Heat the milk and pour over the beaten yolk and crushed saccharine. Return to double saucepan and stir until the custard thickens. Flavour with vanilla and pour into a fireproof dish. Whip up the white stiffly and pile in the centre of the custard. If desired, brown quickly in a hot oven and remove immediately. Serve hot or cold.

Honeycomb Mould. C., 5 g.; P., 5 g.; F., 4 g.

3½ oz. milk. ½ grain saccharine.
1½ sheets gelatine. Lemon juice.

Dissolve the gelatine in the warm milk. Add saccharine and strain. Squeeze in a little lemon juice, sufficient to make the milk separate, pour into a wet mould and allow to set. Turn out and serve. A beaten egg white may be folded into the mixture when cool if desired.

Milk Jelly. C., 5 g.; P., 5 g.; F., 4 g.

3½ oz. milk. ½ grain saccharine.
¾ to 1 sheet gelatine. Flavouring.

Bring the milk to the boil. Sweeten with half a saccharine tablet crushed up. When off the fire add the gelatine. Stir till this is dissolved, strain, and leave to set in a cup or mould. Turn out after placing mould in hot water for a moment or two. This jelly may be flavoured by cooking orange or lemon rind in the milk; or with vanilla, almond essence, or strong coffee added after straining.

Junket. C., 5 g.; P., 3·3 g.; F., 4 g.

3½ oz. milk.	Saccharine.
½ teaspoonful rennet.	Flavouring.

Warm the milk to blood temperature. Sweeten with saccharine. Flavour with vanilla or other essence to taste and place in a glass dish. Stir in the rennet and leave to stand in a warm place.

Orange Jelly. C., 5 g.; P., 2 g.; F., 0 g.

2 oz. strained orange juice.	Lemon rind.
1 to 1½ sheets gelatine.	½ grain saccharine.

Boil 4 oz. water with a piece of lemon rind until the volume is reduced to 2 oz. Add half a saccharine tablet and dissolve the gelatine in the liquid. Add the orange juice. Leave to set in a mould. Turn out and serve. Lemon juice may be added to the orange juice if desired, more saccharine being used if necessary. One and a half to two sheets of gelatine will be required to set this jelly.

Fruit Jelly. C., 5 g.; P., 2 g.; F., 0 g.

Juice of 1 lemon.	1½ sheets gelatine.
Portion of raw fruit containing 5 g. C.	Lemon rind.

Boil ¼ pint water with lemon rind to flavour. Add the juice of a lemon and saccharine to taste. Dissolve one and a half sheets gelatine in the liquid. Slice 1 oz. banana and grapes or other fruit containing 5 g. C. into a mould, and pour the jelly on to them when nearly cold. Turn out and serve.

Fruit Whip. C., 5 g.; P., 3 g.; F., 0 g.

Portion of raw or unsweetened stewed fruit containing 5 g. C. (without juice).	Lemon juice.
	Saccharine
	White of one egg.

Sieve the fruit and weigh out an amount containing 5 g. C. Sweeten with saccharine and add lemon juice if desired. Just before serving fold in the stiffly beaten white of an egg. Fresh strawberries (2¾ oz.) or raspberries (3 oz.) may be crushed and mixed with egg white as above. Saccharine should not be used with strawberries as the combination produces a very unpleasant taste.

Orange Salad. C., 5 g. (to serve with roast duck).

Slice orange crosswise. Weigh 2 oz. Serve on lettuce and decorate with a few unsweetened cooked cranberries if desired. A little lemon or vinegar, liquid paraffin and saccharine may be poured over. If fat is not limited a little oil may be mixed with the vinegar instead of liquid paraffin.

PUDDINGS CONTAINING 15 g. C.

Apple Charlotte. C., 15 g.; P., 1·4 g.; F., 0·2 g.

⅔ oz. bread-crumbs. 4 oz. stewed apple.

Grease a small pie-dish. Line it with half the crumbs. Fill with stewed apple, cover with crumbs, and bake for about 10 minutes in a hot oven. A little butter may be put over the top if allowed in the diet.

Baked Apple. C., 15 g.; P., 0·6 g.; F., 0 g.

Weigh out 6 oz. raw apple. Remove core, insert a clove, and slit the skin right round the apple. Stand in a tin in a little water and bake till tender.

Banana Jelly. C., 15 g.; P., 2·6 g.; F., 0 g.

3 oz. lemon jelly. 3 oz. banana.

Make lemon jelly as for fruit jelly (p. 286), using 3 oz. liquid only. Sieve 3 oz. banana, mix with the jelly, colour carefully with cochineal. Mould and turn out when set.

Fruit Jelly. C., 15 g.; P., 3 g.; F., 0 g.

3 oz. lemon jelly. 1 oz. banana.

1 oz. grapes. 2 oz. orange.

Use 3 oz. lemon jelly as for fruit jelly (p. 286). Peel and stone grapes, slice banana, and cut up orange or 2½ oz. fresh peach or other fruit to make a total containing 15 g. C. Put these in a mould or glass dish. Pour a little of the jelly over them and the rest when this has set. Turn out if desired. A few cooked cranberries sweetened with saccharine may be used to decorate the jelly.

Fruit Salad. C., 15 g.; P., 1 g.; F., 0 g.

The above fruit mixture may be served as fruit salad, a little lemon juice and saccharine being added if necessary.

Queen of Puddings. C., 15 g.; P., 10·5 g.; F., 10 g.

3½ oz. milk. 1 egg.

⅔ oz. bread-crumbs. ½ grain saccharine.

Sugarless marmalade if desired.

Beat the yolk of egg with the milk and pour over the bread-crumbs and allow to stand 20 to 30 minutes if possible. Grated orange or lemon rind may be mixed with the crumbs if desired. Add saccharine and bake in a moderate oven till set. Spread with sugarless marmalade if available, and pile the stiffly beaten egg white on the top. Brown in the oven and serve hot or cold.

Rice or Tapioca Pudding. C., 15 g.; P., 5·0 g.; F., 5·5 g.

½ oz. rice, tapioca or similar cereal. ½ grain saccharine.

Nutmeg if desired.

¼ pint milk.

Weigh and wash the rice or tapioca. Add the crushed saccharine and the milk and bake in a moderate oven, stirring in the first two skins.

Creamed Rice or Tapioca. C., 15 g.; P., 5·0 g.; F., 5·5 g.

½ oz. rice, tapioca or similar cereal.
½ pint milk.
½ grain saccharine.
Nutmeg if desired.

Bring the milk to the boil in a double saucepan. Add the cereal and cook till tender. Serve hot or cold. Lemon rind cooked with the rice, or vanilla essence added when cool will improve the flavour.

Bread-and-Butter Pudding. C., 15 g.; P., 7·5 g.; F., 7·5 g.

¾ oz. bread.
3½ oz. milk.
Half an egg.
½ grain saccharine.

Beat up the milk with the egg. Add saccharine. Weigh out the bread. Butter it if fat is not strictly restricted. Cut in squares and place in a small pie-dish. Pour custard over them. Allow to stand for about quarter of an hour. Place in a pan of water and bake in a slow oven until firm.

MISCELLANEOUS

Sugarless Marmalade. (*From "The Diabetic Life," R. D. Lawrence.*)

1½ lemons.
Peel of 1 large orange.
5 grains saccharine.
7 oz. water.
¼ oz. gelatine.

Wash the fruit, finely shave the skin, avoiding pith, and chop. Add the juice and pulp of the lemons. Put into a saucepan and cover with the water. Bring to boiling-point and simmer for 2 hours, adding more water if necessary. Cut the gelatine into fine strips and add it with the saccharine to the mixture. Stir for 10 minutes. Put into a jar and leave to set.

This marmalade is of negligible food value if taken in moderation. It will only keep for a few days.

Bran Biscuits.

2½ cupfuls of washed and dried bran.
2 heaped tablespoonfuls India gum.
2 tablespoonfuls liquid paraffin.
2 grains saccharine.
¼ teaspoonful salt.
Boiling water or hot coffee.

Mix dry ingredients thoroughly. Add oil and sufficient hot water or coffee to make a mixture that will mould easily. Grease flat tins with liquid paraffin and spread with mixture ¼ inch deep. Mark into squares and bake in a slow oven till dry.

Note on the preparation of washed bran.

Tie about ½ lb. bran from the corn-chandler's in butter muslin so that it is packed very loosely. Put into a saucepan in a large volume of water and bring to the boil. Cool in cold water, then squeeze out as much water as possible. Boil 2 or 3 more times in fresh water until a sample of the bran shows no blue colour when a few drops of iodine are added.

RESTRICTED PROTEIN RECIPES EQUIVALENT TO ONE EGG (6 TO 7 G. PROTEIN)

Individual Servings

Fish and Potato Cake.

Flake 1½ oz. fish, mix well with about 2 oz. mashed cooked potatoes and ½ oz. melted butter or margarine. Form into a cake, coat with breadcrumbs or flour and water mixed to a coating consistency. Fry in shallow fat.

Roes on Toast.

1 oz. herring roe. Fry and serve on hot buttered toast.

Salmon Salad.

Flake 1 oz. of salmon (fresh or tinned) and mix with salad dressing (see below). Serve on lettuce leaves. Decorate with cucumber and tomato to taste.

Kedgeree.

Mix 1½ oz. flaked fish with two tablespoonfuls of cooked rice and sauce made from ½ oz. melted butter or margarine, ½ oz. flour and fish stock or water. Heat gently, stirring all the time. Season to taste, and serve very hot.

Fish Salad.

Mix 1½ oz. flaked fish with one tablespoonful of cooked rice, chopped celery, tomatoes, or capers and salad dressing (see below). Turn into small basin and place a saucer with a weight on top of it. Turn out on to a bed of lettuce or other salad.

Salad Dressing with Negligible Protein Content.

Mix half a tablespoonful of cornflour with a little water. Add sugar, pepper, mustard, and salt (if allowed) to taste. Boil with ¼ pint of water, add ½ oz. margarine or butter, or one teaspoonful of salad oil, and vinegar to flavour. Use when cold.

Minced Chicken (or Rabbit) on Toast.

Mince 1 oz. chicken or rabbit, moisten with gravy and serve on hot buttered toast.

Baked Egg and Tomato.

Butter a small fireproof dish. Cover the bottom with sliced tomato, and bake for five minutes. Break an egg carefully on to the tomato and bake. Cream may be poured on the egg a few minutes before serving if desired.

Scotch Egg.

Cover a hard-boiled egg with cooked potato, mashed and seasoned. Coat with bread-crumbs and fry a golden brown in deep fat.

Scrambled Egg or Cheese and Tomatoes.

Melt ½ oz. butter or margarine in a saucepan. Slice a large tomato and cook with the butter for a few minutes. Add a well-beaten egg and stir until cooked. 1 oz. grated cheese may be used instead of the egg.

Risotto with Chicken.

Melt ½ oz. butter or margarine in a small saucepan. Put into this one tablespoonful of raw rice and a little onion and fry a golden brown. Add about ½ pint of water, vegetable stock, or Marmite or Yeastrel, and cook gently until the rice is soft, adding water if necessary. A large tomato or some slices of green pepper may be added when the rice is nearly cooked if desired. Cut 1 oz. of cooked chicken in dice and mix with the rice, season with salt (if allowed) and pepper, and serve very hot.

Risotto with Cheese.

Cook rice as in preceding recipe, adding the tomato. Grate 1 oz. of cheese, preferably Parmesan, cook with the risotto a few minutes before serving, or serve the risotto plain, scattering the grated cheese over it at the last minute.

Macaroni Cheese with Tomatoes.

Cook about six sticks of macaroni (or eight or nine of spaghetti) in boiling salted water. Make tomato sauce by cooking two tomatoes in ½ pint water. Sieve them and thicken the resulting pulp with cornflour or fat and flour. Tomato purée may be used instead. Mix the macaroni with the tomato sauce, and place in a fireproof dish. Grate 1 oz. cheese on to this and brown in a hot oven or under the grill. Serve immediately. If preferred the grated cheese can be mixed and cooked with the macaroni and tomato for a few minutes.

Scalloped Tomatoes with Cheese.

Grease a small fireproof dish and fill it with alternate layers of breadcrumbs and tomatoes. Put small pieces of butter or margarine on top, and bake in a quick oven. Grate 1 oz. cheese over the tomatoes and brown just before serving.

Cream Cheese and Tomato Savoury (containing 3 g. protein. Approx. ½ portion).

Mix 3 oz. cream cheese with sufficient tomato juice to flavour. Mould into a ball. Serve on lettuce leaves or with biscuits.

PUDDINGS WITH NEGLIGIBLE PROTEIN CONTENT

Butterscotch Sago.

2 oz. sugar.
1 oz. butter or margarine.
Lemon juice.
½ oz. sago.
¼ pint water.

Melt together butter or margarine and sugar in a double saucepan. Add water and sago when the mixture is hot. Cook till soft, stirring occasionally. Add lemon juice to taste when cool.

Semolina Whip, p. 280.

Fruit Mould, p. 280.

Fruit Sago, p. 280.

LOW PURINE RECIPES

Creamed Egg.

1 egg.
2 oz. thick white sauce.
Cheese if desired.
Salt and pepper.

Boil the egg hard, chop or slice it. Heat the white sauce. Add grated cheese to taste if desired. Stir in the hard boiled egg, season to taste, and serve on hot buttered toast.

Welsh Rarebit.

¼ pint thick white sauce.
2 oz. grated cheese.
2 slices toast.
Butter.
Salt and pepper.

Melt the grated cheese in the white sauce. Season to taste. Serve very hot on buttered toast.

Cheese Balls.

6 large potatoes.
1 egg.
1 oz. margarine.
Blocks of cheese spread with a little mustard.
Egg and bread-crumbs.
Seasoning.

Boil or steam the potatoes and pass through a sieve into a basin with the margarine. Add egg and seasoning and mix. Wrap thickly round the cheese, coat with egg and bread-crumbs, fry in deep fat, drain, garnish, and serve hot.

The following low protein recipes (p. 290) are suitable for use with low purine diets. Cheese and eggs may be used freely, and not restricted as in the low protein recipes.

Scotch Egg.

Cream Cheese and Tomato Savoury.

Risotto with Cheese.

Macaroni Cheese with Tomatoes.

Scalloped Tomatoes with Cheese.

Puddings, except those made with coffee, are suitable for low purine diets.

RECIPES FOR LOW SALT DIETS

Synthetic Milk with Low Sodium Chloride Content.

Stock Solution A.

Potassium hydroxide, 5·6 per cent.

Stock Solution B.

Potassium dihydrogen phosphate KH_2PO_4	6·1 g.	made up to 1,000 c.c.
Calcium lactate	12·4 g.	
Magnesium sulphate $MgSO_4.7H_2O$	4·0 g.	
Ferrous sulphate $FeSO_4.7H_2O$	0·2 g.	

Ashless casein (Glaxo laboratories).
Lactose.
Cream (50 per cent.).

To prepare half a litre of milk (18 oz.) take 20 g. of ashless casein, add 430 c.c. of water and 13 c.c. of potassium hydroxide (stock solution A). Heat to boiling point with constant stirring. Add 50 c.c. of stock solution B and boil again. Allow to cool, add 25 g. of lactose and 2 oz. (56 g.) of cream and stir vigorously.

If the prescribed conditions are adhered to closely a smooth and homogeneous preparation will be obtained. An aluminium saucepan should not be used in the preparation of the milk.

Cream Cheese.

If fresh cream is used it should be left to stand in a warm place for two days to ripen. Then hang it in a muslin bag for several days, scraping the moisture from the outside of the bag occasionally. After two days it is advisable to cut the cheese in half and reverse the halves in the muslin in order to squeeze out as much buttermilk as possible.

Low-Salt Casein Bread.

22½ oz. flour.	½ oz. yeast.
5½ oz. ashless casein.	¾ pint water.

Mix the casein and flour in a warm basin. Mix the yeast with the water (lukewarm) and pour into a well made in the flour and casein mixture. Sprinkle a little of the flour over the top of the liquid, cover basin and leave to stand in a warm place for 25 minutes. Mix and knead well on a warm board. Put back into basin, cover with cloth, and leave in a warm place for two hours. Divide the dough into loaves, put into tins previously greased, floured, and warmed. Leave in a warm place for 45 minutes. Then bake in a hot oven for about 25 to 30 minutes.

Note.—Bread may be made in the usual way without the addition of salt if extra protein is not required.

Mince and Tomato Pie.

- ½ lb. minced raw mutton, steak or veal.
- 2 oz. chopped onions.
- 8 oz. tomatoes.
- 2 oz. salt-free butter.
- Pepper to taste.
- 1 tablespoon bread-crumbs (low-salt).

Wash the meat very thoroughly in a fine sieve in running cold water. Then boil, changing the water twice, and drain. Fry the onion in 1 oz. of butter (salt-free). Butter a deep fireproof glass dish and put into it a layer of tomato, a sprinkling of onion and a layer of meat. Continue until all is used up. Bake for one hour. Then sprinkle with bread-crumbs, add the remains of the butter, and bake till brown.

Stuffed Vegetable Marrow.

- ½ lb. raw minced mutton, steak, or veal.
- 4 oz. vegetable marrow.
- 2 oz. grated onion.
- 1 oz. boiled rice.
- 1½ oz. bread-crumbs (low-salt).
- 1½ oz. butter (salt-free).

Prepare the meat as described under "Mince and Tomato Pie." Cut both ends of the marrow, remove the seeds, and scoop out ready for stuffing. Boil the rice and drain well. Mix meat, rice, and grated onion Add pepper, and stuff the marrow with the mixture. Sprinkle with bread-crumbs and dabs of butter and bake for half an hour.

Mince and Chestnut Rissoles.

- ½ lb. raw minced meat.
- 2 oz. sieved chestnuts or chestnut flour.
- 1 lb. vegetable marrow.
- 1 oz. flour.
- 1 oz. low-salt milk.
- 1 oz. bread-crumbs (low-salt).

Prepare mince as described under "Mince and Tomato Pie." Boil, peel, and sieve the chestnuts. Make mince and chestnuts into rissoles with the bread-crumbs and fry in butter. Peel marrow, remove seeds, cut into half rounds and parboil. Dip in batter made with milk and flour and fry in salt-free butter. Serve round the rissoles.

Chutney.

- 1 pint white wine vinegar.
- 1½ lb. cooking apples.
- 1 lb. onions.
- ½ lb. seedless raisins.
- 1 lb. Demerara sugar.
- ½ teaspoon pepper.
- ½ teaspoon mustard.
- ½ teaspoon ground ginger.
- 1 teaspoon allspice.

Peel and cut up apples and boil in the vinegar till soft. Then add sugar, onions (cut into small pieces), raisins and spices, and boil for a further half-hour with frequent stirring. Pour into jars and tie down when cold.

Curry Powder.

2 drachms turmeric.	2 drachms coriander seed.
4 chillies.	2 grains cumin.
2 grains mustard seed.	2 drachms poppy seed.

Pound in a mortar. Use as ordinary curry powder with washed minced meat.

Serve with boiled rice.

Shortbread.

4 oz. flour.	4 oz. salt-free butter.
2 oz. ground rice.	2 oz. castor sugar.

Mix flour and sugar on a board, and work this into the butter. (Add no liquid.) Roll out till about ¼ inch thick, mark with a knife, and place in very lightly greased tin. Prick all over with a fork. Bake in moderate oven 40 to 50 minutes.

Toffee.

½ lb. granulated sugar.	1 teaspoonful white wine vinegar.
1 oz. salt-free butter.	2 tablespoonsful golden syrup.

Place all the ingredients in a saucepan with a tablespoonful of water. Heat gently and stir occasionally till the contents are melted. Boil rapidly for 10 minutes, or until a small portion, dropped into cold water, becomes brittle. Pour into buttered tins or dishes and mark into squares while still warm.

Fondant (also suitable for low calcium diet).

12 to 14 oz. sugar.	Peppermint or lemon essence.
5 oz. hot water (distilled for low Ca diet).	

Dissolve the sugar in the water and boil until a small portion, dropped into cold water, forms a soft ball. Cool, add flavouring and heat until smooth and of the usual fondant consistency. Spread in a tin and cut into shapes.

LOW POTASSIUM RECIPES

Note on Low Potassium Diets.

Foods which contain appreciable amounts of potassium should be cut up finely and cooked in plenty of salted water so that the potassium may dissolve into it and be thrown away. Meat cut finely for stewing will retain its flavour better if it is tied in a square of parchment paper and cooked in plenty of water. The water must be thrown away, but gravy (see below) should be served with the meat. Suitable parchment paper can be obtained from the British Vegetable Parchment Mills, Gravesend, Kent.

Salt (NaCl) should be used wherever possible in dishes for patients suffering from Addison's Disease.

Mustard, curry powder, ginger, and meat and yeast extracts contain appreciable amounts of potassium, and should not be used unless their value is reckoned in the diet.

White sugar should always be used in preference to brown.

SOUP AND SAVOURY DISHES

Tripe and Onions. 0·05 g. Potassium.

3 oz. tripe.
1½ oz. onions (boiled).
½ oz. cornflour.
½ oz. margarine.
½ pint water.
Salt to taste.

Cut the tripe in neat pieces, cut up the onions and place them in a saucepan with water and salt. Stew for about two hours until tender. Melt the margarine, stir in the cornflour to make a smooth paste, add liquor from the tripe, stir and cook for a few minutes, pour this over the tripe and stew for another 5 minutes.

Onion Soup. 0·05 g. Potassium.

2 oz. onions.
½ oz. cornflour.
½ oz. margarine.
½ pint water.
Salt to taste.

Slice the onions and fry them lightly in the margarine. Add the cornflour, stirring well, and then the water and salt. Cook gently for about half an hour until the onions are tender.

Low Potassium Gravy. Negligible Potassium Content.

½ oz. cornflour.
½ oz. margarine or clarified fat.
½ pint water.
Browning.
Salt.
Pepper if desired.

Melt the fat, mix in the cornflour to a smooth paste, add the water, stirring all the time. Cook a few minutes, then add seasoning and browning.

Cream Cheese Salad. 0·05 g. Potassium.

1½ oz. cream cheese.
Salt and pepper.
½ oz. lettuce.

Season the cream cheese with salt and pepper. Form into balls and serve on the lettuce.

Cream Cheese and Onion or Olive Salad. 0·05 g. Potassium.

1½ oz. cream cheese.
½ oz. raw onion or ½ oz. olives (without stones).
½ oz. lettuce.
Salt and pepper.

Chop the onion or olive finely, mix with the cream cheese, and season with salt and pepper. Form into balls and serve on the lettuce or with ½ oz. unsweetened biscuits.

PUDDINGS

Custard. 0·025 g. Potassium.

½ oz. custard powder.
⅔ oz. cream.
7 oz. water.
Sugar to taste.

Mix the custard powder with a little of the water to a smooth paste. Bring the remainder to the boil. Add this to the custard powder, and sugar to taste. Stir and cook a few minutes until the mixture has thickened and tastes cooked. Add the cream when cool. Stir well and serve.

Creamed Rice. 0·05 g. Potassium.

½ oz. rice.
1 oz. cream.
Sugar.
Water.

Wash the rice and cook it in about 7 oz. water with sugar in a double saucepan or in the oven. When no longer boiling stir in the cream. Vanilla or almond essence may also be added if desired. This pudding can be served hot or cold.

Rice and Pear. 0·05 g. Potassium.

1 oz. raw pear
or
1½ oz. stewed pear.
½ oz. rice.
½ oz. cream.
Sugar to taste.
Glacé cherry.

Cook the rice in sugar and water. Stir in the cream when cool, and place in a small dish. Slice the pear and place it on the rice. Decorate with a glacé cherry.

The pear can be coated with caramel (see recipe p. 298) if desired

Pear Caramel. 0·05 g. Potassium.

2½ oz. stewed pear.
Sugar for caramel.

Coat the pear with caramel (see recipe p. 298).

Caramel. Contains no Potassium.

Put sugar in a strong saucepan or frying-pan and allow it to liquefy over a medium heat, stirring all the time. Remove immediately it becomes light brown, and pour over the fruit to be coated, or add water and continue boiling for a few minutes. The liquid caramel may be turned into sauce by thickening it with 1 oz. cornflour to a pint of caramel.

Some cooks prefer to cook the sugar water with and to stir the mixture only after this has evaporated.

Apple Tapioca. 0·05 g. Potassium.

1½ oz. apple.
½ oz. lemon juice.
Sugar and lemon rind to taste.
½ pint water.
½ oz. tapioca or sago.

Cut the apple in slices. Stew in water with the tapioca or sago, sugar and lemon rind until the tapioca is clear. Add the lemon juice and serve cold. Decorate with a glacé cherry if desired.

The apple may be omitted and ½ oz. lemon juice used instead of ½ oz. to make lemon tapioca.

Gooseberry Fool. 0·05 g. Potassium.

1 oz. sieved and sweetened stewed gooseberries.
½ oz. cornflour.
½ oz. cream.
7 oz. water.

Mix the cornflour to a smooth paste with a little water. Heat the rest, add the cornflour and stir a few minutes until cooked. Stir in the sieved gooseberries, add the cream, and more sugar if necessary. Serve very cold.

Plain Jelly. 0·015 g. Potassium.

7 oz. plain jelly, preferably not made with fresh fruit, prepared in the ordinary way from packet jelly, contains approximately 0·015 g. Potassium.

Rice and Jelly. 0·025 g. Potassium.

½ oz. rice.
½ oz. cream.
2 oz. jelly.
Sugar.

Cook the rice with a little sugar in water. Drain it and mix it with the cream. Place in a wetted mould. Pour over 2 oz. of made jelly (preferably not made from fresh fruit). Stir and allow to set. Turn out and serve.

Butterscotch Mould with Biscuits. 0·035 g. Potassium.

½ oz. cornflour.
½ oz. margarine.
1 oz. sugar.
½ oz. lemon juice.
¼ pint water.
½ oz. sweet biscuits.

Melt the margarine and the sugar together. Blend the cornflour with a little of the water, bring the rest to the boil with the margarine and sugar. Add the cornflour and cook for a few minutes after the mixture has thickened. Add the lemon juice when cooling. Mould and serve with ½ oz. sweet biscuits.

Strawberry Whip. 0·016 g. Potassium.

½ oz. cornflour.
1½ oz. packet jelly (strawberry flavour).
½ oz. sugar.
¼ pint water.
Strawberry essence.

Mix the cornflour with a little of the cold water. Put the rest into a saucepan with the jelly and sugar, and when melted, add the cornflour. Stir well, and allow to boil for 1 minute. Turn into a basin, add a few drops of strawberry essence, and when cold but still liquid whip until frothy. Serve in a glass dish and decorate with a glacé cherry if desired. The cornflour and strawberry essence can be omitted, when the jelly will contain only 0·005 g. potassium.

Snow Cake. 1 oz. contains 0·019 g. Potassium.

4 oz. cornflour.
2 oz. margarine.
2 oz. sugar.
2 egg whites.
½ teaspoon baking powder.
½ teaspoon vanilla, almond or lemon essence.

Sift the cornflour, and cream the fat and sugar very thoroughly. Beat the egg whites until stiff and add them to the creamed mixture, alternately with the cornflour. Beat very well, add the flavouring essence, and lastly the baking powder. Turn into a tin, previously greased and lined with greased paper. Bake 40 to 45 minutes in a moderate oven.

Jellied Apples. 0·05 g. Potassium.

3 oz. stewed apples.
½ oz. cornflour.
Sugar to taste.
Lemon rind.
Water.

Peel and core two medium sized apples. Stew them gently in ¼ pint water, with sugar and lemon rind, keeping them whole. Drain, weigh out 3 oz. and place in a glass dish. Mix the cornflour with a little water to a smooth paste. Boil ¼ pint water with sugar and lemon rind for about 10 minutes. Add the cornflour after removing the lemon rind, boil for a few minutes, colour with cochineal if desired, and pour over the apple.

CHAPTER XIII

TABLES

TABLE I

THE CHEMICAL COMPOSITION OF FOODS

All figures have been derived from the following sources :

McCance and Shipp, 1933. *The Chemistry of Flesh Foods and their Losses in Cooking.*

McCance, Widdowson and Shackleton, 1936. *The Nutritive Value of Fruits, Vegetables and Nuts.*

McCance and Widdowson, 1940. *The Chemical Composition of Foods.*

Fixsen and Roscoe, 1938. *Tables of the Vitamin Content of Human and Animal Foods.*

Fixsen, 1938. *The Vitamin Content of Human Foods as affected by Processes of Cooking and Canning.*

The figures show the composition of 1 oz. (28·4 grams) of the *edible portion*, except where otherwise stated.

Vegetables are cooked *without* added salt or soda. Fruit is stewed *without* sugar. Fried fish is coated with batter and crumbs, flour or oatmeal before cooking.

Where the food is known to have had salt added during preparation, the figures for sodium and chlorine are given in brackets.

The composition of a number of cooked dishes, cakes, puddings, etc., is included. These are marked *, and the recipes used in their preparation and the method of cooking are given on pp. 250–263. They are prepared with sugar, salt or baking powder in the usual way.

The column headed " Vitamin A," includes Vitamin A and carotene. The conversion factor 1·6 has been used for converting micrograms of carotene to International units of Vitamin A.

Vitamin B_2 is the riboflavine or lactoflavine part of the Vitamin B complex.

Vitamin C is synonymous with ascorbic acid.

The values obtained by different workers for the vitamin content of foods sometimes vary enormously. Where the highest figure is not more than twice the lowest the results have been averaged and a single figure given. Where the variation is greater than this the range is shown.

Where vitamin determinations have been made on the raw food, but the rest of the analysis applies to the food after cooking, the vitamin values are marked (R).

Tr. = trace (of no quantitative dietetic significance).

— = not estimated. The constituent may or may not b—

3(R)
—
—

THE CHEMICAL COMPOSITION OF FOODS

No.	Food	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
1	All-Bran, Kellogg's	16·5	3·9	1·3	96	(345)	271	23·4	119.3
2	Apples, eating, raw (weighed with skin and core)	2·6	0·1	Tr.	11	0·5	26	0·8	1·0
3	Apples, cooking, baked	2·8	0·1	Tr.	12	0·6	36	1·0	0·9
4	Apples, cooking, stewed	1·2	Tr.	Tr.	6	0·3	16	0·5	0·4
5	Apple Charlotte*	7·9	0·4	4·5	76	(21)	28	2·1	1·6
6	Apple dumpling*	8·0	0·7	2·7	61	(12)	31	1·9	1·9
7	Apple pudding*	9·0	0·8	3·6	74	(14)	21	1·8	2·0
8	Apple tart*	9·3	0·7	2·5	64	(20)	26	1·7	1·8
9	Apricots, fresh, raw (weighed with stones)	1·7	0·2	Tr.	8	Tr.	84	4·5	3·2
10	Apricots, dried, raw	12·3	1·4	Tr.	56	16·0	535	26·3	18·6
11	Apricots, dried, stewed	5·1	0·6	Tr.	23	6·7	223	10·9	7·7
12	Apricots, tinned in syrup	4·5	0·1	Tr.	19	0·3	73	3·4	2·0
13	Arrowroot	25·7	0·1	Tr.	106	1·4	5	2·0	2·2
14	Artichokes, Jerusalem, boiled	0·9	0·5	Tr.	6	0·7	119	8·6	3·2
15	Asparagus, boiled (weighed as served)	0·2	0·5	Tr.	3	0·3	34	3·7	1·5
16	Bacon, raw	0·0	4·0	10·6	115	(348)	71	3·8	4·1
17	Bacon, fried	0·0	6·9	14·2	159	(837)	139	9·1	7·2
18	Bananas	5·5	0·3	Tr.	24	0·3	99	1·9	11·9
19	Banana custard*	5·1	0·7	0·7	31	8·8	64	23·9	6·7
20	Barley, Pearl	23·1	2·4	0·5	109	0·7	35	2·8	5·7
21	Beans, baked, tinned	4·9	1·7	0·1	28	(168)	98	17·4	10·4
22	Beans, Broad, boiled	2·0	1·2	Tr.	13	5·6	66	6·0	7·8
23	Beans, Butter or Haricot, boiled	4·8	2·0	Tr.	28	4·4	102	11·8	11·1
	Beans, French or Runner, boiled	0·3	0·2	Tr.	2	1·0	27	9·2	3·3
	Corned	0·0	6·3	4·3	66	(392)	33	3·6	8·2
	XXVII. ½, raw	0·0	5·5	3·0	50	19·6	95	1·5	6·9

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
3·06	0·13	231·5	51·6	(574)	12		—	—	—	—	1
0·06	0·03	1·7	1·3	0·3		6	—	9	—	0·2–3·5	2
0·09	0·03	4·8	0·9	1·4		7	—	8	—	0·9	3
0·04	0·01	2·1	0·4	0·6		3	—	5	—	1·8	4
0·12	0·03	6·4	3·6	(31)		4	—	—	—	—	5
0·12	0·03	9·3	7·3	(20)	1		—	—	—	—	6
0·10	0·02	8·8	8·6	5·8		1	—	—	—	—	7
0·10	0·02	8·3	6·8	(33)	1		—	—	—	—	8
0·10	0·03	5·6	1·6	Tr.		22	840	—	—	3·4	9
1·16	0·08	33·5	46·6	9·8		119	2,410	—	0·016	—	10
0·48	0·03	13·9	19·4	4·1		49	1,000	—	0·007	—	11
0·20	0·01	3·7	0·3	0·4		20	—	—	—	—	12
0·55	0·06	7·8	0·5	2·0	1		—	—	—	—	13
0·12	0·03	9·4	6·1	16·4		23	—	—	—	1·7(R)	14
0·13	0·03	12·0	6·6	4·5	1		—	—	—	1·2	15
0·37	0·05	34·6	46·0	(530)	21		—	—	—	—	16
0·86	—	66·4	85·0	(1265)	43		—	—	—	—	17
0·12	0·05	8·0	3·7	22·3		23	—	14	0·002	0·3–4·3	18
0·07	0·02	21·3	6·9	26·3		12	—	—	—	—	19
0·19	0·03	58·3	30·5	29·7	50		—	—	—	—	20
0·58	0·07	52·1	14·4	(230)		8	—	—	—	—	21
0·28	0·12	28·1	7·7	4·0		5	—	—	—	2·2	22
0·59	0·05	29·5	13·3	0·5		16	—	28(R)	—	—	23
0·17	0·02	3·7	2·6	2·8		10	196	—	—	0·3–6·3(R)	24
2·78	—	33·8	60·0	(590)	39		—	—	—	—	25
1·22	—	78·2	57·0	19·9	52		17	14	—	—	26

THE CHEMICAL COMPOSITION OF FOODS—*(continued)*

No.	Food	Grams. per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
27	Beefsteak, grilled	0·0	7·2	6·1	86	19·0	105	2·6	7·2
28	Beefsteak pudding*	6·1	2·9	3·7	71	(223)	47	2·1	4·4
29	Beef, topside or sirloin, roast. Lean only	0·0	7·6	3·9	67	20·7	103	1·8	7·5
30	Beef, salt, boiled	0·0	7·9	5·7	86	(417)	82	6·6	5·7
31	Beef, stewed	0·0	8·7	2·4	58	10·8	43	0·9	6·0
32	Beer or ale (per pint)†	18·2	1·8	Tr.	290	98·0	286	69·0	54·2
33	Beetroot, boiled	2·8	0·5	Tr.	14	18·2	99	8·5	4·8
34	Biscuits, Cream crackers	16·3	2·6	9·4	164	(124)	36	5·1	5·4
35	Biscuits, Digestive	18·7	3·0	5·8	143	(124)	88	12·4	9·1
36	Biscuits, Plain mixed	21·4	2·3	3·8	132	(69)	48	12·9	4·1
37	Biscuits, Rusks	20·8	1·9	2·4	116	(59)	80	24·6	7·7
38	Biscuits, Sweet mixed	18·9	1·7	8·7	166	(61)	39	7·7	4·0
39	Biscuits, Water	20·7	3·4	3·5	131	(134)	40	6·3	5·4
40	Blackberries, raw	1·8	0·4	Tr.	9	1·1	59	18·0	8·4
41	Blackberries, stewed	0·9	0·2	Tr.	5	0·5	30	9·1	4·2
42	Blackcurrants, raw	1·9	0·3	Tr.	9	0·8	106	17·2	4·9
43	Blackcurrants, stewed	1·3	0·2	Tr.	6	0·5	74	12·0	3·4
44	Black treacle	19·1	0·3	0·0	80	27·2	416	140·5	40·9
45	Blancmange*	5·2	0·9	1·1	35	12·8	44	33·1	3·8
46	Bloater, grilled (weighed with bones)	0·0	4·7	3·7	54	(148)	94	25·9	9·4
47	Bournvita	19·2	3·2	2·1	96	102·0	188	25·3	48·2
48	Bovril	0·0	8·3	0·2	36	(1580)	1020	14·8	48·0
49	Bread, Currant	13·0	2·0	1·0	71	(47)	71	10·7	7·0
50	Bread, Hovis	11·5	3·2	1·1	70	(129)	69	7·8	22·4
51	Bread, Malt	14·0	2·6	0·9	77	(78)	108	15·0	22·0
2	Bread, White	15·2	2·2	0·2	74	(126)	33	6·6	6·3
3	Bread, White, toasted	18·1	2·7	0·2	87	(150)	39	7·8	7·5

† Contains 29·7 c.c. alcohol per pint.

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
1·48	—	86·0	76·0	18·2	66		—	—	—	—	27
0·53	—	37·3	30·3	(318)	19		—	—	—	—	28
1·42	0·06	81·0	80·0	19·3	64		—	—	—	—	29
1·05	0·05	69·0	83·0	(660)	71		—	—	—	—	30
1·45	—	65·0	93·0	11·0	82		—	—	—	—	31
0·35	0·48	101·0	130·0	195·0	6		—	17	—	—	32
0·20	0·04	10·1	6·3	21·5		25	14	20	—	1·8	33
0·27	0·04	23·2	22·1	(200)	15		—	—	—	—	34
0·45	0·07	38·0	20·5	(123)		18	—	—	—	—	35
0·35	0·02	11·6	23·7	(74)		9	—	—	—	—	36
0·76	0·06	22·8	30·5	(49)		17	—	—	—	—	37
0·24	0·03	18·8	9·1	(105)	4		—	—	—	—	38
0·27	0·04	24·6	28·4	(192)	11		—	—	—	—	39
0·24	0·03	6·8	2·6	6·3		24	—	—	—	—	40
0·12	0·02	3·4	1·3	3·2		12	—	—	—	—	41
0·36	0·04	12·3	9·4	4·2		25	114	—	—	56·0	42
0·25	0·03	8·6	6·6	2·9		17	—	—	—	33·0	43
2·60	0·12	8·7	19·5	231·0		140	—	—	—	—	44
0·05	0·01	26·8	8·0	27·5		7	—	—	—	—	45
0·46	—	74·6	65·0	(238)	156		—	—	—	—	46
0·94	0·28	117·0	69·0	52·5		13	—	—	—	—	47
3·44	0·24	369·0	103·0	(1950)		145	—	—	—	—	48
0·67	0·03	34·4	16·9	(81)	6		—	—	—	—	49
0·84	0·03	73·0	22·0	(182)	16		—	—	—	—	50
0·91	0·02	71·9	32·6	(149)	21		—	9	—	—	51
0·28	0·02	20·8	15·5	(187)	4		—	6	—	—	52
0·34	0·02	24·8	18·4	(223)	5		—	7	—	—	53

THE CHEMICAL COMPOSITION OF FOODS—(*continued*)

No.	Food	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
54	Bread, Wholemeal	12·4	2·4	0·5	65	(137)	68	8·5	22·8
55	Bread and butter pudding*	4·7	1·6	2·3	47	(32)	56	33·7	4·9
56	Bread sauce*	3·6	1·2	1·4	33	(92)	44	29·5	4·4
57	Brussels sprouts, boiled	0·5	0·7	Tr.	5	2·2	70	7·7	3·0
58	Buck rarebit*	4·6	4·1	8·7	116	(122)	35	94·5	8·0
59	Buns, Currant	15·4	2·3	2·2	93	(29)	52	10·2	6·3
60	Buns, Rock*	18·2	1·7	4·8	126	(44)	54	13·9	5·3
61	Butter, " fresh "	Tr.	0·1	24·2	226	(63)	4	4·2	0·7
62	Cabbage, boiled	0·3	0·2	Tr.	2	3·7	36	12·5	2·0
63	Cabinet pudding*	5·8	1·3	1·3	41	(30)	56	24·7	4·6
64	Cake, Cherry*	15·8	1·4	6·8	134	(39)	20	9·1	2·9
65	Cake, Chocolate*	15·4	2·0	6·6	133	(61)	26	6·4	4·0
66	Cake, Coconut*	15·3	2·1	6·6	133	(47)	49	9·9	6·5
67	Cake, Currant*	17·1	1·8	5·2	126	(43)	59	9·8	5·0
68	Cake, Dundee	17·7	1·2	4·3	117	(40)	96	14·3	7·8
69	Cake, Orange*	14·9	1·8	7·2	136	(56)	26	5·9	3·3
70	Cakes, Queen*	16·2	1·8	6·4	133	(46)	49	9·2	4·4
71	Cakes, Rock*	18·4	1·8	4·5	125	(43)	68	12·0	5·7
72	Cake, Sponge*	15·2	2·7	2·0	92	22·5	33	9·9	3·9
73	Canary pudding*	15·4	1·9	7·0	136	(49)	26	7·5	3·6
74	Carrots, boiled	1·2	0·2	Tr.	6	14·2	25	10·4	1·8
75	Castle pudding, steamed*	13·1	1·6	5·9	115	(41)	21	5·5	2·9
76	Cauliflower, boiled	0·3	0·4	Tr.	3	3·2	43	6·5	1·9
77	Celery, raw	0·4	0·3	Tr.	3	38·9	79	14·8	2·7
78	Celery, boiled	0·2	0·2	Tr.	1	18·9	38	14·8	2·4
79	Cheese, Cheddar	Tr.	7·1	9·8	120	(174)	33	230·0	13·3
80	Cheese, Cream	Tr.	0·9	24·5	232	(31)	13	8·4	1·5
81	Cheese, Dutch	Tr.	8·0	4·8	77	(355)	27	256·0	14·9
82	Cheese, Gorgonzola	Tr.	7·1	8·8	112	(347)	49	153·0	10·7
83	Cheese, Gruyère	Tr.	10·4	9·5	131	(154)	36	306·0	12·8
84	Cheese, Packet	Tr.	6·4	8·5	106	(260)	24	206·0	13·5
85	Cheese, St. Ivel	Tr.	6·6	8·7	108	(161)	19	137·0	6·6

Milligrams per oz.					Acid-Base value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
0·77	0·05	60·5	21·6	(228)	17		—	30	—	—	54
0·18	0·02	35·4	16·4	(54)		1	—	—	—	—	55
0·06	0·01	26·1	9·6	(145)		6	—	—	—	—	56
0·18	0·02	12·7	22·0	3·2		2	—	17(R)	—	15·6	57
0·31	0·02	80·7	40·7	(195)	16		—	—	—	—	58
0·60	0·02	18·4	20·8	(55)	5		—	—	—	—	59
0·21	0·03	22·2	18·1	(41)		7	—	—	—	—	60
0·05	0·01	6·8	2·6	(94)	1		690	—	—	—	61
0·13	0·02	6·8	6·0	2·9		10	270	16(R)	0·014 (R)	5·7–28·4(R)	62
0·18	0·02	27·9	9·9	(44)		7	—	—	—	—	63
0·35	0·09	20·1	17·9	(36)	5		—	—	—	—	64
0·36	0·02	29·2	23·8	(51)	8		—	—	—	—	65
0·31	0·03	28·8	23·5	(48)	3		—	—	—	—	66
0·33	0·04	24·1	21·8	(42)		9	—	—	—	—	67
0·57	0·05	22·3	15·6	(51)		17	—	—	—	—	68
0·28	0·01	24·9	22·3	(54)	8		—	—	—	—	69
0·30	0·03	26·8	22·6	(37)	1		—	—	—	—	70
0·31	0·05	23·9	21·0	(38)		8	—	—	—	—	71
0·46	0·01	41·2	34·9	29·3	30		—	—	—	—	72
0·27	0·01	26·6	22·9	(40)	8		—	—	—	—	73
0·11	0·02	4·7	1·4	8·8		13	540	17(R)	0·006 (R)	1·3	74
0·22	0·01	21·8	19·3	(33)	7		—	—	—	—	75
0·14	0·02	9·4	8·4	3·3		5	16	9	—	5·4–28·6(R)	76
0·17	0·03	9·0	4·2	52·0		24	—	Tr.	—	0·6	77
0·12	0·03	5·5	2·4	28·4		14	—	Tr.	—	—	78
0·16	0·01	155·0	65·2	(300)	15		1,560	0	—	—	79
0·04	0·01	12·5	18·2	(43)	10		—	—	—	—	80
0·22	0·01	136·0	53·1	(582)		17	—	—	—	—	81
0·14	0·04	107·0	50·2	(511)	1		—	9	—	—	82
0·07	0·08	198·0	58·5	(235)		10	—	—	—	—	83
0·16	0·01	136·0	91·0	(308)		1	—	—	—	—	84
0·20	0·01	107·0	52·9	(258)	25		—	—	—	—	85

THE CHEMICAL COMPOSITION OF FOODS—*(continued)*

No.	Food.	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
86	Cheese, Stilton	Tr.	7·1	11·4	135	(326)	46	103·0	7·7
87	Cheese sauce*	2·5	1·9	3·7	52	(155)	45	57·7	5·4
88	Cheese straws*	7·3	4·7	13·5	175	(234)	32	116·0	8·9
89	Cherries, raw (weighed with stones)	3·0	0·1	Tr.	12	0·7	68	3·9	2·4
90	Cherries, stewed (weighed with stones)	1·2	0·1	Tr.	5	0·4	31	2·0	1·2
91	Chicken, boiled	0·0	7·4	2·9	58	27·8	108	3·0	7·5
92	Chicken, roast	0·0	8·4	2·1	54	22·7	101	4·1	6·5
93	Chocolate, milk	14·9	2·1	9·7	160	26·5	138	49·8	16·3
94	Chocolate, plain	16·6	1·3	9·2	159	5·3	113	7·4	23·2
95	Chocolate mould*	6·0	0·9	1·1	39	16·4	45	31·9	4·5
96	Cocoa powder	9·9	5·8	6·6	126	185·0	152	14·6	54·5
97	Cod, fried	0·8	5·9	1·3	40	45·8	97	14·1	7·6
98	Cod, steamed	0·0	5·1	0·3	23	28·4	102	4·2	5·9
99	Coffee, ground	8·1	3·6	4·4	89	20·8	575	37·8	66·8
100	College pudding*	13·6	1·3	6·8	124	(77)	66	9·4	4·3
101	Cornflakes, Kellogg's	23·4	2·1	0·2	107	(298)	32	2·1	4·7
102	Cornflour	26·1	0·2	0·2	110	14·7	17	4·4	2·0
103	Crab, boiled	0·0	5·4	1·5	36	104·0	77	8·3	13·6
104	Cream (40 per cent.)	0·7	0·5	11·9	116	9·0	26	16·8	1·3
105	Cucumber	0·5	0·2	Tr.	3	3·7	40	6·5	2·6
106	Currants, dried, raw	18·0	0·5	Tr.	76	5·5	201	27·1	10·3
107	Curried meat*	2·5	2·3	3·2	49	(84)	72	9·3	5·8
108	Custard, egg * boiled or baked	3·2	1·4	1·6	34	17·5	47	34·1	4·1
109	Custard powder (take as Cornflour)								
110	Custard powder custard*	4·8	0·9	1·1	34	13·1	46	34·7	4·0
111	Damsons, raw (weighed with stones)	2·4	0·1	Tr.	10	0·6	74	6·0	2·8

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (AscorbicAcid)	No.
0·13	0·01	86·2	64·5	(488)	22		—	—	—	—	86
0·06	0·01	42·6	17·2	(249)		4	—	—	—	—	87
0·27	0·02	93·0	44·9	(376)	20		—	—	—	—	88
0·09	0·02	4·2	1·7	Tr.		18	—	—	—	1·0	89
0·03	0·01	2·1	0·8	Tr.		8	—	—	—	—	90
0·60	—	76·8	83·0	17·6	59		—	—	—	—	91
0·74	—	77·0	92·0	28·4	72		—	11	—	—	92
0·47	0·04	61·0	19·0	37·7		24	—	—	—	—	93
0·93	0·32	39·5	9·1	2·5		22	—	—	—	—	94
0·10	0·02	28·0	8·2	27·9		7	—	—	—	—	95
4·06	0·20	194·0	45·5	56·5		2	—	0	—	—	96
0·28	0·03	74·1	69·0	41·1	44		—	11(R)	—	—	97
0·14	0·03	68·5	60·0	34·0	46		—	11(R)	—	—	98
1·16	0·23	45·7	31·3	6·7		180	—	—	—	—	99
0·34	0·04	21·1	16·4	(52)		20	—	—	—	—	100
0·80	0·03	16·5	26·2	(432)	6		—	—	—	—	101
0·41	0·04	11·1	0·3	20·2		2	—	—	—	—	102
0·37	—	99·4	132·0	162·0	112		—	—	—	—	103
0·07	0·04	7·1	9·4	15·3		5	—	—	—	—	104
0·09	0·03	6·9	3·1	6·9		9	0	9	—	0·3–5·0	105
0·52	0·14	11·4	8·8	4·5		62	—	—	—	—	106
1·39	—	28·7	27·9	(124)	7		—	—	—	—	107
0·14	0·01	35·1	15·7	33·2	2		—	—	—	—	108
											109
0·04	0·01	27·9	8·4	28·4		7	—	—	—	—	110
0·11	0·02	4·2	1·6	Tr.		21	—	—	—	—	111

THE CHEMICAL COMPOSITION OF FOODS—(*continued*)

No.	Food	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
112	Damsons, stewed (weighed with stones)	1·8	0·1	Tr.	8	0·4	56	4·6	2·2
113	Dates (weighed with stones)	15·6	0·5	Tr.	66	1·2	185	16·6	14·3
114	Doughnuts	13·8	1·9	4·5	106	(17)	32	6·1	4·7
115	Dripping	0·0	Tr.	28·1	262	1·4	1	0·2	Tr.
116	Dumpling*	6·8	0·9	3·2	61	(139)	13	1·8	2·1
117	Eggs (per 1 egg) (1 egg = 50 g.)	0·0	5·9	6·2	82	67·5	69	28·0	6·2
118	Egg white	0·0	2·6	Tr.	11	54·7	42	1·5	3·0
119	Egg yolk	0·0	4·6	8·7	99	14·2	35	37·4	4·2
120	Egg sauce*	2·4	1·4	2·9	42	(133)	45	29·9	4·1
121	Figs, green, raw	2·7	0·4	Tr.	13	0·5	76	9·7	5·7
122	Figs, dried, raw	15·0	1·0	Tr.	66	24·6	288	80·5	26·2
123	Figs, dried, stewed	8·5	0·6	Tr.	38	14·0	164	45·8	14·9
124	Fish cakes*	2·8	3·5	4·0	62	(119)	85	5·6	5·2
125	Fish paste	1·9	4·2	2·7	50	(420)	87	41·5	8·6
126	Fish pie*	1·9	2·5	4·3	58	(146)	71	14·6	4·6
127	Flour, White	22·7	3·0	0·3	108	8·4	41	5·2	6·7
128	Flour, Wholemeal	19·0	3·5	0·6	98	45·4	92	8·2	28·7
129	Force	21·5	2·9	0·5	106	(197)	115	18·8	42·1
130	Ginger, Ground	17·0	2·1	0·1	80	10·0	258	28·0	38·0
131	Gingerbread*	17·9	1·7	3·7	115	(95)	45	10·1	4·4
132	Golden syrup	22·4	0·1	0·0	92	76·6	69	7·5	2·7
133	Gooseberries, ripe, raw	2·6	0·2	Tr.	11	0·3	48	5·2	2·4
134	Gooseberries, unripe, stewed	0·5	0·2	Tr.	3	0·3	30	4·0	1·0
135	Gooseberry tart*	8·8	0·8	2·7	64	(22)	38	5·3	2·5
136	Grapes, black or white (weighed with skin and pips)	4·1	0·2	Tr.	18	0·4	71	3·1	1·4
137	Grapefruit	1·5	0·2	Tr.	7	0·4	66	4·9	3·0
138	Grapenuts	20·2	3·6	0·9	106	(187)	121	13·6	43·4

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
0·08	0·02	3·2	1·2	Tr.		16	—	—	—	—	112
0·39	0·05	15·6	12·4	71·0		30	235	7	—	—	113
0·46	0·03	15·6	16·0	(25)	5		—	—	—	—	114
0·06	—	4·0	3·0	0·6	3		—	—	—	—	115
0·09	0·01	8·9	10·5	(177)		4	—	—	—	—	116
1·27	0·02	109·0	86·5	79·5	81		1,760	28	0·245	0	117
0·03	0·01	9·2	51·9	48·4	14		—	Tr.	0·128	0	118
1·74	0·01	141·0	46·7	40·4	94		2,500	40	0·156	0	119
0·14	0·01	32·3	15·6	(209)	1		—	—	—	—	120
0·12	0·02	9·1	3·7	5·2		20	23	7	—	0·6	121
1·18	0·07	26·0	22·9	47·1		102	—	3–28	—	—	122
0·67	0·04	14·8	13·0	26·8		58	—	2–16	—	—	123
0·22	0·04	48·1	41·0	(185)	26		—	—	—	—	124
1·70	0·02	60·0	53·0	(677)	29		—	—	—	—	125
0·16	0·02	40·7	30·0	(225)	16		—	—	—	—	126
0·26	0·02	28·8	30·9	19·2	21		—	0–10	—	—	127
0·84	0·11	69·7	35·0	50·3	10		—	36	—	—	128
1·13	0·10	96·3	29·6	(318)	11		—	—	—	—	129
4·90	0·13	39·0	41·0	11·0		61	—	—	—	—	130
0·36	0·02	23·0	22·2	(30)		25	—	—	—	—	131
0·41	0·03	5·7	15·3	11·8		41	—	—	—	—	132
0·16	0·04	5·4	3·8	3·0		10	—	—	—	10·5	133
0·05	0·02	4·8	2·3	1·0		6	—	—	—	4·9	134
0·11	0·02	11·2	9·1	(35)		1	—	—	—	—	135
0·09	0·03	4·9	2·2	Tr.		17	6	—	—	Tr.–1·0	136
0·07	0·02	4·4	1·5	0·4		18	—	11	—	7·4–18·5 (juice)	137
1·60	0·05	94·6	41·1	(257)	4		—	—	—	—	138

THE CHEMICAL COMPOSITION OF FOODS—*(continued)*

No.	Food	Grams per oz.			Calories per oz.	Milligrams per oz.			
		Carbohydrate	Protein	Fat		Sodium	Potassium	Calcium	Magnesium
139	Greengages, raw (weighed with stones)	3·2	0·2	Tr.	14	0·4	82	4·5	2·1
140	Greengages, stewed (weighed with stones)	2·2	0·1	Tr.	10	0·3	56	3·1	1·4
141	Haddock, fresh, fried	1·0	5·8	2·4	50	50·2	99	32·4	8·7
142	Haddock, fresh, steamed	0·0	6·2	0·2	28	34·4	92	15·5	7·9
143	Haddock, smoked, steamed	0·0	6·3	0·3	28	(346)	83	16·3	7·2
144	Hake, fried	1·5	5·5	3·2	59	43·5	84	7·3	8·2
145	Hake, steamed	0·0	5·2	0·9	30	33·5	88	4·5	7·6
146	Halibut, steamed	0·0	6·4	1·1	37	31·5	97	3·7	6·6
147	Ham, boiled, lean	0·0	6·6	3·8	62	(595)	129	4·8	6·7
148	Ham, boiled, lean and fat	0·0	4·6	11·2	123	(422)	91	3·6	4·9
149	Herring, fried (weighed with bones)	0·4	5·4	3·8	59	25·2	104	9·7	8·7
150	Honey	21·7	0·1	Tr.	90	3·1	15	1·5	0·6
151	Hotpot*	3·2	2·8	1·3	37	(164)	132	6·2	7·1
152	Ice cream bricks	5·0	1·1	3·8	60	18·2	51	43·4	4·3
153	Irish stew*	2·2	1·1	3·1	42	(101)	63	2·9	3·4
154	Jam	19·6	0·2	0·0	81	4·0	31	5·1	2·2
155	Jam roll, baked*	15·7	1·4	5·4	120	(43)	28	4·1	3·7
156	Jam tarts*	17·3	1·0	3·8	110	(33)	29	4·5	3·2
157	Jelly, packet	17·7	1·7	0·0	80	7·2	7	8·9	1·3
158	Jelly, plain*	5·4	0·6	0·0	25	2·2	2	2·7	0·4
159	Jelly, milk*	5·9	1·0	0·5	33	9·2	25	19·7	2·4
160	Kedgeree*	2·8	3·4	2·0	44	(312)	46	6·0	6·8
161	Kidney, sheep's, fried	0·0	7·9	2·6	57	74·0	86	4·7	7·6
162	Kidney, ox, stewed	0·0	7·3	1·6	45	46·5	47	5·9	6·3

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
0·10	0·02	6·1	0·8	0·3		21	—	—	—	1·5	139
0·07	0·01	4·1	0·5	0·2		14	—	—	—	0·6	140
0·34	—	70·0	81·0	51·3	40		—	—	—	—	141
0·20	0·04	66·3	86·0	22·1	50		—	—	—	—	142
0·28	—	70·8	72·0	(540)	56		—	—	—	—	143
0·26	0·05	73·5	56·0	38·0	42		—	—	—	—	144
0·17	0·03	62·0	55·0	27·0	36		—	—	—	—	145
0·17	0·02	72·0	72·0	22·7	53		—	17 (fried)	—	—	146
0·74	—	69·2	80·0	(950)	63		—	63	—	—	147
0·71	—	54·4	56·0	(665)	46		—	—	—	—	148
0·48	—	84·7	65·0	31·2	55		—	—	—	—	149
0·11	0·01	4·8	0·2	5·1		2	—	—	—	—	150
0·66	—	42·2	33·2	(253)	5		—	—	—	—	151
0·06	0·01	27·1	8·7	29·2		15	—	—	—	—	152
0·26	—	16·2	14·2	(159)		<1	—	—	—	—	153
0·35	0·05	5·1	1·3	1·8		9	—	—	—	—	154
0·24	0·03	14·7	14·4	(39)		1	—	—	—	—	155
0·28	0·03	11·9	10·5	(51)	2		—	—	—	—	156
0·49	0·05	2·0	10·4	8·5		<1	—	—	—	—	157
0·15	0·02	0·7	3·2	2·6		<1	—	—	—	—	158
0·16	0·02	14·1	7·2	16·4		4	—	—	—	—	159
0·29	—	47·8	44·8	(459)	33		—	—	—	—	160
4·12	—	123·0	78·0	82·0	88		—	54(R)	—	—	161
2·02	—	111·0	69·0	40·9	86		—	—	0·400 (R)	—	162

THE CHEMICAL COMPOSITION OF FOODS—*(continued)*

No.	Food	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
163	Kipper, baked (weighed with bones)	0·0	3·6	1·7	31	(152)	80	9·9	7·3
164	Leeks, boiled	1·3	0·5	Tr.	7	1·8	79	17·2	3·6
165	Lemon juice	0·5	0·1	Tr.	2	0·4	40	2·4	1·9
166	Lentils, raw	15·1	6·8	Tr.	90	10·2	192	11·0	21·7
167	Lettuce, raw	0·5	0·3	Tr.	3	0·9	59	7·4	2·8
168	Liver, raw	0·0	4·7	2·3	41	24·4	92	2·4	5·9
169	Liver, fried, after rolling in flour	0·9	8·3	4·3	78	30·4	113	2·5	7·2
170	Lobster, boiled	0·0	6·0	1·0	34	92·3	73	17·5	9·7
171	Loganberries, raw	1·0	0·3	Tr.	5	0·7	73	10·0	7·1
172	Loganberries, tinned in syrup	7·4	0·2	Tr.	31	0·3	28	5·0	3·2
173	Macaroni	21·8	3·3	0·6	109	7·3	62	7·5	16·2
174	Macaroni cheese*	4·3	2·2	3·6	60	(190)	39	56·6	7·3
175	Mackerel, fried	0·0	5·7	3·2	53	43·5	118	8·1	9·9
176	Malted milk, Horlick's	20·1	4·1	2·4	102	196·0	321	77·2	20·0
177	Margarine	0·0	0·1	24·2	226	(90)	1	1·2	0·3
178	Marmalade	19·8	Tr.	0·0	81	5·2	12	9·9	1·1
179	Marmite	0·0	2·8	Tr.	12	(1740)	978	22·0	78·4
180	Marrow, boiled	0·4	0·1	Tr.	2	0·3	24	3·9	1·9
181	Meat paste	1·2	5·6	3·6	61	(267)	59	7·5	6·2
182	Melon, Cantaloupe or Yellow, raw	1·4	0·2	Tr.	7	4·7	77	4·7	4·8
183	Milk, fresh, whole raw or pasteurised	1·3	0·9	1·1	19	14·2	46	34·1	4·0
184	Milk, fresh, skimmed	1·4	1·0	0·1	10	14·8	47	35·2	4·1
185	Milk, dried, whole	10·4	7·5	8·5	152	113·5	363	272·0	31·8
186	Milk, whole, evaporated, unsweetened	3·3	2·2	2·4	45	45·8	143	82·5	9·9
187	Milk, whole, condensed, sweetened	15·9	2·3	3·4	106	40·7	116	97·5	10·2

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (AscorbicAcid)	No.
0·22	—	65·3	43·0	(234)	38		—	—	—	—	163
0·57	0·03	7·8	13·9	12·1		15	—	—	—	3·1(R)	164
0·04	0·04	2·9	0·6	0·7		11	—	—	0·001	7·3–20·1	165
2·17	0·17	69·0	34·8	18·0		6	24	11–60	—	0·9	166
0·21	0·04	8·6	3·4	11·2		11	910	26	—	Tr.–6·2	167
3·95	1·65	89·0	68·0	28·4	67		11,900	—	0·028–0·680	10·0	168
6·02	—	159·8	119·0	28·7	137		16,900	43	—	—	169
0·23	—	80·5	146·0	149·0	109		—	—	—	—	170
0·39	0·04	6·9	5·1	4·5		21	—	—	—	12·4	171
0·82	0·01	6·5	0·9	1·3		7	—	—	—	10·0	172
0·41	0·02	43·1	27·0	8·9	11		—	—	—	—	173
0·10	0·01	45·9	19·7	(301)		<1	—	—	—	—	174
0·34	0·06	79·5	60·0	32·4	36		—	—	—	—	175
0·37	0·35	114·0	47·5	146·0		78	—	—	—	—	176
0·09	0·01	3·4	3·4	(141)	4		500†	—	—	—	177
0·16	0·03	3·6	0·6	2·0		8	—	—	—	Tr.–4·3	178
1·48	0·56	535·0	108·0	(2,200)		49	—	227	0·940	—	179
0·06	0·01	3·6	1·6	3·9		5	0	—	—	3·2(R)	180
1·05	0·03	38·0	37·0	(426)	27		—	—	—	—	181
0·15	0·01	5·6	2·6	12·6		19	—	—	—	4·3–15·0	182
0·02	0·01	27·0	8·3	27·8		8	22–62	7	0·057	Tr.–0·8	183
0·02	0·01	27·8	8·5	28·9		8	—	—	—	—	184
0·18	0·05	215·5	66·1	222·0		61	122	—	—	—	185
0·05	0·03	72·0	21·3	79·0		24	—	—	—	—	186
0·05	0·02	68·0	23·5	81·0		24	—	—	—	—	187

† Vitaminised.

THE CHEMICAL COMPOSITION OF FOODS—(*continued*)

No.	Food	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
188	Milk, skimmed, condensed, sweetened	17·0	2·8	0·1	82	51·0	142	109·0	10·7
189	Mincemeat	7·2	0·2	0·9	39	(59)	159	14·9	5·9
190	Mince pies*	12·2	1·3	5·6	107	(43)	76	7·9	5·1
191	Mushrooms, fried	0·0	0·6	6·4	62	3·1	161	1·0	4·6
192	Mustard, powder	5·9	8·2	8·1	134	1·0	268	95·0	73·0
193	Mustard and cress	0·3	0·5	Tr.	3	5·4	96	18·7	7·8
194	Mutton, leg, boiled	0·0	7·3	4·7	74	18·2	78	1·0	7·8
195	Mutton, leg, roast	0·0	7·1	5·8	83	20·1	98	1·2	7·5
196	Mutton chop or cutlet, grilled	0·0	5·7	12·8	142	29·0	87	5·1	6·5
197	Mutton, neck, stewed	0·0	6·9	6·9	92	18·8	53	14·2	7·6
	Nuts—								
198	Almonds	1·2	5·8	15·2	170	1·6	243	70·0	73·0
199	Barcelona	1·5	3·7	18·2	189	0·7	266	48·2	57·2
200	Brazil	1·2	3·9	17·3	183	0·4	216	50·0	117·0
201	Chestnuts	10·4	0·7	0·8	53	3·1	141	13·1	9·4
202	Cobnuts	1·9	2·6	10·2	114	0·4	98	12·5	15·9
203	Coconut, fresh	1·1	1·1	10·2	104	4·7	124	3·7	14·8
204	Coconut, desiccated	1·8	1·9	17·6	179	8·1	214	6·4	25·5
205	Peanuts	2·4	8·0	13·9	172	1·6	193	17·3	51·3
206	Walnuts	1·4	3·6	14·6	156	0·8	195	17·3	37·2
207	Oatmeal or Quaker oats, raw	20·6	3·8	2·5	123	9·5	104	15·8	32·0
208	Olives, in brine (weighed with stones)	0·0	0·2	2·5	24	(510)	21	14·0	5·0
209	Olive oil	0·0	Tr.	28·4	264	Tr.	Tr.	0·1	0·1
210	Omelette, Cheese*	0·0	5·0	8·8	102	(402)	42	89·9	7·3
211	Omelette, Jam*	7·5	2·7	4·1	80	(34)	39	13·9	3·3
212	Omelette, Plain*	0·0	2·2	8·6	89	(286)	26	11·1	2·4
213	Onions, boiled	0·8	0·2	Tr.	4	1·9	22	6·9	1·4
214	Onions, fried	2·9	0·5	9·5	102	5·7	76	17·4	4·2
215	Onions, Spring, raw	2·4	0·3	Tr.	11	3·7	64	38·4	3·1
216	Onion sauce*	2·0	0·7	1·6	26	(86)	36	21·7	3·1

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (AscorbicAcid)	No.
0·08	0·01	76·8	26·8	88·0		31	—	—	—	—	188
0·60	0·02	4·5	8·1	(129)		35	—	—	—	—	189
0·35	0·02	14·3	16·5	(116)		3	—	—	—	—	190
0·36	0·22	47·2	20·9	29·3	5		—	14(R)	—	0·5(R)	191
3·10	0·06	50·0	364·0	18·0	88		—	—	—	—	192
1·29	0·03	18·6	48·2	25·3	7		—	14	—	—	193
1·45	0·07	67·5	80·0	19·0	64		9(R)	—	—	—	194
1·22	—	68·8	77·0	17·6	57		—	14	—	—	195
0·68	0·05	58·0	60·0	25·5	40		—	—	—	—	196
1·93	—	62·5	74·0	23·3	57		—	—	—	—	197
1·20	0·04	125·5	41·2	0·5		52	—	23	—	0–5·5	198
0·84	0·27	85·0	50·0	9·5		52	—	—	—	—	199
0·80	0·31	168·0	83·0	17·3		13	—	—	—	—	200
0·25	0·07	21·0	8·2	4·3		32	—	—	—	—	201
0·30	0·06	65·0	21·3	1·7	11		—	57	—	4·3	202
0·59	0·09	27·0	13·0	32·4		14	—	—	—	0·1–3·8	203
1·02	0·16	46·0	21·6	55·8		24	—	Tr.	—	—	204
0·58	0·08	104·0	107·0	1·9	33		29	28–91	—	—	205
0·67	0·09	145·0	29·5	6·5	24		—	43	—	8·5	206
1·17	0·07	108·0	44·0	20·8	38		—	40	—	—	207
0·23	0·05	3·8	8·1	(855)	9		—	—	—	—	208
0·02	0·02	Tr.	Tr.	Tr.		<1	—	—	—	—	209
0·63	0·02	100·9	60·7	(620)	40		—	—	—	—	210
0·64	0·02	50·0	39·0	(41)	34		—	—	—	—	211
0·46	0·01	40·7	31·4	(431)	29		—	—	—	—	212
0·07	0·02	4·7	6·7	1·4		1	13	11(R)	—	1·3	213
0·17	0·05	16·8	24·9	10·8		5	—	—	—	—	214
0·35	0·04	6·7	14·2	10·1		24	—	—	—	4·0	215
0·06	0·02	17·9	7·9	(137)		6	—	—	—	—	216

THE CHEMICAL COMPOSITION OF FOODS—(*continued*)

No.	Food	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
217	Oranges, raw	2·4	0·2	Tr.	11	0·8	56	11·7	3·7
218	Orange juice	2·7	0·2	Tr.	12	0·5	51	3·3	3·3
219	Ovaltine	17·5	3·8	2·2	89	70·8	312	96·1	39·8
220	Oxo	0·0	9·0	1·1	47	(3010)	761	28·8	45·4
221	Pancakes*	10·3	1·4	4·3	88	(25)	37	20·8	4·0
222	Parsnips, boiled	3·8	0·4	Tr.	17	1·2	83	10·1	3·7
223	Pastry, flaky*	12·4	1·7	10·2	153	(62)	23	3·3	3·8
224	Pastry, short*	15·5	2·1	8·6	152	(70)	28	4·0	4·7
225	Peas, fresh, boiled	2·2	1·4	Tr.	15	Tr.	49	3·6	6·1
226	Peas, dried, boiled	5·4	2·0	Tr.	30	3·6	76	6·9	8·6
227	Peaches, fresh, raw (weighed with stones)	2·3	0·2	Tr.	10	0·7	64	1·2	2·0
228	Peaches, dried, raw	15·0	1·0	Tr.	66	1·7	314	10·1	15·4
229	Peaches, dried, stewed	5·1	0·3	Tr.	22	0·6	107	3·4	5·2
230	Peaches, tinned in syrup	4·9	0·1	Tr.	20	0·4	43	1·0	1·8
231	Pears, eating, raw (weighed with skin and core)	2·2	0·1	Tr.	9	0·5	26	1·6	1·5
232	Pears, stewed	1·8	0·1	Tr.	8	0·5	20	1·4	0·8
233	Pears, tinned in syrup	4·7	0·1	Tr.	20	0·4	26	1·5	1·7
234	Pepper	19·3	2·5	0·6	94	2·0	12	36·0	13·0
235	Pineapple, fresh	3·3	0·1	Tr.	14	0·5	70	3·5	4·8
236	Pineapple, tinned in syrup	4·7	0·1	Tr.	20	0·1	16	3·8	2·3
237	Plaice, fried	2·0	5·1	4·1	67	35·3	62	12·7	6·9
238	Plaice, steamed	0·0	5·1	0·5	26	34·0	79	10·7	6·8
239	Plums, dessert, raw (weighed with stones)	2·6	0·2	Tr.	11	0·5	50	2·9	1·9

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
0·09	0·02	6·7	2·6	0·9		17	—	11	—	4·5–41·0	217
0·09	0·01	6·2	1·3	0·3		13	159	—	0·002	2·8–25·2	218
0·99	0·18	160·0	52·0	115·0		24	—	—	—	—	219
3·98	0·09	310·0	91·0	(3980)		180	—	—	—	—	220
0·15	0·01	26·4	15·9	(43)	5		—	—	—	—	221
0·13	0·03	9·0	4·1	9·3		19	12	—	—	1·7	222
0·18	0·01	17·0	18·2	(100)	13		—	—	—	—	223
0·21	0·02	20·9	22·3	(113)	15		—	—	—	—	224
0·35	0·04	23·6	12·4	2·2	4		63	—	0·023 (R)	3·0	225
0·41	0·05	32·1	11·1	2·6		3	—	11–28 (R)	—	0–0·8 (R)	226
0·09	0·01	4·6	1·4	Tr.		15	300	—	—	0·3–5·1	227
1·92	0·18	33·0	68·1	3·0		34	—	—	—	—	228
0·65	0·06	11·2	23·2	1·0		12	—	—	—	—	229
0·55	0·02	2·8	0·3	1·2		11	—	—	—	—	230
0·05	0·03	2·0	0·9	Tr.		7	27	6	—	Tr.–1·9	231
0·03	0·02	2·9	0·7	0·3		4	25	6	—	—	232
0·50	0·01	1·5	0·4	0·8		7	—	—	—	—	233
2·90	0·32	37·0	28·0	17·0		82	—	—	—	—	234
0·12	0·02	2·2	0·7	8·1		20	50	7	—	3·0–17·8	235
0·48	0·01	1·4	0·8	1·2		6	14 (juice)	—	—	1·7	236
0·23	0·04	71·3	71·0	49·4	61		—	—	—	—	237
0·17	—	70·0	71·0	31·8	52		—	—	—	—	238
0·10	0·03	4·3	0·9	Tr.		13	0–98	11	—	Tr.–1·8	239

THE CHEMICAL COMPOSITION OF FOODS—*(continued)*

No.	Food	Grams per oz.			Calories per oz.	Milligrams per oz.			
		Carbohydrate	Protein	Fat		Sodium	Potassium	Calcium	Magnesium
240	Plums, stewed (weighed with stones)	1·1	0·1	Tr.	5	0·4	36	2·5	1·4
241	Plum tart*	9·1	0·7	2·7	65	(22)	34	3·0	2·5
242	Pork, loin, roast	0·0	5·5	11·5	129	17·0	82	2·1	5·1
243	Pork chop, grilled	0·0	5·3	14·3	155	16·8	73	2·4	4·2
244	Pork salt, boiled (lean only)	0·0	6·7	4·5	69	(511)	85	7·8	6·9
245	Porridge (2½ oz. oatmeal per pint water)	2·3	0·4	0·3	14	1·1	12	1·8	3·7
246	Potatoes, old, boiled	5·6	0·4	Tr.	25	1·0	92	1·2	4·3
247	Potatoes, old, baked in skins	7·1	0·7	Tr.	32	2·2	193	2·6	8·3
248	Potatoes, "chips"	10·6	1·1	2·6	72	3·3	290	3·9	12·3
249	Potatoes, roast	7·8	0·8	0·3	38	2·4	211	2·9	9·1
250	Potatoes, new, boiled	5·2	0·5	Tr.	23	11·5	94	1·4	5·6
251	Potato soup*	3·1	0·6	1·2	27	(94)	27	13·1	4·5
252	Prunes, stewed (weighed with stones)	4·4	0·3	Tr.	19	1·3	95	4·1	2·9
253	Queen of puddings*	6·6	1·5	2·8	59	(36)	41	24·8	4·1
254	Rabbit, stewed	0·0	7·6	2·2	51	9·1	60	3·2	6·1
255	Radish, raw	0·8	0·3	Tr.	5	16·8	68	12·4	3·2
256	Raisins, dried	18·3	0·3	Tr.	76	14·9	244	17·2	11·8
257	Raspberries, raw	1·6	0·3	Tr.	8	0·7	64	11·6	6·2
258	Raspberries, stewed	1·1	0·2	Tr.	5	0·5	43	7·9	4·2
259	Red currants, raw	1·2	0·3	Tr.	7	0·7	78	10·2	3·6
260	Red currants, stewed	0·9	0·2	Tr.	5	0·5	57	7·4	2·6
261	Rhubarb, stewed	0·2	0·1	Tr.	1	0·4	85	20·4	2·7
262	Rhubarb tart*	8·5	0·7	2·7	63	(22)	69	15·8	3·4
263	Rice, polished, raw	24·6	1·9	0·3	112	1·8	32	1·1	3·7

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
0·05	0·02	2·7	0·9	Tr.		10	0–67	7	—	Tr.–0·7	240
0·10	0·02	8·2	7·4	(35)		2	—	—	—	—	241
0·65	0·03	53·0	57·0	21·8	42		—	91 (lean)	—	—	242
0·68	0·03	51·0	54·0	20·4	40		—	—	—	—	243
0·65	—	62·1	69·0	(880)	78		—	—	—	—	244
0·14	0·01	12·2	5·1	2·4	4		—	5	—	—	245
0·14	0·03	8·2	6·3	11·6		16	12	9	0 002 (R)	0·3–6·8	246
0·25	0·05	13·7	11·8	26·8		35	15	—	—	0·3–8·3	247
0·38	0·08	20·6	12·7	39·8		56	—	—	—	0·5–12·4	248
0·28	0·06	15·1	16·0	29·3		36	—	—	—	0·4–9·1	249
0·13	0·04	9·4	6·9	12·9		20	—	—	—	2·2–11·3	250
0·11	0·02	14·8	8·4	(155)	<1		—	—	—	—	251
0·32	0·02	9·1	2·0	0·3		22	—	12	—	0·1	252
0·24	0·02	31·9	17·0	(53)	5		—	—	—	—	253
0·54	0·06	56·5	70·0	12·2	57		—	—	0	Tr.–1·0 (R)	254
0·54	0·04	7·7	10·6	5·3		20	1	2–17	—	4·5	255
0·44	0·07	9·3	6·5	2·4		76	—	21	—	—	256
0·34	0·06	8·2	4·9	6·3		17	—	—	—	8·7	257
0·23	0·04	5·5	3·3	4·3		12	—	—	—	1·8	258
0·35	0·03	8·4	8·1	4·0		17	—	—	—	11·6	259
0·25	0·02	6·1	5·9	2·9		12	—	—	—	7·9	260
0·08	0·04	4·2	1·6	17·3		26	—	—	—	0·9	261
0·12	0·02	9·3	7·9	(47)		14	—	—	—	—	262
0·13	0·02	28·0	22·4	7·7	22		0	0	—	—	263

THE CHEMICAL COMPOSITION OF FOODS—*(continued)*

No.	Food	Grams per oz.				Milligrams per oz.			
		Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
264	Rice, boiled	8·4	0·6	0·1	38	0·6	11	0·4	1·3
265	Rice pudding*	5·9	1·3	2·6	54	(18)	54	39·0	4·8
266	Roe, Cod's, fried	0·9	5·8	3·4	59	36·0	73	4·8	3·0
267	Roe, Herring, fried	1·3	6·6	4·5	74	24·6	68	4·5	2·3
268	Ryvita	22·4	2·1	0·6	106	(175)	133	11·5	25·7
269	Sago	26·7	0·1	0·1	110	1·0	1	2·8	0·7
270	Sago pudding*	5·8	0·9	1·1	38	13·5	43	32·8	3·9
271	Salmon, fresh, steamed	0·0	5·4	3·7	57	30·4	95	8·2	8·1
272	Salmon, tinned	0·0	5·6	1·7	39	(152)	91	18·8	8·5
273	Sardines, tinned	0·0	5·8	6·4	84	(223)	123	116·2	11·7
274	Sausage, Beef, fried	4·5	3·9	5·2	83	(321)	72	6·0	4·7
275	Sausage, Pork, fried	3·6	3·3	7·1	94	(284)	58	5·6	4·2
276	Sausage roll*	10·1	2·1	10·2	145	(115)	32	3·8	3·8
277	Scones (with egg)*	16·9	2·6	3·0	108	(48)	42	13·4	5·7
278	Scones (without egg)*	16·2	2·4	3·8	111	(47)	46	17·9	6·1
279	Scotch egg*	2·9	3·1	5·5	76	(153)	47	10·1	4·0
280	Scrambled eggs*	0·2	2·9	7·1	79	(358)	38	17·4	3·4
281	Semolina	22·0	3·3	0·5	109	3·4	47	5·2	9·1
282	Semolina pudding*	5·5	1·2	1·1	38	14·3	49	34·0	4·8
283	Shepherd's pie*	3·5	2·0	1·5	37	(105)	83	4·3	4·7
284	Shortbread*	18·2	1·9	7·7	154	(24)	26	4·5	4·3
285	Shredded Wheat	22·4	3·0	0·8	112	4·7	86	9·9	34·1
286	Skate, fried	2·1	4·3	4·7	70	51·8	67	5·5	6·6
287	Sole, fried	1·5	5·7	5·2	78	54·5	67	37·2	7·9
288	Sole, steamed	0·0	5·0	0·4	24	31·2	68	32·1	8·0
289	Spinach, cooked without added water	0·4	1·4	Tr.	8	34·9	139	169·0	16·8
290	Spring greens, boiled	0·3	0·5	Tr.	3	2·9	34	24·4	2·4
291	Steak and kidney pie*	4·8	4·4	5·4	88	(225)	69	2·9	5·9
292	Stout (per pint)†	23·0	2·2	Tr.	286	117·0	381	58·0	65·0
293	Strawberries, raw	1·8	0·2	Tr.	8	0·4	46	6·3	3·3
294	Suet	0·0	0·3	28·1	262	6·0	4	1·7	0·3

† Contains 26·7 c.c. alcohol per pint.

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
0·04	0·01	9·5	7·6	2·6	7		0	0	—	—	264
0·04	0·01	34·2	12·1	(38)		5	—	—	—	—	265
0·45	—	143·0	68·0	53·2	110		—	—	—	—	266
0·43	—	260·0	69·0	34·9	188		—	17 (R)	—	—	267
1·06	0·04	83·9	24·7	(266)	7		—	—	—	—	268
0·34	0·01	8·1	0·1	3·6	4		0	0	—	—	269
0·05	0·01	25·9	7·8	26·6		8	—	—	—	—	270
0·23	—	85·8	54·0	18·2	46		—	—	—	—	271
0·37	0·01	81·0	67·0	(246)	57		92	—	—	—	272
1·13	0·01	194·0	80·0	(342)	75		—	9	—	—	273
1·16	0·05	47·7	46·0	(503)	37		—	—	—	—	274
0·94	0·04	40·0	27·0	(397)	10		—	—	—	—	275
0·37	0·02	22·6	20·3	(173)	13		—	—	—	—	276
0·28	0·02	33·4	28·7	(36)	7		—	—	—	—	277
0·19	0·02	31·0	24·2	(35)		1	—	—	—	—	278
0·77	0·02	47·2	35·8	(210)	25		—	—	—	—	279
0·59	0·01	54·0	41·0	(540)	36		—	—	—	—	280
0·30	0·04	32·4	26·0	20·2	19		—	—	—	—	281
0·06	0·01	29·7	10·7	29·3		5	—	—	—	—	282
0·66	—	25·1	22·8	(166)	4		—	—	—	—	283
0·18	0·02	19·6	19·5	(40)	13		—	—	—	—	284
1·27	0·13	81·5	24·6	20·2	16		—	—	—	—	285
0·34	—	67·8	61·0	75·7	55		—	—	—	—	286
0·40	—	73·9	75·0	54·9	44		—	—	—	—	287
0·20	—	76·8	67·0	37·5	48		—	—	—	—	288
1·14	0·07	26·4	24·6	15·8		112	3340	6–20 (R)	0·016 (R)	0·6–12·6	289
0·38	0·02	8·7	8·1	4·6		12	—	—	—	—	290
1·58	—	60·5	44·4	(339)	40		—	—	—	—	291
0·78	0·67	130·0	130·0	200·0		10	—	—	0·162	—	292
0·20	0·04	6·5	3·8	5·0		10	—	—	—	15·8	293
0·11	0·01	2·0	5·7	5·1	2		—	—	—	—	294

THE CHEMICAL COMPOSITION OF FOODS—*(continued)*

		Grams per oz.				Milligrams per oz.			
No.	Food	Carbohydrate	Protein	Fat	Calories per oz.	Sodium	Potassium	Calcium	Magnesium
295	Suet pudding, plain*	10·4	1·2	5·1	95	(57)	27	12·7	3·5
296	Suet pudding with raisins*	11·6	1·1	4·4	93	(51)	58	13·1	4·7
297	Sugar, Demerara	28·2	0·1	0·0	116	1·8	25	4·9	4·2
298	Sugar, White	28·4	Tr.	0·0	116	0·1	1	0·4	0·1
299	Sultanas, dried	18·4	0·5	Tr.	77	15·0	243	14·9	10·0
300	Swedes, boiled	1·1	0·3	Tr.	5	4·1	29	11·8	2·0
301	Sweetbread, stewed	0·0	6·4	2·6	51	19·6	66	4·1	4·4
302	Tapioca	27·0	0·1	Tr.	111	1·2	6	2·3	0·6
303	Tapioca pudding*	5·9	0·9	1·1	38	13·8	44	32·9	3·9
304	Tea, as purchased	0·0	4·4	0·0	17	12·6	612	121·0	72·0
305	Toad-in-the-hole*	5·3	2·2	5·8	85	(199)	46	19·0	4·5
306	Tomatoes, raw	0·8	0·3	Tr.	4	0·8	82	3·8	3·1
307	Tomatoes, fried	0·9	0·3	1·7	21	0·9	95	4·4	3·6
308	Tongue, Ox, pickled in salt and sugar	0·7	5·4	6·8	88	(532)	43	8·8	4·6
309	Tongue, Sheep's, stewed	0·0	5·1	6·8	84	22·5	31	3·2	3·7
310	Treacle, tart*	17·8	1·2	3·8	113	(73)	45	5·5	3·3
311	Trifle*	7·8	1·1	1·1	47	(14)	43	28·2	3·9
312	Tripe, stewed	0·0	5·1	0·9	29	20·4	3	36·1	2·2
313	Turkey, roast	0·0	8·6	2·2	56	36·9	104	10·9	8·0
314	Turnips, boiled	0·7	0·2	Tr.	3	8·0	45	15·6	1·9
315	Veal, roast	0·0	8·7	3·3	66	27·5	122	4·1	7·9
316	Vinegar	0·2	0·1	0·0	1	6·0	25	4·0	6·0
317	Virol	16·9	1·3	2·2	108	(106)	102	30·6	17·4
318	Vita-Weat	19·4	2·7	2·9	118	(172)	122	12·5	33·4
319	Watercress, raw	0·2	0·8	Tr.	4	17·0	89	63·0	4·8
320	Welsh rarebit*	5·9	4·3	10·1	136	(146)	34	116·4	9·3
321	White sauce, savoury*	2·8	1·1	2·8	42	(148)	46	32·2	4·2
322	White sauce, sweet*	5·0	1·0	2·5	48	18	42	29·5	3·8
323	Yorkshire pudding*	7·6	2·0	2·7	65	(117)	49	28·7	5·2

Milligrams per oz.					Acid-Base Value c.c. per oz.		International units per oz.		Milligrams per oz.		
Iron	Copper	Phosphorus	Sulphur	Chlorine	$\frac{N}{10}$ Acid	$\frac{N}{10}$ Alkali	Vitamin A	Vitamin B_1	Vitamin B_2 (Lactoflavine)	Vitamin C (Ascorbic Acid)	No.
0·12	0·01	17·0	11·4	(44)		11	—	—	—	—	295
0·16	0·02	15·7	10·6	(38)		20	—	—	—	—	296
0·25	0·02	5·7	4·0	10·0		9	—	—	—	—	297
0·01	0·01	Tr.	Tr.	Tr.		<1	0	0	—	0	298
0·52	0·10	26·8	12·6	4·4		58	—	17	—	—	299
0·08	0·01	5·2	8·7	2·6		8	—	—	—	—	300
0·46	—	169·3	53·0	21·0	117		—	—	—	—	301
0·09	0·02	11·1	1·0	3·7	3		—	—	—	—	302
0·28	0·01	27·0	8·1	27·1		7	—	—	—	—	303
4·32	0·45	178·0	50·2	14·7		132	—	—	—	—	304
0·40	0·02	35·5	22·8	(297)	9		—	—	—	—	305
0·12	0·03	6·1	3·0	14·5		16	11,400	11	0·017	3·7–11·1	306
0·14	0·03	7·1	2·6	16·8		19	—	—	—	—	307
0·85	—	65·0	57·0	(851)	67		—	—	—	—	308
0·97	—	56·0	53·0	22·7	53	—	—	6	—	—	309
0·29	0·02	13·1	17·8	(68)		10	—	—	—	—	310
0·13	0·01	27·2	11·2	(26)		3	—	—	—	—	311
0·45	—	37·5	41·0	8·5	23		—	—	—	—	312
1·08	—	91·0	66·0	34·9	55		—	—	—	—	313
0·10	0·01	5·4	6·0	8·9		15	—	Tr.	—	5·1	314
1·22	—	101·0	94·0	32·1	81		—	14	—	—	315
0·13	0·01	9·0	5·0	13·0		3	—	—	—	—	316
5·00	0·13	75·5	23·5	(169)	9		—	—	—	—	317
0·97	0·05	106·0	26·5	(240)	12		—	—	—	—	318
0·46	0·04	14·8	36·1	44·4		21	—	17	—	6·8–21·6	319
0·19	0·02	85·7	38·3	(245)	8		—	—	—	—	320
0·04	0·01	27·3	10·1	(236)		6	—	—	—	—	321
0·04	0·01	25·0	9·3	34		5	—	—	—	—	322
0·19	0·02	36·4	21·1	(188)	8		—	—	—	—	323

TABLE II

VITAMIN D CONTENT OF FOODS

	International units per oz.
Halibut liver oil	5,700–114,000
Cod liver oil	1,700–8,500
Herring body oil	2,800–5,600
Salmon, Tinned	227
Egg yolk	43–142
Butter	2–114
Cream	14
Liver	0–14
Margarine, Vitaminised	30
Milk, Fresh whole	0·1–1·1
Milk, Evaporated tinned	0·7

TABLE III

'READY RECKONER" FOR THE CALCULATION OF CARBOHYDRATE, PROTEIN, AND FAT IN COMMON FOODS, AND THEIR CALORIFIC VALUE

MILK, FRESH

Milk.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	0·2	0·2	0·2	3
10	0·5	0·3	0·4	7
20	0·9	0·7	0·7	13
30	1·4	1·0	1·1	20
40	1·8	1·3	1·5	27
50	2·3	1·7	1·8	34
60	2·8	2·0	2·2	40
70	3·2	2·3	2·6	47
80	3·7	2·6	3·0	54
90	4·1	3·0	3·3	60
100	4·6	3·3	3·7	67

CREAM

Cream.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	0·1	0·1	2·1	20
10	0·2	0·2	4·2	41
20	0·5	0·4	8·4	81
30	0·7	0·5	12·6	122
40	0·9	0·7	16·8	163
50	1·1	0·9	21·0	203
60	1·4	1·1	25·2	244
70	1·6	1·3	29·4	284
80	1·8	1·4	33·6	325
90	2·1	1·6	37·8	366
100	2·3	1·8	42·0	407

BUTTER

Butter.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	—	—	4·3	40
10	—	—	8·5	79
20	—	0·1	17·0	158
30	—	0·1	25·6	237
40	—	0·2	34·1	316
50	—	0·2	42·6	396
60	—	0·2	51·1	475
70	—	0·3	59·6	554
80	—	0·3	68·1	633
90	—	0·4	76·6	712
100	—	0·4	85·1	793

CHEESE, CHEDDAR, OR SOFT WHOLE MILK

Cheese. g.	C. g.	P. g.	F. g.	Cals.
5	—	1·2	1·7	21
10	—	2·5	3·5	42
20	—	5·0	6·9	85
30	—	7·5	10·4	127
40	—	9·9	13·8	169
50	—	12·5	17·3	211
60	—	14·9	20·7	254
70	—	17·4	24·2	296
80	—	19·9	27·6	338
90	—	22·4	31·1	381
100	—	24·9	34·5	423

MEAT, LEAN

Meat. g.	C. g.	P. g.	F. g.	Cals.
5	—	1·7	0·4	11
10	—	3·3	0·8	21
20	—	6·6	1·6	42
30	—	10·0	2·5	63
40	—	13·4	3·3	85
50	—	16·7	4·1	106
60	—	20·0	4·9	127
70	—	23·3	5·7	148
80	—	26·7	6·6	169
90	—	30·0	7·4	190
100	—	33·3	8·2	211

MEAT, AVERAGE

Meat. g.	C. g.	P. g.	F. g.	Cals.
5	—	1·3	1·0	15
10	—	2·5	2·0	29
20	—	5·0	4·1	59
30	—	7·5	6·1	88
40	—	10·0	8·2	117
50	—	12·5	10·2	146
60	—	15·0	12·2	176
70	—	17·5	14·3	205
80	—	20·0	16·3	234
90	—	22·5	18·4	264
100	—	25·0	20·4	293

CHICKEN (OR RABBIT), BOILED

Chicken.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	—	1·3	0·5	10
10	—	2·6	1·0	20
20	—	5·2	2·1	41
30	—	7·9	3·1	61
40	—	10·5	4·1	82
50	—	13·1	5·2	102
60	—	15·7	6·2	122
70	—	18·4	7·2	142
80	—	21·0	8·2	163
90	—	23·6	9·3	183
100	—	26·2	10·3	203

BACON, RAW

Bacon.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	—	0·6	2·7	28
10	—	1·3	5·4	55
20	—	2·5	10.8	111
30	—	3·8	16·2	166
40	—	5·0	21·6	221
50	—	6·3	27·0	276
60	—	7·5	32·4	332
70	—	8·8	37·8	387
80	—	10·0	43·2	443
90	—	11·3	48·6	498
100	—	12·5	54·0	553

HAM, LEAN

Ham.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	—	1·2	0·7	11
10	—	2·3	1·3	22
20	—	4·6	2·7	44
30	—	6·9	4·0	66
40	—	9·2	5·4	88
50	—	11·5	6·7	110
60	—	13·8	8·1	132
70	—	16·1	9·4	154
80	—	18·4	10·8	175
90	—	20·7	12·1	197
100	—	23·1	13·4	219

FISH, STEAMED

Fish. g.	C. g.	P. g.	F. g.	Cals.
5	—	0.9	—	4
10	—	1·8	0·1	8
20	—	3·6	0·2	16
30	—	5·4	0·3	25
40	—	7·2	0·4	33
50	—	9·0	0·5	41
60	—	10·8	0·5	49
70	—	12·6	0·6	57
80	—	14·4	0·7	65
90	—	16·2	0·8	74
100	—	18·0	0·9	82

HERRINGS, COVERED WITH OATMEAL AND FRIED

Herrings. g.	C. g.	P. g.	F. g.	Cals.
5	0·1	1·1	0·8	12
10	0·2	2·2	1·5	27
20	0·3	4·4	3·0	47
30	0·5	6·5	4·5	71
40	0·6	8·7	6·0	94
50	0·8	10·9	7·6	118
60	0·9	13·1	9·1	142
70	1·1	15·2	10·6	165
80	1·2	17·4	12·1	189
90	1·4	19·6	13·6	212
100	1·5	21·8	15·1	236

JAM OR MARMALADE

Jam. g.	C. g.	P. g.	F. g.	Cals.
5	3·5	—	—	14
10	6·9	0·1	—	29
20	13·9	0·1	—	57
30	20·8	0·2	—	86
40	27·7	0·2	—	114
50	34·7	0·3	—	143
60	41·6	0·4	—	173
70	48·6	0·4	—	202
80	55·5	0·5	—	230
90	62·5	0·5	—	259
100	69·4	0·6	—	287

BREAD, WHITE

Bread.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	2·7	0·4	—	13
10	5·4	0·8	0·1	26
20	10·7	1·6	0·1	52
30	16·1	2·4	0·2	78
40	21·4	3·2	0·3	104
50	26·8	4·0	0·4	130
60	32·2	4·7	0·4	156
70	37·5	5·5	0·5	182
80	42·9	6·3	0·6	208
90	48·2	7·1	0·6	234
100	53·7	7·9	0·7	260

FLOUR

Flour.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	4·0	5·0	—	19
10	8·0	1·1	0·1	38
20	16·0	2·1	0·2	76
30	24·0	3·2	0·3	114
40	32·0	4·3	0·4	152
50	40·0	5·4	0·5	190
60	48·0	6·4	0·5	228
70	56·0	7·5	0·6	266
80	64·0	8·6	0·7	304
90	72·0	9·6	0·8	342
100	80·0	10·7	0·9	380

BISCUITS, WATER

Biscuits.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	3·6	0·6	0·6	23
10	7·3	1·2	1·3	46
20	14·6	2·4	2·5	93
30	21·8	3·5	3·7	139
40	29·1	4·7	5·0	185
50	36·4	5·9	6·2	231
60	43·6	7·1	7·5	277
70	50·9	8·3	8·7	324
80	58·2	9·4	10·0	370
90	65·5	10·6	11·2	416
100	72·8	11·8	12·5	462

OATMEAL OR QUAKER OATS, RAW

Oatmeal.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	3·6	0·7	0·4	22
10	7·3	1·3	0·9	43
20	14·6	2·7	1·7	87
30	21·8	4·0	2·6	130
40	29·1	5·3	3·5	174
50	36·4	6·7	4·4	217
60	43·7	8·0	5·2	260
70	51·0	9·3	6·1	303
80	58·2	10·6	7·0	347
90	65·5	12·0	7·8	391
100	72·8	13·3	8·7	434

RICE

Rice.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	4·3	0·3	0·1	20
10	8·7	0·7	0·1	39
20	17·4	1·4	0·2	79
30	26·0	2·0	0·3	118
40	34·7	2·7	0·4	157
50	43·4	3·4	0·5	196
60	52·1	4·1	0·6	236
70	60·8	4·8	0·7	275
80	69·4	5·4	0·8	314
90	78·0	6·1	0·9	353
100	86·8	6·8	1·0	393

POTATOES, OLD, BOILED

Potatoes.	C.	P.	F.	
g.	g.	g.	g.	Cals.
5	1·0	0·1	—	4
10	2·0	0·1	—	9
20	3·9	0·3	—	17
30	5·9	0·4	—	26
40	7·9	0·6	—	35
50	9·9	0·7	—	44
60	11·8	0·8	—	52
70	13·8	1·0	—	61
80	15·8	1·1	—	70
90	17·7	1·3	—	78
100	19·7	1·4	—	87

TABLE IV

PROTEIN AND FAT FOODS

The following portions contain about 7 g. protein and 7 g. fat, and may be exchanged one for another without causing any significant difference in food values.

MEAT	g.	oz.	FISH	g.	oz.
Beef, roast ..	26	1	Herring, kipper or bloater ..	32	1
Ham (lean), boiled	30	1	Salmon	37	1¼
Duck, roast ..	30	1	Sardines ..	34	1¼
Mutton, roast ..	28	1	Mackerel ..	35	1¼
Cheese	28	1	1 egg	57	2
With the addition of ½ oz. butter					
Tripe, stewed ..	39	1½	White fish, steamed ..	36	1¼
Chicken, boiled or roast ..	25	1	Smoked haddock	31	1
Rabbit, stewed ..	26	1			
Game, roast ..	22	¾			
Veal	23	¾			
With the reduction of ½ oz. butter			*With the reduction of 1 oz. butter*		
Bacon, fried ..	29	1	Bacon, raw ..	56	2

Note.—1 oz. gelatine contains 26 g. protein.

TABLE V

5-GRAM CARBOHYDRATE PORTIONS OF FOOD

(Edible portions unless otherwise stated)

Cereal Foods

	g.	oz.		g.	oz.
Biscuit (plain) ..	7	¼	Grapenuts	7	¼
Bread (white or brown)	10	⅓	Oatmeal or Quaker Oats	7	¼
Cornflakes	6	⅕	Rice or tapioca ..	6	⅕
Cornflour	5	⅙	Ryvita or Vita-weat	7	¼
Flour	6	⅕	Shredded Wheat ..	6	⅕
Force or Post Toasties	6	⅕	Toast	8	¼

Beverages and Invalid Foods

Benger's Food ..	6	⅕	Instant Postum ..	7	¼
Bournvita ..	7	¼	Ovaltine	8	¼
Cocoa	14	½	Virol	8	¼
Horlick's Malted Milk	7	¼			

Miscellaneous High Carbohydrate Foods

Chocolate (plain or milk)	9	⅓	Honey	7	¼
Golden syrup or treacle	7	¼	Jam	7	¼
			Marmalade ..	7	¼
			Sugar	5	⅛

Milk

Whole cow's milk	100 c.c.	3½	Unsweetened condensed milk ..	43	1½
Skimmed milk ..	100 c.c.	3½			

Vegetables, Raw

Onions, Spring ..	59	2	Radishes	180	6½

Vegetables, Boiled

Beetroot	50	2	Peas (fresh green)	65	2½
Butter or Haricot beans	29	1	Peas (dried) ..	26	1
Carrots	116	4	Potatoes (old or new)	26	1
Leeks	109	4	Swedes	132	4¾
Onions	185	6½	Turnips	218	7½
Parsnips	37	1½			

Nuts

	g.	oz.
Almonds *	116	3½
Barcelona nuts *	96	3½
Brazil nuts *	122	3½
Chestnuts	14	½
Cob nuts *	73	2½
Peanuts *	58	2
Walnuts *	100	3½

Fruit

	g.	oz.
Apple (raw)	42	1½
Apple (stewed)	114	4
Apricot (fresh); weight includes stones	82	3
Apricot (dried stewed)	28	1
Avocado pear *	200	7
Banana	26	1
Blackberries (raw)	78	2¾
Blackberries (stewed)	156	5½
Cherries (raw); weight includes stones	49	1¾
Cherries (stewed); weight includes stones	122	4½
Cranberries	142	5
Currants (black, red or white, raw)	91	3¼
Currants (black, red or white, stewed)	129	4½
Custard apple	27	1
Damsons (stewed); weight includes stones	74	2½
Dates; weight includes stones	8	¼
Figs (fresh, raw)	52	2
Figs (dried, raw)	9	¼
Figs (dried, stewed)	17	½
Gooseberries (ripe, raw)	54	2
Gooseberries (unripe, stewed)	282	10
Grapefruit	94	3½
Grapes (white or black)	31	1
Greengages (raw); weight includes stones	45	1½
Greengages (stewed); weight includes stones	66	2½
Liches	40	1½
Loganberries	147	5
Medlars	96	3½
Melon (yellow or water)	97	3½
Mulberries	62	2
Nectarine; weight includes stones	44	1½
Orange or tangerine	59	2
Orange juice	53	2
Passion fruit	81	3
Peach (fresh); weight includes stones	63	2¼
Peach (dried, stewed)	28	1
Pear (raw)	47	1¾
Pear (stewed)	74	2½
Pineapple (fresh)	43	1½
Plum (raw); weight includes stones	55	2
Plum (stewed); weight includes stones	79	2¾
Pomegranate (whole)	77	2½
Prunes (dried, stewed); weight includes stones	32	1
Quince	80	3
Raisins	8	¼
Raspberries (raw)	89	3
Raspberries (stewed)	132	4½
Strawberries	83	2¾
Tomatoes	177	6¼

* These foods in the amounts given contain appreciable quantities of fat.

Cakes and Pastry (Recipes, pp. 250–252.)

	g.	oz.		g.	oz.
Buns, Currant ..	9	⅓	Cake, Sponge ..	9	⅓
Buns, Rock ..	8	¼	Doughnuts ..	10	⅓
Cake, Cherry ..	9	⅓	Gingerbread ..	8	¼
Cake, Chocolate ..	9	⅓	Jam tarts	8	¼
Cake, Coconut ..	9	⅓	Mince pies ..	12	⅖
Cake, Currant ..	8	¼	Pastry, flaky ..	12	⅖
Cake, Dundee ..	8	¼	Pastry, short ..	9	⅓
Cake, Orange ..	9	⅓	Scones (with egg)..	8	¼
Cakes, Queen ..	9	⅓	Scones (without egg)	9	⅓
Cakes, Rock	8	¼	Shortbread ..	8	¼

Puddings (Recipes, pp. 253–258.)

Apple Charlotte ..	18	⅔	Jelly, plain ..	26	1
Apple dumpling ..	18	⅔	Jelly, milk ..	24	⅞
Apple pudding ..	16	½	Omelette, Jam ..	19	⅔
Apple tart ..	15	½	Pancakes	14	½
Banana custard ..	28	1	Plum tart	16	½
Blancmange ..	28	1	Queen of puddings	22	¾
Bread and butter pudding ..	30	1	Rhubarb tart ..	17	⅗
Cabinet pudding ..	25	1	Rice pudding ..	24	¾
Canary pudding ..	9	⅓	Sago pudding ..	25	1
Castle pudding ..	11	⅖	Semolina pudding	26	1
Chocolate mould ..	24	¾	Suet pudding, plain	14	½
College pudding ..	10	⅓	Suet pudding with raisins	12	⅖
Custard, Egg ..	53	2	Tapioca pudding ..	24	¾
Custard powder custard ..	30	1	Treacle tart ..	8	¼
Dumpling	21	¾	Trifle	18	⅔
Gooseberry tart ..	16	½	White sauce, sweet	29	1
Jam roll, baked ..	9	⅓	Yorkshire pudding	19	⅔

Savoury Dishes (Recipes, pp. 259–263.)

Beefsteak pudding	23	¾	Macaroni cheese ..	33	1¼
Bread sauce ..	39	1½	Onion sauce ..	73	2½
Buck rarebit ..	31	1	Potato soup ..	45	1½
Cheese sauce ..	57	2	Sausage roll ..	14	½
Cheese straws ..	19	⅔	Scotch egg ..	49	1¾
Curried meat ..	58	2	Shepherd's pie ..	41	1½
Egg sauce	60	2	Steak and kidney pie	30	1
Fish cakes ..	51	1¾	Toad-in-the-hole ..	27	1
Fish pie	76	2⅔	Welsh rarebit ..	24	⅞
Hotpot	44	1½	White sauce, savoury	51	1¾
Irish stew	64	2¼			
Kedgeree	50	1¾			

The following contain little or no carbohydrate and need not be weighed in diabetic diets:

Vegetables	Other Foods
Asparagus	Tea
Brussels sprouts	Coffee, ground
Cabbage	Lemon juice
Cauliflower	Soda water
Celery	Meat extract or Marmite
Cucumber	Clear meat, rabbit or chicken soup
French beans	Vinegar
Lettuce	Saccharine
Mushrooms	Salt
Mustard and cress	Pepper
Rhubarb	Mustard
Spinach	Cloves
Watercress	Nutmeg
	Cinnamon
	Curry powder

TABLE VI

5-GRAM MEASURES OF CARBOHYDRATE FOODS

(For use in an emergency)

Sugar	1 large lump.
Glucose or lactose	1 heaped teaspoon.
Milk	7 tablespoons.
Horlick's Malted Milk.. ..	1 heaped teaspoon.
Orange juice	4 tablespoons.
Benger's Food	1 level teaspoon.
Ovaltine or Bournvita.. ..	1 very full teaspoon.

TABLE VII

1-15-*GRAM CARBOHYDRATE PORTIONS OF FRUITS AND VEGETABLES*

(Weights are given in grams)

Fruit	How Weighed	Grams Carbohydrate														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Apples, average eating, raw.	With skin and core	11	22	33	44	54	65	76	87	98	109	120	131	141	152	163
Apples, stewed	.. .. ..	23	45	68	91	114	136	159	182	205	227	250	273	295	318	341
Apricots, fresh	With stones ..	16	33	49	65	82	98	114	131	147	163	180	196	213	229	245
Apricots, dried, stewed ..	.. .. ..	6	11	17	22	28	34	39	45	50	56	62	68	73	79	85
Bananas ..	Without skin ..	5	10	16	21	26	31	36	42	47	52	57	63	68	73	78
Blackberries, stewed ..	.. .. ..	31	62	93	124	156	187	218	249	280	312	343	374	405	436	468
Cherries, eating, raw.	With stones and stalks.. ..	10	19	29	39	48	58	67	77	87	96	106	116	125	135	144
Cherries, stewed	With stones ..	24	49	73	98	122	146	171	195	220	244	269	293	317	342	366
Currants, black, red or white, stewed ..	.. .. ..	26	52	77	103	129	155	180	206	232	258	284	310	335	361	387
Damsons, stewed	With stones ..	15	30	44	59	74	89	103	118	133	148	163	177	192	207	222
Dates	With stones ..	2	3	5	6	8	10	11	13	14	16	18	19	21	22	24
Figs, fresh ..	.. .. ..	10	20	31	41	52	62	73	83	93	104	114	124	135	145	155
Figs, dried, stewed ..	.. .. ..	3	7	10	14	17	20	24	27	31	34	37	41	44	47	51
Gooseberries, ripe.	Topped and tailed.. ..	11	22	33	43	54	65	76	87	98	109	119	130	141	152	163
Grapes, black or white,	With skins, pips and stalks ..	7	13	20	26	33	39	46	52	59	65	72	78	85	91	98
Grapefruit ..	No skin, pith or pips	19	38	56	75	94	113	131	150	169	188	206	225	244	263	281
Greengages ..	With skins and stones ..	9	18	27	36	45	54	63	72	81	90	99	108	116	125	134

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Greengages, stewed.	With skins and stones ..	13	26	40	53	66	79	93	106	119	132	145	159	172	185	198
Melon	Flesh only ..	19	39	58	78	97	117	136	155	175	194	214	233	252	272	292
Oranges ..	No outer skin or pips	12	24	35	47	59	71	82	94	106	117	129	141	153	165	176
Orange juice ..	.. .. ..	11	21	32	42	53	64	74	85	95	106	117	127	138	148	159
Peaches ..	With stones ..	13	25	38	51	63	76	89	102	114	127	140	152	165	178	190
Pears, average eating.	With skin and core	13	26	39	52	66	79	92	105	118	131	144	157	170	183	197
Pears, stewed..	.. .. ..	15	29	44	59	74	88	103	118	132	147	162	177	191	206	221
Pineapple, fresh	No skin or core	9	17	26	34	43	52	60	69	77	86	95	103	112	120	129
Plums, dessert	With stones and stalks.. ..	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165
Plums, cooking	With stones ..	18	35	53	71	88	106	124	141	159	177	194	212	230	247	265
Plums, stewed	With stones ..	16	32	47	63	79	95	110	126	142	158	174	190	206	221	237
Prunes, stewed	With stones ..	6	13	19	25	32	38	44	51	57	63	70	76	82	89	95
Raspberries ..	Whole	18	36	53	71	89	107	125	143	160	178	196	214	232	250	267
Strawberries ..	With stalks ..	17	33	50	66	83	100	116	133	149	166	183	199	216	232	249
VEGETABLE (Boiled except where otherwise stated)																
Artichokes; Brussels sprouts; cucumber, raw		59	118	176	235	294	353	412	470	529	588	647	706	764	824	882
Beans, butter		6	12	17	23	29	35	41	44	52	58	64	70	75	81	87
Beetroot		13	25	38	50	63	75	88	100	113	125	138	150	163	175	188
Cabbage; cauliflower; French and runner beans; spinach ..		90	180	270	360	450	540	630	720	810	900	990	1080	1170	1260	1350
Carrots		23	47	70	93	116	140	163	186	209	233	256	279	302	326	349
Leeks		22	43	65	87	109	130	152	174	196	217	239	261	283	304	326
Marrow		71	143	214	286	357	428	500	572	643	714	785	856	928	1000	1072
Onions		37	74	111	148	185	222	259	296	333	370	407	444	481	519	556
Parsnips		7	15	22	29	37	44	52	59	66	74	81	89	96	104	111
Peas, fresh green		13	26	39	52	65	78	91	104	117	130	143	156	169	182	195
Potatoes, peas (dried)		5	10	16	21	26	31	36	42	47	52	57	62	68	73	78
Swedes		26	53	79	105	132	158	185	211	237	264	290	317	343	369	396
Tomatoes, raw		35	71	106	142	177	212	248	284	319	354	389	424	460	496	532
Turnips		43	87	130	174	218	261	304	348	391	435	478	522	565	609	652

TABLE VII

1-15-GRAM CARBOHYDRATE PORTIONS OF FRUITS AND VEGETABLES

(Weights are given in grams)

Fruit	How Weighed	Grams Carbohydrate														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Apples, average eating, raw.	With skin and core	11	22	33	44	54	65	76	87	98	109	120	131	141	152	163
Apples, stewed	.. .. ..	23	45	68	91	114	136	159	182	205	227	250	273	295	318	341
Apricots, fresh	With stones ..	16	33	49	65	82	98	114	131	147	163	180	196	213	229	245
Apricots, dried, stewed ..	.. .. ..	6	11	17	22	28	34	39	45	50	56	62	68	73	79	85
Bananas ..	Without skin ..	5	10	16	21	26	31	36	42	47	52	57	63	68	73	78
Blackberries, stewed ..	.. .. ..	31	62	93	124	156	187	218	249	280	312	343	374	405	436	468
Cherries, eating, raw.	With stones and stalks.. ..	10	19	29	39	48	58	67	77	87	96	106	116	125	135	144
Cherries, stewed	With stones ..	24	49	73	98	122	146	171	195	220	244	269	293	317	342	366
Currants, black, red or white, stewed ..	.. .. ..	26	52	77	103	129	155	180	206	232	258	284	310	335	361	387
Damsons, stewed	With stones ..	15	30	44	59	74	89	103	118	133	148	163	177	192	207	222
Dates	With stones ..	2	3	5	6	8	10	11	13	14	16	18	19	21	22	24
Figs, fresh ..	.. .. ..	10	20	31	41	52	62	73	83	93	104	114	124	135	145	155
Figs, dried, stewed ..	.. .. ..	3	7	10	14	17	20	24	27	31	34	37	41	44	47	51
Gooseberries, ripe.	Topped and tailed.. ..	11	22	33	43	54	65	76	87	98	109	119	130	141	152	163
Grapes, black or white,	With skins, pips and stalks ..	7	13	20	26	33	39	46	52	59	65	72	78	85	91	98
Grapefruit ..	No skin, pith or pips	19	38	56	75	94	113	131	150	169	188	206	225	244	263	281
Greengages ..	With skins and stones ..	9	18	27	36	45	54	63	72	81	90	99	108	116	125	134

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Greengages, stewed.	With skins and stones ..	13	26	40	53	66	79	93	106	119	132	145	159	172	185	198
Melon	Flesh only ..	19	39	58	78	97	117	136	155	175	194	214	233	252	272	292
Oranges ..	No outer skin or pips	12	24	35	47	59	71	82	94	106	117	129	141	153	165	176
Orange juice ..	.. .. ..	11	21	32	42	53	64	74	85	95	106	117	127	138	148	159
Peaches ..	With stones ..	13	25	38	51	63	76	89	102	114	127	140	152	165	178	190
Pears, average eating.	With skin and core	13	26	39	52	66	79	92	105	118	131	144	157	170	183	197
Pears, stewed..	.. .. ..	15	29	44	59	74	88	103	118	132	147	162	177	191	206	221
Pineapple, fresh	No skin or core	9	17	26	34	43	52	60	69	77	86	95	103	112	120	129
Plums, dessert	With stones and stalks.. ..	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165
Plums, cooking	With stones ..	18	35	53	71	88	106	124	141	159	177	194	212	230	247	265
Plums, stewed	With stones ..	16	32	47	63	79	95	110	126	142	158	174	190	206	221	237
Prunes, stewed	With stones ..	6	13	19	25	32	38	44	51	57	63	70	76	82	89	95
Raspberries ..	Whole	18	36	53	71	89	107	125	143	160	178	196	214	232	250	267
Strawberries ..	With stalks ..	17	33	50	66	83	100	116	133	149	166	183	199	216	232	249
VEGETABLE (Boiled except where otherwise stated)																
Artichokes; Brussels sprouts; cucumber, raw		59	118	176	235	294	353	412	470	529	588	647	706	764	824	882
Beans, butter		6	12	17	23	29	35	41	44	52	58	64	70	75	81	87
Beetroot		13	25	38	50	63	75	88	100	113	125	138	150	163	175	188
Cabbage; cauliflower; French and runner beans; spinach ..		90	180	270	360	450	540	630	720	810	900	990	1080	1170	1260	1350
Carrots		23	47	70	93	116	140	163	186	209	233	256	279	302	326	349
Leeks		22	43	65	87	109	130	152	174	196	217	239	261	283	304	326
Marrow		71	143	214	286	357	428	500	572	643	714	785	856	928	1000	1072
Onions		37	74	111	148	185	222	259	296	333	370	407	444	481	519	556
Parsnips		7	15	22	29	37	44	52	59	66	74	81	89	96	104	111
Peas, fresh green		13	26	39	52	65	78	91	104	117	130	143	156	169	182	195
Potatoes, peas (dried)		5	10	16	21	26	31	36	42	47	52	57	62	68	73	78
Swedes		26	53	79	105	132	158	185	211	237	264	290	317	343	369	396
Tomatoes, raw		35	71	106	142	177	212	248	284	319	354	389	424	460	496	532
Turnips		43	87	130	174	218	261	304	348	391	435	478	522	565	609	652

TABLE VIII

*COMPOSITION OF ALCOHOLIC BEVERAGES**

	Sugar in 100 c.c. (3½ oz.) grams	Alcohol in 100 c.c. (3½ oz.) c.c.
Wines—		
Bordeaux—		
Vin Ordinaire	0·1	7
Claret	0·2	9
Californian Claret ..	0·15	9
Grâves	0·4	9
Sauterne, dry	1·0	12
Sauterne, sweet ..	2·3	12
Burgundy—		
Average	0·2	11
Australian	0·3	11
Beaune	0·3	11
Californian	0·2	11
Chablis	1·2	9
Pommard	0·2	12
Champagne, dry	1·9	12
Hock	0·0	8
Italian, dry	0·3	10
Madeira	2·0	15
Marsala	3·5	16
Moselle	0·25	8
Port	6·8	17
Sherry, dry	2·0	17
Sherry, sweet	4·0	17
Spirits—		
Brandy, old	0	45
Gin, dry, pre-1914 ..	0	30
Rum, pre-1914	0	43
Rum, Jamaica	0	69
Whisky, pre-1914 ..	0	40–45
Whisky, post-1914 ..	0	20–25

* From R. D. Lawrence, *The Diabetic Life*, 1939.

	Sugar in 100 c.c. (3½ oz.)	Alcohol in 100 c.c. (3½ oz.)
	grams	c.c.
Liqueurs, etc.—		
Absinthe	0	45–55
Benedictine	33	40–50
Brandy	0	45
Chartreuse..	34	43
Crème de Menthe ..	28	48
Curaçao	29	30–45
Kummel	31	35–55
Vermouth	9·5	14–16
Beers, etc.—		
Ale, beer	4–8	4–5
Cider	0·7–2·0	5–6
Porter, stout	7	5

All sweet wines and liqueurs are forbidden for diabetics, and other alcoholic drinks should be taken only on the physician's prescription. Patients suffering from high blood pressure or gout should avoid alcohol in any form.

TABLE IX

PURINES IN FOODS.

Foods Rich in Purines	Purine nitrogen Grams per 100 grams
Herring roe (soft)	0·48
Sweetbreads	0·43
Whitebait	0·34
Sprats	0·25
Sardines	0·23
Heart	0·17
Herring	0·17
Mussels	0·15
Liver	0·14
Kidney	0·14
Bloater	0·13
Cod's roe	0·12
Goose	0·10
Venison	0·10
Pheasant	0·10
Trout	0·09
Veal	0·09
Mutton	0·08
Haddock	0·08
Salmon	0·08
Pork	0·07
Chicken	0·07
Bacon	0·07
Cod	0·06
Ham	0·06
Beef	0·06
Crab	0·06
Beverages Rich in Purines	
Marmite	0·36
Bovril	0·32
Oxo cubes	0·24
Tea, dry	0·07
Coffee, ground	0·04

Foods Poor in Purines

(Less than 0·06 g. of purine nitrogen per 100 g.)

Peas	White flour and other refined cereals	Corned beef
Beans		Brains
Lentils	Tea infusion	Tripe
Nuts	Root vegetables	Eggs
White bread	Green-leaf vegetables	Coffee infusion

Foods Free from Purines

Milk, fresh or tinned	Margarine	Jam
Cheese	Sugar	Marmalade
Cream and butter	Fruit	Honey

TABLE X

ROUGHAGE IN FOODS

Foods high in Roughage	**Foods with little or no Roughage**
Bread, brown or wholemeal	Biscuits, plain (not digestive)
Digestive or coconut biscuits or macaroons	Bread, white
Flour, wholemeal	Butter
Fruit, dried or fresh, with edible pips or skins	Cake, Madeira or sponge
Green vegetables	Cheese
Jam with pips or skins	Cornflour
Nuts	Cream
Oatmeal or Quaker Oats	Eggs
Peas and beans	Fish, steamed (no bones)
Foods with moderate amounts of Roughage	Flour, white
Fruit (no pips or skins)	Golden syrup or black treacle
Root and stem vegetables	Grape juice
	Honey
	Jelly
	Lemon juice, strained
	Meat
	Milk
	Orange or other fruit juice, strained
	Rusks
	Sugar
	Tomato juice, strained

TABLE XI

*OXALIC ACID IN FOODS**

	Oxalic Acid Grams per 100 grams		Oxalic Acid Grams per 100 grams
Spinach	0·890	Potatoes	0·0057
Rhubarb	0·500	Broccoli	0·0054
Gooseberries, green	0·088	Asparagus	0·0052
Carrots	0·033	Pears	0·0030
Oranges	0·024	Cherries, cooking	0·0011
Redcurrants	0·019	Grapes	0–0·025
Strawberries	0·019	Peaches	0–0·005
Blackberries	0·018	Apples	0
Raspberries	0·015	Cauliflower	0
Turnip tops	0·015	Cherries, eating	0
Apricots	0·014	Cucumber	0
Damsons	0·010	Grapefruit	0
Parsnips	0·010	Greengages	0
Cabbage	0·0077	Lemon juice	0
Tomatoes	0·0075	Melons	0
Lettuce	0·0071	Nectarines	0
Bananas	0·0064	Peas	0
Pineapple, tinned	0·0063	Radishes	0
Prunes	0·0058	Turnips	0

* From Kohman, E. F. (1939). Oxalic Acid in Foods and its Behaviour and Fate in the Diet, Journal of Nutrition, vol. 18, p. 233.

TABLE XII

PORTIONS OF FOOD CONTAINING 0·05 g. OF POTASSIUM

Cereal Foods

	g.	oz.
Arrowroot ..	278	9¾
Biscuits, Cream crackers ..	39	1¼
Biscuits, Digestive	16	½
Biscuits, Sweet or water	36	1¼
Bread, White ..	43	1½
Bread, Wholemeal or Hovis ..	21	¾
Cornflour	82	3
Flour, white ..	35	1¼
Oatmeal or Quaker Oats	14	½
Rice	44	1½
Rusks	18	⅝
Tapioca	250	9

Meat, Fish and Dairy Products

	g.	oz.
Bacon, raw weight	23	¾
Beef, Corned ..	43	1½
Beef, roast or boiled	15	½
Beef, stewed ..	33	1¼
Butter, " fresh " ..	333	12
Cheese, Cream ..	106	3¾
Cheese, Cheddar ..	43	1½
Cheese, Packet ..	58	2
Chicken, roast or boiled	14	½
Cod, steamed or fried	14	½
Crab, boiled ..	18	⅝
Cream (40%) ..	55	2
Haddock, fresh or dried, steamed	16	½
Hake, steamed or fried	16	½
Ham, lean, boiled	11	⅓
Kidney, ox, stewed	30	1
Lobster, boiled ..	19	⅝
Margarine, unsalted	1000	35
Milk, fresh, whole	31	1
Milk, evaporated, unsweetened ..	12	½
Milk, whole or skimmed condensed, sweetened ..	10	⅓
Mutton, boiled ..	18	⅝
Mutton, roast ..	14	½
Mutton, neck, stewed	27	1
Plaice, steamed ..	18	⅝
Pork, roast or salt, boiled	16	½
Rabbit, stewed ..	24	¾
Salmon, fresh steamed, or tinned	15	½
Sardines, tinned ..	12	½
Sole, steamed ..	21	¾
Sweetbreads, stewed	22	¾
Tripe, stewed ..	473	17
Veal, roast ..	12	½

1 egg contains 70 mg. potassium.

Miscellaneous

	g.	oz.
Chocolate, plain or milk	11	⅓
Cocoa	9	⅓
Golden syrup ..	21	¾
Honey	95	3¼
Jam	37	1¼
Marmalade ..	118	4¼

Nuts

	g.	oz.		g.	oz.
Almonds	6	¼	Cobnuts	14	½
Barcelona nuts ..	5	⅙	Coconut, desiccated	7	¼
Brazil nuts ..	7	¼	Peanuts	7	¼
Chestnuts	10	⅓	Walnuts	7	¼

Fruit

	g.	oz.		g.	oz.
*Apples, eating, raw	55	2	Lemon juice ..	36	1¼
Apples, stewed ..	89	3	Loganberries, raw	19	⅔
*Apricots, fresh, raw	18	⅔	Melon	18	⅔
Apricots, dried, stewed	5	⅙	Orange or orange juice	26	1
Bananas	14	½	*Peaches, fresh, raw	22	¾
Blackberries, stewed	47	1½	Peaches, dried, stewed	13	½
Blackcurrants, stewed ..	19	⅔	*Pears, eating, raw	55	2
*Cherries, raw ..	21	¾	Pears, stewed ..	71	2½
*Cherries, stewed ..	41	1½	Pineapple, raw ..	20	⅔
Currants, dried ..	7	¼	Plums, raw ..	28	1
*Damsons, raw ..	19	⅔	*Plums, stewed ..	28	1
*Damsons, stewed	25	1	Prunes, stewed ..	17	⅔
Figs, green, raw ..	19	⅔	Raisins, dried ..	6	¼
Figs, dried, stewed	9	⅓	Raspberries, raw ..	22	¾
Gooseberries, ripe, raw	30	1	Raspberries, stewed	33	1¼
Gooseberries, stewed	47	1½	Redcurrants, raw	18	⅔
*Grapes	20	⅔	Redcurrants, stewed	25	1
Grapefruit ..	22	¾	Rhubarb, stewed ..	17	⅔
*Greengages, raw..	17	½	Strawberries ..	31	1
*Greengages, stewed	26	1	Sultanas, dried ..	6	¼
			Tomatoes, raw ..	17	⅔

* Weighed with stones, or skin and core.

Vegetables

	g.	oz.		g.	oz.
Asparagus, boiled (weighed as served)	59	2	Brussels sprouts, boiled	20	⅔
Beans, Broad, boiled	22	¾	Cabbage, boiled ..	35	1¼
Beans, French or Runner, boiled..	53	1¾	Carrots, boiled ..	57	2
Beetroot, boiled ..	14	½	Cauliflower, boiled	33	1
			Celery, raw ..	18	⅔
			Celery, boiled ..	37	1¼

Vegetables—*continued.*

	g.	oz.		g.	oz.
Cucumber, raw ..	36	1¼	Potatoes, baked in skin	8	¼
Leeks, boiled ..	18	⅔	Potatoes, chips ..	5	⅙
Lentils, raw ..	8	¼	Potatoes, roast ..	7	¼
Lentils, boiled ..	23	¾	Potatoes, new, boiled	15	½
Lettuce, raw ..	24	¾	Radishes, raw ..	21	¾
Marrow, boiled ..	59	2	Spinach, cooked without water ..	10	⅓
Onions, boiled ..	64	2¼	Spring greens, boiled	42	1½
Onions, Spring, raw	22	¾	Swedes, boiled ..	49	1¾
Parsnips, boiled ..	17	⅔	Turnips, boiled ..	32	1
Peas, fresh, boiled	29	1	Watercress, raw ..	16	½
Peas, dried, boiled	19	⅔			
Potatoes, old, boiled	11	⅓			

TABLE XIII

AVAILABLE (INORGANIC) IRON IN FOODS

	Available iron as per cent. of total iron
Apples	95
Apricots, fresh or dried	100
Bacon	29
Bananas	100
Beans, baked	98
Beans, Broad	93
Beans, Butter	71
Beans, French	87
Beans, Haricot	84
Beans, Runner	74
Beef, Corned	35
Beef, raw	10
Beef, roast	19
Beer	100
Beetroot	94
Biscuits, Digestive	91
Blackberries	40
Blackcurrants	100
Black treacle	100
Bloater	35
Bread, Hovis	95
Bread, White	89
Bread, Wholemeal	79
Brussels sprouts	75
Cabbage	76
Carrots	100
Cauliflower	100
Celery	100
Cherries	100
Chicken	28
Chocolate, Milk	84
Chocolate, Plain	89
Cocoa powder	93
Cod	100
Cucumber	100
Currants, dried	89
Damsons	70
Dates	82
Eggs	100
Figs, fresh or dried	96
Flour, White	93
Golden syrup	95
Gooseberries	40
Grapefruit	92
Grapes, Black or White	86
Greengages	84
Haddock	100
Halibut	100
Ham	15
Herring	74
Herring roe	99
Kidney	62
Leeks	91
Lemon juice	80
Lentils	66
Lettuce	63
Liver	80–100
Loganberries	76
Mackerel	64
Marrow	85
Milk	100
Mushrooms	99
Mustard and Cress	42
Mutton	24
Nuts—	
Almonds	99
Barcelona nuts	91
Brazil nuts	62
Chestnuts	51
Cobnuts	97
Coconut	86
Coconut milk	75
Peanuts	100
Walnuts	41
Oatmeal	96
Olives (in brine)	97
Onions	100
Orange juice	85

	Available iron as per cent. of total iron
Parsnips	100
Peas, fresh or dried	75
Peaches, fresh	100
Peaches, dried	92
Pears	97
Pineapple	91
Plaice	97
Plums	55
Pork	47
Potatoes	98
Prunes	72
Rabbit	42
Radishes	62
Raisins	96
Raspberries	76
Redcurrants	85
Rhubarb	100
Rice	85
Ryvita	100
Salmon, tinned	94
Sardines, tinned	65
Sausage, Beef	72
Sausage, Pork	81
Skate	100
Sole	100
Spinach	57
Strawberries	52
Sultanas	65
Swedes	96
Sweetbread	71
Tomatoes	64
Tongue	19
Turnips	67
Veal	55
Watercress	66

TABLE XIV

ATOMIC WEIGHTS OF ELEMENTS

Element	Symbol	Atomic weights		Valency
		Approximate	International	
Calcium	Ca	40·0	40·07	2
Carbon	C	12·0	12·00	2 or 4*
Chlorine	Cl	35·5	35·457	1
Copper	Cu	63·5	63·57	1 or 2*
Hydrogen.. ..	H	1·0	1·008	1
Iodine	I	127·0	126·932	1
Iron	Fe	56·0	55·84	2 or 3*
Magnesium ..	Mg	24·0	24·32	2
Nitrogen	N	14·0	14·008	3* or 5
Oxygen	O	16·0	16·00	2
Phosphorus ..	P	31·0	31·027	2*, 3 or 5
Potassium ..	K	39·0	39·096	1
Sodium	Na	23·0	22·997	1
Sulphur	S	32·0	32·064	2*, 4 or 6

The valency used for calculating the acid-base value is marked *.

Determination of the Acid-Base Value of a Food.

The acid-base value of a foodstuff is usually expressed in terms of $\frac{N}{10}$ acid or alkali, and it may be calculated from the mineral analysis of the food. The metals, calcium, magnesium, sodium, potassium, iron, and copper contribute towards the *base* value, while the non-metals, chlorine, phosphorus, and sulphur contribute towards the *acid* value. In practice iron and copper are usually neglected since such small amounts are present.

Some foods contain more basic than acidic radicles; these foods yield a basic ash and are said to be base-forming. Others contain more acidic radicles, and these yield an acid ash in the body.

Method of calculating the acid-base value of a food

From Table I—

1 oz. white bread contains—

0·126 g. Na	0·0208 g. P
0·033 g. K	0·187 g. Cl
0·0066 g. Ca	0·0155 g. S
0·0063 g. Mg	

1,000 c.c. of a normal solution contain the atomic weight in grams of the element divided by its valency.

23 g. of Na are contained in 1,000 c.c. N. alkali.

" " " " 10,000 c.c. $\frac{N}{10}$ "

0·126 " " " $\frac{10,000 \times 0·126}{23} = 54·8$ c.c. $\frac{N}{10}$ alkali.

0·033 g. of K are contained in $\frac{10,000 \times 0·033}{39} = 8·5$ c.c. $\frac{N}{10}$ alkali.

0·0066 " Ca " " $\frac{10,000 \times 0·0066}{20} = 3·3$ c.c. "

0·0063 " Mg " " $\frac{10,000 \times 0·0063}{12} = 5·2$ c.c. "

Base value of 1 oz. bread = 71·8 c.c. "

0·0208 g. of P are contained in $\frac{10,000 \times 0·0208}{15·5} = 13·4$ c.c. $\frac{N}{10}$ acid.

0·187 " Cl " " $\frac{10,000 \times 0·187}{35·5} = 52·7$ c.c. "

0·0155 " S " " $\frac{10,000 \times 0·0155}{16} = 9·7$ c.c. "

Acid value of 1 oz. bread = 75·8 c.c. "

Acid-base value of 1 oz. bread = 75·8 − 71·8 = 4·0 c.c. $\frac{N}{10}$ acid.

TABLE XV

VITAMIN STANDARDS AND UNITS

International standards and units from the *Quarterly Bulletin of the Health Organisation of the League of Nations*, 1934, Vol. 4, No. 3.

Sherman and Steenbock units from *Notes on Vitamin Units*, by H. E. Munsell, U.S. Dept. of Agriculture, 1934.

Vitamin A

International Standard.—Pure, optically inactive β carotene.

International Unit.—Vitamin A activity of 0·6 gamma of the standard. (Daily doses of about 3 to 5 gamma of the standard, when administered to young rats on a diet deficient in vitamin A will restore growth and cure xerophthalmia.)

Sherman (Munsell) Unit.—The amount of the vitamin which, when fed daily, just suffices to support a rate of gain of 3 g. per week in a standard test animal (rat) during an experimental feeding period of four to eight weeks.

Vitamin B_1. Aneurin

International Standard.—Adsorption product of the vitamin, prepared from rice polishings by Seidell's method.

International Unit.—Anti-neuritic activity of 10 mg. of the standard. (Daily doses of 10 to 20 mg. of the standard will maintain normal growth in young rats on a diet deficient in vitamin B1. Doses of 20 to 30 mg. will cure pigeons suffering from polyneuritis.)

Sherman-Chase Unit.—The amount of the vitamin which, when fed daily, will induce a gain of 3 g. per week in a standard test animal during a test period of four to eight weeks.

Remainder of Vitamin B complex

Pellagra-preventing factor. Nicotinic acid
Riboflavine or lactoflavine
Vitamin B_6. Adermin

There are no International Standards for these Vitamins.

Vitamin C. Ascorbic Acid

International Standard.—*l*-ascorbic acid.

International Unit.—0·05 mg. of standard.

Sherman Unit.—The amount of the vitamin which, when fed daily, will protect a 300-g. guinea-pig from scurvy during a period of 90 days.

Vitamin D

International Standard.—Standard solution of irradiated ergosterol. This is to be replaced by a standard solution of pure crystalline vitamin D in olive oil.

International Unit.—1 mg. of standard solution, equivalent to 0·025 gamma of crystalline vitamin D.

Steenbock Unit.—The total amount of vitamin D which will produce a narrow line of calcium deposit in the rachitic metaphyses of the distal ends of the radii and ulnæ of standard rachitic rats in a period of 10 days.

Vitamin E. α-tocopherol

There is no International Standard for this vitamin.

TABLE XVI

FUNCTIONS AND PROPERTIES OF VITAMINS

Vitamins	A	B con		plex		C	D	E
		B_1 Aneurin	Riboflavine or Lactoflavine	B_6 Adermin	Nicotinic Acid	Ascorbic Acid	Vitamin D_3 and Calciferol	α- and β-tocopherol
Functions. All vitamins are essential for normal growth, health and reproduction.	Anti-infective. Anti-xerophthalmic. Promotes well-being at all ages by maintaining a resistance to infections, notably of the eyes, respiratory tract, and possibly the gums.	Anti-neuritic. Promotes appetite and digestion. Prevents beri-beri, polyneuritis and alcoholic neuritis. Plays a part in carbohydrate metabolism.	Component part of an enzyme connected with respiration in the tissues.	Prevents florid dermatitis in rats. Function in human beings uncertain.	Anti-pellagra. One factor concerned in the prevention of pellagra, and used clinically for cure.	Anti-scorbutic. Prevents scurvy, and helps to maintain the healthy condition of the body tissues and skeletal structure including the teeth.	Anti-rachitic. Regulates the absorption and metabolism of calcium and phosphorus in the body.	Related to reproduction. In rats a deficiency causes resorption of the foetus in females and degeneration of the tubules of the testes in males. The latter cannot be cured by Vitamin E.
Results of Prolonged Deficiency. Deficiency will in all cases result eventually in poor health, cessation of growth in the young, and of reproduction in the adult.	Lowered resistance to infections. Night-blindness and xerophthalmia.	Loss of appetite. Beri-beri.			Pellagra.	Scurvy and its precursors, hæmorrhages of skin, joints and muscles causing pains and tenderness. Loss of appetite and energy.	Rickets. Osteomalacia. Defects in the enamel of the teeth, leading to caries.	Clinical and veterinary application uncertain.
Chemical properties.	Fat-soluble. Present in certain animal fats as vitamin A and derived from carotene which is found chiefly in yellow and green vegetables and fruits. The animal body changes carotene into Vitamin A. The carotene content of vegetables is probably unaffected by cooking.	Water-soluble. Comparatively unstable at ordinary cooking temperatures, unless in an acid medium. Practically no loss if cooking liquor is consumed.	Water-soluble. Not stable to light. Dissolves into water during cooking.	Water-soluble. Comparatively stable to heat and oxidation at ordinary temperatures.		Water-soluble. Destroyed gradually by heat at cooking temperatures. The destruction is hastened by alkalis and aeration.	Fat-soluble. *Calciferol, Vitamin D_2* made by irradiating ergosterol. *Vitamin D_3* of fish liver oils. Comparatively stable to heat and oxidation at cooking temperatures.	Stable to heat.
Principal Sources.	Animal fats such as cod and halibut liver oils: Fat fish such as herring and salmon: liver, kidney, egg yolk, butter, cream, milk and cheese; tomatoes; green leafy vegetables such as lettuce, spinach, cabbage; yellow root vegetables and fruits such as carrots, oranges, bananas and apricots.	*Vitamin B Complex* Yeast, Marmite, Yeastrel. Husks and germ of wheat and other wholemeal cereals, such as brown bread, oatmeal and unpolished rice. Liver, the lean of meat, especially of pork, milk, egg yolk. Root and green leafy vegetables, all fruits and nuts. Egg white contains no vitamin B.				Oranges, lemons and other citrous fruits. Blackcurrants, tomatoes and raw fruit generally. Raw leafy vegetables. Some root vegetables as swedes, onions, turnips and potatoes. Stewed fruits contain about half as much vitamin C as fresh fruits.	Halibut, cod and other fish liver oils. Egg yolk. Butter and cream. The body, or foods irradiated with ultra-violet light from lamps or sunshine. Irradiated ergosterol.	Found in many foodstuffs. Wheat-germ oil is the richest source. Lettuce is very rich.
Approximate daily requirement of Adults. I.U. = International Units.	3,000–6,000 I.U. Vitamin A. Carotene requirements probably nearly double.	200–500 I.U.	1–3 m.g.		5–10 mg.	25–75 mg.	300–400 I.U. for children).	

FIG. 1.

BOOTHBY AND SANDIFORD'S NOMOGRAPH

The weight in pounds and kilograms is shown on Scale I. The height in inches and centimetres is shown on Scale II. The surface area in square metres is shown on Scale III.

Directions.—Keep the chart flat. Use a flexible ruler with a straight edge, or a strip of stiff paper, such as a postcard. Locate the position of the weight and height on Scales I and II respectively. Apply the straight edge of the ruler, and note where it cuts Scale III. Read the figure on Scale III, which will give the surface area of the body in square metres.

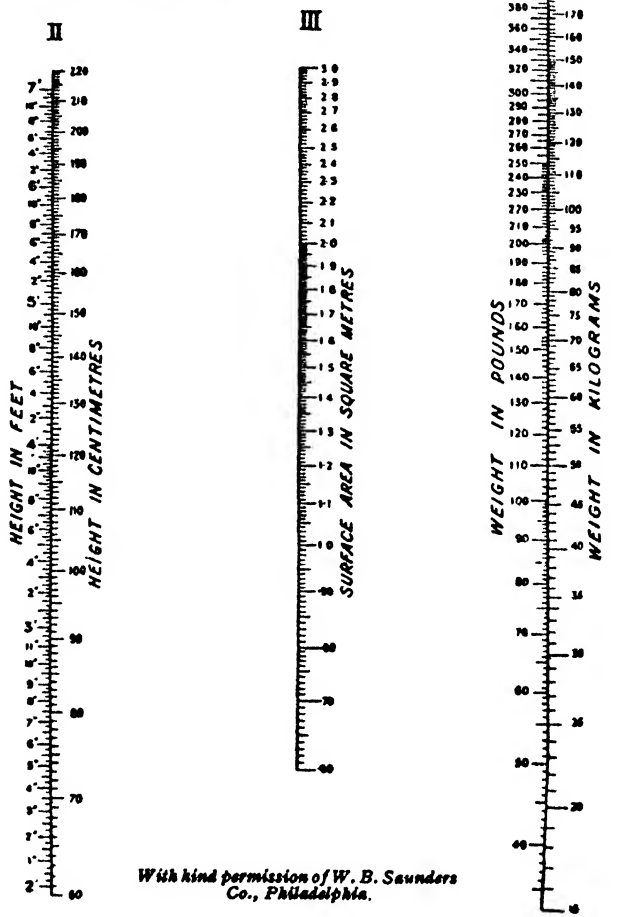

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TABLE XVII

BASAL METABOLISM OF CHILDREN AND ADULTS

(Calories per square metre per hour)

Age	Males	Females
5 years	53·0	51·5
6 ,,	53·0	50·5
7 ,,	52·0	49·5
8 ,,	51·0	48·0
9 ,,	50·0	46·5
10 ,,	49·0	45·5
11 ,,	48·5	44·5
12 ,,	47·5	43·0
13 ,,	47·0	42·0
14 ,,	46·0	41·0
15 ,,	45·0	39·5
16 ,,	44·0	38·5
17 ,,	43·5	37·5
18 ,,	42·5	37·0
19 ,,	42·0	37·0
20–30 ,,	39·5	37·0
30–40 ,,	39·5	36·5
40–50 ,,	38·5	36·0
50–60 ,,	37·5	35·0
60–70 ,,	36·5	34·0
70–80 ,,	35·5	33·0

(From "Sage Normal Standards" of Dubois and Boothby and Sandiford, 1929.)

The surface area in square metres may be obtained from Boothby and Sandiford's Nomograph (p. 356).

TABLE XVIII

VARIATION OF BASAL METABOLISM WITH DIFFERENT DISEASES

Under-nutrition	12 to 20 per cent. below normal
Obesity (not connected with glandular disturbance) ..	Normal
Anæmia (Primary or Secondary)	Normal
Myxœdema	10 to 40 per cent. below normal
Cretinism	Below normal
Hyperthyroidism	20 to 75 per cent. above normal
Leukæmia	20 to 100 per cent. above normal
Fever..	Rise of 7·2 per cent. for each degree Fahrenheit rise in temperature.

(From *Food and the Principles of Dietetics.* Hutchison and Mottram.)

TABLE XIX

ESTIMATED AVERAGE DAILY REQUIREMENTS OF CALORIES, PROTEIN AND MINERAL SALTS (BASED ON REPORTS OF THE TECHNICAL COMMISSION OF THE LEAGUE OF NATIONS)

Age	Calories	Protein g.	Calcium g.	Phosphorus g.	Iron mg.
1–3 years ..	1,100	42	1·1	1·0	5
3–7 ,, ..	1,500	50	1·3	1·2	8
7–12 ,, ..	2,100	65	1·4	1·5	13
12–15 ,, ..	2,900	95	1·5	1·6	16
15–17 ,, ..	3,000	100	1·4	1·6	15
17–21 ,, ..	3,000	90	1·1	1·4	13
Males 21 years +	3,000	70	0·8	1·3	10
Females 21 years+	2,500	60	0·8	1·3	15
Expectant and Nursing mothers	3,000	80	1·5	1·9	20

TABLE XX

ENERGY EXPENDITURE PER HOUR UNDER DIFFERENT CONDITIONS OF MUSCULAR ACTIVITY

Form of Activity	Calories per hour			
	Per 70 kg. (11 stone) man	Per 57 kg. (9 stone) woman	Per kg.	Per lb.
Sleeping	65	53	0·93	0·43
Awake. Lying still	77	60	1·10	0·50
Sitting at rest	100	82	1·43	0·65
Reading aloud	105	86	1·50	0·69
Standing relaxed	105	86	1·50	0·69
Hand sewing	111	91	1·59	0·72
Standing at attention	115	93	1·63	0·74
Knitting (23 stitches per minute on sweater)	116	95	1·66	0·75
Singing	122	100	1·74	0·79
Tailoring	135	110	1·93	0·88
Typewriting rapidly	140	115	2·00	0·91
Ironing (with 5-lb. iron)	144	118	2·06	0·93
Dish washing	144	118	2·06	0·93
Sweeping bare floor (38 strokes per minute)	169	138	2·41	1·09
Shoemaking	180	147	2·57	1·17
Walking slowly (2·6 miles per hour)	200	164	2·86	1·30
Carpentry, metal work	240	196	3·43	1·56
Walking moderately fast (3·75 miles per hour)	300	245	4·28	1·95
Stoneworking	400	328	5·71	2·60
Sawing wood	480	393	6·86	3·12
Swimming	500	409	7·14	3·25
Running (5·3 miles per hour)	570	466	8·14	3·70
Walking very fast (5·3 miles per hour)	650	532	9·28	4·22

(From Sherman, *Chemistry of Food and Nutrition*, 5th Ed., 1937.)

TABLE XVIII

VARIATION OF BASAL METABOLISM WITH DIFFERENT DISEASES

Under-nutrition	12 to 20 per cent. below normal
Obesity (not connected with glandular disturbance) ..	Normal
Anæmia (Primary or Secondary)	Normal
Myxœdema	10 to 40 per cent. below normal
Cretinism	Below normal
Hyperthyroidism	20 to 75 per cent. above normal
Leukæmia	20 to 100 per cent. above normal
Fever..	Rise of 7·2 per cent. for each degree Fahrenheit rise in temperature.

(From *Food and the Principles of Dietetics.* Hutchison and Mottram.)

TABLE XIX

ESTIMATED AVERAGE DAILY REQUIREMENTS OF CALORIES, PROTEIN AND MINERAL SALTS (BASED ON REPORTS OF THE TECHNICAL COMMISSION OF THE LEAGUE OF NATIONS)

Age	Calories	Protein g.	Calcium g.	Phosphorus g.	Iron mg.
1–3 years ..	1,100	42	1·1	1·0	5
3–7 ,, ..	1,500	50	1·3	1·2	8
7–12 ,, ..	2,100	65	1·4	1·5	13
12–15 ,, ..	2,900	95	1·5	1·6	16
15–17 ,, ..	3,000	100	1·4	1·6	15
17–21 ,, ..	3,000	90	1·1	1·4	13
Males 21 years +	3,000	70	0·8	1·3	10
Females 21 years+	2,500	60	0·8	1·3	15
Expectant and Nursing mothers	3,000	80	1·5	1·9	20

TABLE XX

ENERGY EXPENDITURE PER HOUR UNDER DIFFERENT CONDITIONS OF MUSCULAR ACTIVITY

Form of Activity	Calories per hour			
	Per 70 kg. (11 stone) man	Per 57 kg. (9 stone) woman	Per kg.	Per lb.
Sleeping	65	53	0·93	0·43
Awake. Lying still	77	60	1·10	0·50
Sitting at rest	100	82	1·43	0·65
Reading aloud	105	86	1·50	0·69
Standing relaxed	105	86	1·50	0·69
Hand sewing	111	91	1·59	0·72
Standing at attention	115	93	1·63	0·74
Knitting (23 stitches per minute on sweater)	116	95	1·66	0·75
Singing	122	100	1·74	0·79
Tailoring	135	110	1·93	0·88
Typewriting rapidly	140	115	2·00	0·91
Ironing (with 5-lb. iron)	144	118	2·06	0·93
Dish washing	144	118	2·06	0·93
Sweeping bare floor (38 strokes per minute)	169	138	2·41	1·09
Shoemaking	180	147	2·57	1·17
Walking slowly (2·6 miles per hour)	200	164	2·86	1·30
Carpentry, metal work	240	196	3·43	1·56
Walking moderately fast (3·75 miles per hour)	300	245	4·28	1·95
Stoneworking	400	328	5·71	2·60
Sawing wood	480	393	6·86	3·12
Swimming	500	409	7·14	3·25
Running (5·3 miles per hour)	570	466	8·14	3·70
Walking very fast (5·3 miles per hour)	650	532	9·28	4·22

(From Sherman, *Chemistry of Food and Nutrition*, 5th Ed., 1937.)

TABLE XXI

SUMMARY OF CHIEF DIGESTIVE ENZYMES

	Enzymes	Where chiefly found	Action
Act on Carbohydrates	Ptyalin (salivary amylase)	Salivary secretions.	Converts starch to maltose.
	Amylase (pancreatic amylase).	Pancreatic juice.	Converts starch to maltose.
	Invertase (sucrase)	Intestinal juice.	Converts sucrose to glucose and fructose.
	Maltase ..	Intestinal juice.	Converts maltose to glucose.
	Lactase ..	Intestinal juice.	Converts lactose to glucose and galactose.
Act on Fats	Lipases ..	Gastric (?) and pancreatic juices.	Splits fats to fatty acids and glycerol.
Act on Proteins	Pepsin ..	Gastric juice.	Splits proteins to proteoses and peptones.
	Trypsin ..	Pancreatic juice.	Splits proteins to proteoses, peptones, polypeptides and amino acids.
	Erepsin ..	Intestinal juice.	Splits peptones to amino acids and ammonia.

(Sherman, *Chemistry of Food and Nutrition*, 5th Ed., 1937.)

TABLE XXII

CARBOHYDRATE ARRANGEMENT WITH DIFFERENT KINDS OF INSULIN

Insulin arrangement	Carbohydrate. Total. daily		Breakfast and mid-morning	Dinner	Tea	Supper and Bedtime	
	g.		Carbohydrate in grams				
Ordinary Insulin							
Before breakfast only	100		35	30	20	15	
	125		45	35	25	20	
	150		50	40	35	25	
Before breakfast and supper	100		35	25	5	35	
	125		45	30	5	45	
	150		50	35	15	50	
	175		60	40	15	60	
	200		65	50	20	65	
Retard Insulin (Protamine) or Protamine Zinc Insulin						Supper	Bedtime
Before breakfast with or without ordinary insulin	150		40	35	25	40	10
	175		47·5	40	30	47·5	10
	200		55	45	35	55	10
Protamine Zinc Insulin		With injection					
Before breakfast with carbohydrate at the time of injection.	150	10	30	35	25	40	10
	150	10	37·5	40	30	47·5	10
	200	10	45	45	35	55	10

N.B.—If only three meals a day are taken, the carbohydrate should be divided in proportions similar to those given above for four meals.

Diets without Insulin.—The carbohydrate should be divided evenly among the main meals, between meals such as mid-morning or bedtime being counted with the preceding ones, in this case breakfast and supper.

TABLE XXIII

WEIGHTS AND MEASURES

Avoirdupois weight	Metric equivalent in grams
1 oz.	28·4 = 30 approx.
16 oz. (1 lb.)	454
14 lb. (1 stone)	6·35 kg.
10 stone (140 lb.)	63·5 kg.
11 stone (154 lb.)	70 kg. approx.

Linear measure	Metric equivalent in centimetres
1 inch.	2·54
12 inches (1 foot).	30·48
3 feet (1 yard).	91·44

Fluid measure	Metric equivalent in cubic centimetres (millilitres)
1 fluid oz.	28·4 = 30 approx.
16 fluid oz. (1 U.S. pint)	454
20 fluid oz. (1 Imperial pint)	568·3

Metric measure of weight	Avoirdupois equivalent
1 g.	0·035 oz. or 15·4 grains
100 g.	3·5 oz.
1 kg. (1,000 g.)	2·205 lb.

Metric measure of length	Imperial equivalent
1 millimetre	0·03937 inch
1 centimetre	0·3937 inch
1 metre	39·3701 inches 3·2808 feet 1·0936 yards

Metric measure of capacity	Imperial fluid equivalent
1 cubic centimetre or millilitre	0·035 fluid oz. or 17·0 minims
1 litre (1,000 c.c.)	35·2 fluid oz.

Factors for converting from one scale to another

To convert	grams to ounces	× 0·035
,,	kilograms to pounds	× 2·205
,,	ounces to grams	× 28·4
,,	pounds to kilograms	× 0·444
,,	cubic centimetres to fluid ounces (Imperial)	× 0·035
,,	litres to fluid ounces (Imperial)	× 35·2
,,	fluid ounces to cubic centimetres	× 28·4
,,	Imperial pints to litres	× 0·568

Approximate value of domestic measures

Tumbler	= 8–10 fluid oz.
Breakfast-cup	= 5–8 ,,
Teacup	= 3–5 ,,
Eggcup	= 1 ,,
Tablespoon	= ½ ,,
Dessertspoon	= ¼ ,,
Teaspoon	= ⅛ ,,

1 new penny weighs ⅓ oz.
,, halfpenny weighs ⅕ oz.

Temperature Scales

	Fahrenheit (F.)	Centigrade (C.)	Reamur (R.)
Freezing-point ..	32°	0°	0°
Boiling-point ..	212°	100°	80°

Conversion from one scale to another

$$C=\tfrac{5}{9}(F-32)=\tfrac{5}{4}R$$

$$F=\tfrac{9}{5}C+32=\tfrac{9}{4}R+32$$

$$R=\tfrac{4}{5}C=\tfrac{4}{9}(F-32)$$

TABLE XXIV

MEAN HEIGHTS AND WEIGHTS OF ADULTS

Without shoes. With indoor clothes

Height ft.	Height in.	MEN Age 20 lb.	MEN Age 30 lb.	MEN Age 40 lb.	MEN Age 55 lb.	WOMEN Age 20 lb.	WOMEN Age 30 lb.	WOMEN Age 40 lb.	WOMEN Age 55 lb.
4	11	113	122	127	131	114	120	127	133
5	0	115	124	129	133	116	122	129	135
5	1	118	126	131	135	119	124	132	138
5	2	121	129	134	138	122	127	135	141
5	3	124	132	137	141	125	131	138	144
5	4	128	136	141	145	128	134	142	148
5	5	132	140	145	149	132	138	146	153
5	6	136	144	149	154	136	142	150	158
5	7	140	148	154	159	140	146	154	163
5	8	144	152	159	164	143	150	158	167
5	9	148	157	164	169	147	154	161	171
5	10	152	162	170	174	151	157	164	174
5	11	157	168	176	180	156	161	167	177
6	0	162	174	182	187	—	—	—	—
6	1	167	180	189	194	—	—	—	—
6	2	172	186	196	201	—	—	—	—

The figures are based upon the Report of Life Insurance Directors and Actuarial Society of America, New York, 1912, but have been modified to take into account the lower weight of modern clothing; 6 lb. is allowed for clothes for men and 4 lb. for women. Heights are given *without* shoes.

TABLE XXV

MEAN HEIGHTS AND WEIGHTS OF CHILDREN

Age last birthday	HEIGHT				WEIGHT			
	BOYS		GIRLS		BOYS		GIRLS	
	Inches	Cm.	Inches	Cm.	lb.	Kg.	lb.	Kg.
3	37	94	37	94	33	15	33	15
4	40	101	40	101	38	17	38	17
5	43	109	43	109	42	19	42	19
6	45	114	45	114	48	22	48	22
7	48	122	48	122	53	24	53	24
8	50	127	50	127	57	26	57	26
9	52	132	52	132	64	29	64	29
10	54	137	54	137	71	32	71	32
11	56	142	56	142	77	35	79	36
12	58	147	58	147	86	39	88	40
13	60	152	60	152	93	42	99	45
14	63	160	62	157	110	50	108	49
15	65	165	63	160	121	55	117	53
16	67	170	64	163	132	60	121	55
17	68	173	64	163	139	63	123	56
18	69	175	64	163	143	65	126	57

These values are adapted from Baldwin and Wood's " Weight-height-age Tables for Boys and Girls of School Age " and from unpublished data of Widdowson and McCance. Measurements are made in indoor clothes, but without shoes.

TABLE XXVI

NORMAL BLOOD AND URINE FINDINGS AND THEIR ALTERATION IN DISEASES WHICH MAY BE TREATED BY DIET

	Normal level	Level raised	Level lowered
	Normal Blood Findings		
Pressure ..	Systolic, 110–140 Diastolic, 70–90	Chronic interstitial nephritis and often for other unknown causes.	Addison's Disease. Diabetic coma.
Hæmoglobin ..	Men, 100–110 per cent. Women, 90–100 per cent.	Diabetic coma, diarrhœa, and vomiting. Sometimes shock.	Anæmia secondary to blood loss, deficient iron intake, or absorption. Pernicious anæmia. Hæmorrhage. Carcinoma.
Red blood cells	Men, 5·0–5·5 million per cubic mm. Women, 4·5–5·0 million per cubic mm.	Diabetic coma, diarrhœa, and vomiting. Sometimes shock.	Pernicious anæmia; to a lesser extent all forms of secondary anæmia.
Sugar .. .	Fasting, 80–120 mg. per 100 c.c. After food, up to 180 mg. per 100 c.c. (arterial), 150 mg. per 100 c.c. (venous).	Untreated or incompletely controlled diabetes mellitus.	Overdose of insulin

Urea	14–40 mg. per 100 c.c.	Acute and chronic interstitial nephritis. Diarrhœa and vomiting. Patients taking high protein diets.	Pregnancy. Low protein diets.
Proteins ..	6–8 per cent., made up of Albumen about 4–5 per cent. Globulin about 2·5 per cent.	Diabetic coma. Acute diarrhœa and vomiting. Dehydration. Sometimes shock.	Chronic parenchymatous nephritis. Malnutrition of any kind. After severe hæmorrhage.
Uric acid ..	2–4 mg. per 100 c.c.	Gout.	—
Calcium ..	9–11 mg. per 100 c.c.	Over-activity of the parathyroid glands.	Removal of parathyroids. Sprue. Cœliac disease. Sometimes in rickets.
Diastase ..	2–12 units (Wohlgemuth).	Always in acute pancreatitis. Sometimes in chronic pancreatitis.	—
	Normal Urine Findings		
Volume ..	1–2 litres a day.	Diabetes Mellitus. Diabetes Insipidus. Often in chronic interstitial nephritis.	Dehydration. Failing circulation. Insufficient fluid intake.
Specific gravity	1·008–1·030.	Diabetes Mellitus. Dehydration.	Diabetes Insipidus. Excess fluid intake.

TABLE XXVII

ABNORMAL EXCRETIONS

Urine

Glucose in diabetes mellitus. Grave's disease. Sometimes also in healthy persons (renal glycosuria). Pregnancy.

Lactose, sometimes in late pregnancy, often in lactation.

Acetone Bodies in untreated diabetes mellitus and any other form of carbohydrate starvation, whatever the cause. Also after the administration of a ketogenic diet.

Albumen, Casts, etc., in all types of nephritis, including albuminuria of pregnancy. Sometimes also in normal young adults.

Bile Pigments and Bile Salts in obstructive jaundice.

Absence of Chlorides in pneumonia, vomiting, diabetic coma and other salt deficient conditions. Also after the administration of a low salt diet.

Fæces*

Excess of Undigested Fat in obstructive pancreatitis and chronic pancreatitis.

Excess of Digested Fat (Fatty Acids) in jaundice, cœliac disease, sprue.

Starch in chronic pancreatitis, and early stages of severe diarrhœa.

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* Not more than one quarter of the dried fæces should be fat, and, of this, not more than one quarter should be undigested fat.

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Printed in Great Britain by William Clowes & Sons, Limited, Beccles, for Baillière, Tindall & Cox